Delivering on the Promise Of RNAi Therapy

MDRNA, INC.
2008 ANNUAL REPORT
NOTICE OF 2009 ANNUAL MEETING
AND PROXY STATEMENT

April 2009

To my fellow shareholders,

I believe the keys to success in the biotech sector are solid science, a great team, a strong intellectual property portfolio and unrelenting tenacity. And, of course, a bit of good fortune as we cannot always count on human biology to behave the way we hope or predict it will. I can tell you today, with all confidence, that this company does not lack for the science, the team, the intellectual property or the tenacity. In fact, we superbly leveraged all of them to rapidly and successfully transition from a clinical stage intranasal delivery company to an industry leading RNAi-based therapeutics company in just nine months. No small feat under any circumstance but particularly significant if you consider we are in the midst of the most unforgiving public market in the history of biotech.

Our transition to a leading RNAi-based therapeutics company was marked by two significant accomplishments in the first quarter of 2009. First, we eliminated all of our non-RNAi operating expenses through the successful renegotiation of our legacy obligations as well as the sale of our Contract Manufacturing Operations in Hauppauge, NY. Of particular note, we reduced our debt by almost sixty percent since February with the expectation that we will be debt free by the third quarter of this year. Second, we validated our RNAi drug discovery engine by completing two agreements with large, international pharmaceutical companies. In the first deal, we non-exclusively sublicensed certain siRNA constructs and chemistries to F. Hoffmann-La Roche and in the second deal, we non-exclusively licensed our DiLA^2 siRNA delivery platform to Novartis AG. These deals begin to demonstrate the value of our RNAi drug discovery platform. We expect to build from these license agreements and establish high-value, broad target-based and therapeutic-based research and development collaborations with multiple pharmaceutical companies.

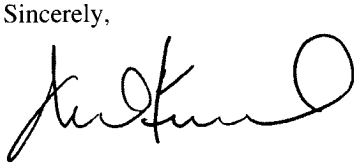
For all our efforts over the past several months, we are not yet where we need to be. We have successfully ***transitioned*** the company but now we must ***build*** the company by rebuilding shareholder value. Fortunately, we have a first-rate team that previously built a successful RNAi-based therapeutics company. We know what is required to demonstrate the robustness of the science and the RNAi drug discovery platform. We know how to aggressively pursue, negotiate and close target-based and therapeutic-based research and development collaborations with large pharmaceutical companies. We know how to expand and maintain an intellectual property estate to ensure that our, and our partner's, R&D programs are protected. And, more importantly, we know that none of the above comes easy, that to achieve the success that we believe we are capable of achieving will require dedication, hard work and resourcefulness. Further, I believe our team's understanding of the RNAi landscape, from both a business and scientific perspective, are unparalleled in the sector. I believe our knowledge, experience and insight will position us to take advantage of current and near-term market conditions and emerge as the preeminent investment opportunity in the RNAi sector.

Overshadowing the tremendous effort necessary to build the company is the need to continue to bring capital into the company. Our objective is to do so through non-dilutive means such as R&D collaborations with large pharmaceutical companies. However, we will pursue all options available to us to ensure that the company remains viable, that we achieve our planned business objectives and that we maximize shareholder value.

Today we are a leaner, stronger and more focused company than we were a year ago, with an industry leading RNAi drug discovery platform, an outstanding management and scientific team and the fortitude to excel in this highly competitive and economically constrained environment.

On behalf of our Board of Directors and our team, I would like to express my sincerest appreciation to all our shareholders for your unwavering confidence and support during this transition. We appreciate your continued support as we build MDRNA into the preeminent RNAi-based therapeutics company we believe it will be.

Sincerely,



J. Michael French
President and Chief Executive Officer

MDRNA, Inc.

3830 Monte Villa Parkway
Bothell, Washington 98021

NOTICE OF ANNUAL MEETING OF STOCKHOLDERS
To Be Held Wednesday, May 20, 2009 at 10:00 A.M. (Eastern Daylight Time)

TO THE STOCKHOLDERS OF MDRNA, Inc.:

Notice is hereby given that the Annual Meeting of Stockholders (the "Annual Meeting") of MDRNA, Inc. will be held on Wednesday, May 20, 2009, at 10:00 A.M., Eastern Daylight Time, at The University Club, 1 West 54th Street, New York, New York 10019 to consider and vote on the following proposals:

1. To elect five (5) persons to our Board of Directors, each to hold office until the 2010 annual meeting of stockholders and until their respective successors shall have been duly elected or appointed and qualify;

2. To consider and vote upon a proposal to ratify the appointment of KPMG LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2009;

3. To consider and vote upon a proposal to approve an amendment to our amended and restated certificate of incorporation to effect a reverse stock split, at a time in the future, and in such ratio between a one-for-two and one-for-ten reverse stock split, to be determined by our Board of Directors, in conjunction with advice from our investment bankers, to be in the best interest of MDRNA, Inc.

The enclosed Proxy Statement includes information relating to these proposals. Additional purposes of the Annual Meeting are to receive reports of officers (without taking action thereon) and to transact such other business as may properly come before the Annual Meeting or any adjournment or postponement thereof.

Only stockholders of record as of the close of business on April 8, 2009 are entitled to notice of and to vote at the Annual Meeting. The holders of at least a majority of our outstanding shares of common stock present in person or by proxy are required for a quorum. You may vote electronically through the Internet or by telephone. The instructions on your proxy card describe how to use these convenient services. Of course, if you prefer, you can vote by mail by completing your proxy card and returning it to us in the enclosed envelope.

By Order of the Board of Directors,

Bruce R. York
Secretary and CFO

April 20, 2009
Bothell, Washington

OUR BOARD OF DIRECTORS APPRECIATES AND ENCOURAGES YOUR PARTICIPATION IN OUR ANNUAL MEETING. WHETHER OR NOT YOU PLAN TO ATTEND THE ANNUAL MEETING, IT IS IMPORTANT THAT YOUR SHARES BE REPRESENTED. ACCORDINGLY, PLEASE AUTHORIZE A PROXY TO VOTE YOUR SHARES BY INTERNET, TELEPHONE OR MAIL. IF YOU ATTEND THE ANNUAL MEETING, YOU MAY WITHDRAW YOUR PROXY, IF YOU WISH, AND VOTE IN PERSON. YOUR PROXY IS REVOCABLE IN ACCORDANCE WITH THE PROCEDURES SET FORTH IN THIS PROXY STATEMENT.

MDRNA, Inc.

3830 Monte Villa Parkway
Bothell, Washington 98021

PROXY STATEMENT FOR ANNUAL MEETING OF STOCKHOLDERS

To be held Wednesday, May 20, 2009 at 10:00 A.M. (Eastern Daylight Time)

ANNUAL MEETING AND PROXY SOLICITATION INFORMATION

General

This Proxy Statement is furnished in connection with the solicitation of proxies by the board of directors (the "Board of Directors") of MDRNA, Inc., a Delaware corporation, for use at the Annual Meeting of Stockholders to be held on Wednesday, May 20, 2009, at 10:00 A.M., Eastern Daylight Time, at The University Club, 1 West 54th Street, New York, New York 10019, and at any postponements or adjournments thereof (the "Annual Meeting"). This Proxy Statement, the Notice of Annual Meeting of Stockholders and the accompanying proxy card, are being mailed to stockholders on or about April 20, 2009.

Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting of Stockholders to Be Held on May 20, 2009: The Proxy Statement and the Annual Report to Shareholders are available at www.mdrnainc.com.

Solicitation and Voting Procedures

Solicitation. The solicitation of proxies will be conducted by mail, and we will bear all attendant costs. These costs will include the expense of preparing and mailing proxy materials for the Annual Meeting and reimbursements paid to brokerage firms and others for their expenses incurred in forwarding solicitation materials regarding the Annual Meeting to beneficial owners of our common stock, par value $0.006 per share (the "Common Stock"). We intend to use the services of Morrow & Co., Inc., 470 West Ave., Stamford, CT 06902, in soliciting proxies and, as a result, we expect to pay approximately $7,500, plus out-of-pocket expenses, for such services. We may conduct further solicitation personally, telephonically, electronically or by facsimile through our officers, directors and regular employees, none of whom would receive additional compensation for assisting with the solicitation.

Voting. Stockholders of record may authorize the proxies named in the enclosed proxy card to vote their shares of Common Stock in the following manner:

- by mail, by marking the enclosed proxy card, signing and dating it, and returning it in the postage-paid enveloped provided;
- by telephone, by dialing the toll-free telephone number 1-800-PROXIES (1-800-776-9437) from within the United States or Canada and following the instructions. Stockholders voting by telephone need not return the proxy card; and
- through the Internet, by accessing the World Wide Website address www.voteproxy.com. Stockholders voting by the Internet need not return the proxy card.

Revocability of Proxies. Any proxy given pursuant to this solicitation may be revoked by the person giving it at any time before it is exercised in the same manner in which it was given, or by delivering to Bruce R. York, Secretary, MDRNA, Inc., 3830 Monte Villa Parkway, Bothell, Washington 98021, a written notice of revocation or a properly executed proxy bearing a later date, or by attending the Annual Meeting and giving notice of your intention to vote in person.

Voting Procedure. The presence at the Annual Meeting of a majority of our outstanding shares of Common Stock, represented either in person or by proxy, will constitute a quorum for the transaction of business at the Annual Meeting. The close of business on April 8, 2009 has been fixed as the record date (the "Record Date") for determining the holders of shares of Common Stock entitled to notice of and to vote at the Annual Meeting. Each share of Common Stock outstanding on the Record Date is entitled to one vote on all matters. As of the Record Date, there were 34,834,159 shares of Common Stock outstanding. Under Delaware law, stockholders will not have appraisal or similar rights in connection with any proposal set forth in this Proxy Statement.

Stockholder votes will be tabulated by the persons appointed by the Board of Directors to act as inspectors of election for the Annual Meeting. Shares represented by a properly executed and delivered proxy will be voted at the Annual Meeting and, when instructions have been given by the stockholder, will be voted in accordance with those instructions. If no instructions are given, the shares will be voted FOR Proposal Nos. 1, 2, and 3. Abstentions and broker non-votes will each be counted as present for the purpose of determining whether a quorum is present at the Annual Meeting. Abstentions will have no effect on the outcome of the election of directors, but will be counted as a vote AGAINST the ratification of KPMG LLP as our independent registered public accounting firm and AGAINST the proposal to effect a reverse stock split of our common stock. Broker non-votes will have no effect on the outcome of the election of directors or the ratification of KPMG LLP as our independent registered public accounting firm, but will be considered as a vote AGAINST the proposal to effect a reverse stock split of our common stock. A broker non-vote occurs when a broker submits a proxy card with respect to shares of Common Stock held in a fiduciary capacity (typically referred to as being held in "street name"), but declines to vote on a particular matter because the broker has not received voting instructions from the beneficial owner. Conduct Rule 2260 of the NASDAQ Stock Market ("NASDAQ") states that member organizations are not permitted to give proxies when instructions have not been received from beneficial owners; provided, however, that a member organization may give proxies when instructions have not been received from beneficial owners if given pursuant to the rules of a national securities exchange to which the member is also responsible. Under Rule 452 of the New York Stock Exchange (the "NYSE"), which governs brokers who are voting with respect to shares held in street name, a broker may have the discretion to vote such shares on routine matters, but not on non-routine matters. Routine matters include the election of directors, the ratification of independent registered public accounting firm and increases in authorized common stock for general corporate purposes. Accordingly, a broker that is a member organization of NASDAQ will not be permitted to vote a properly executed proxy when no instructions have been given, unless such broker is also a member of the NYSE, in which case such broker would have the discretion to vote the proxy for Proposal Nos. 1, 2 and 3 in accordance with Rule 452 of the NYSE.

On each matter properly presented for consideration at the Annual Meeting, stockholders will be entitled to one vote for each share of Common Stock held. Stockholders do not have cumulative voting rights in the election of directors. For the election of directors, the nominees who receive a plurality of votes from the shares present and entitled to vote at the Annual Meeting will be elected. For the ratification of our independent registered public accounting firm the vote of a majority of the shares present and entitled to vote is required.

If any other matters are properly presented for consideration at the meeting, the persons named in the enclosed proxy will have discretion to vote on those matters in accordance with their best judgment.

Some banks, brokers and other nominee record holders may be participating in the practice of "householding" proxy statements and annual reports. This means that only one copy of this Proxy Statement or our annual report may have been sent to multiple shareholders in your household. We will promptly deliver a separate copy of either document to you if you call or write us at the following address or phone number: MDRNA, Inc., 3830 Monte Villa Parkway, Bothell, Washington 98021, phone: (425) 908-3600, Attention: Bruce R. York, Secretary. If you want to receive separate copies of our annual report and Proxy Statement in the future, or if you are receiving multiple copies and would like to receive only one copy for your household, you should contact your bank, broker or other nominee record holder, or you may contact us at the above address and phone number.

PROPOSAL NO. 1

ELECTION OF DIRECTORS

General

Our Amended and Restated Bylaws (the "Bylaws") provide that the Board of Directors shall consist of not less than five (5) members and not more than eleven (11) members, as fixed by the Board of Directors. Following the Annual Meeting, the number of our Board of Directors shall be fixed at five (5).

At the Annual Meeting, five (5) directors are to be elected by the holders of the Common Stock to serve until the 2010 annual meeting of our stockholders and until such directors' respective successors are elected or appointed and qualify or until any such director's earlier resignation or removal. The Board of Directors, acting upon the recommendation of its Nominating and Corporate Governance Committee, has nominated J. Michael French, Daniel Peters, James Rothman, Ph.D., Gregory Sessler and Bruce R. Thaw for election to the Board of Directors at the Annual Meeting. In the event any nominee is unable or unwilling to serve as a director at the time of the Annual Meeting, the proxies may be voted for the balance of those nominees named and for any substitute nominee designated by the current Board of Directors or the proxy holders to fill such vacancy or for the balance of those nominees named without the nomination of a substitute, or the size of the Board of Directors may be reduced in accordance with our Bylaws.

Nominees

The following information is submitted concerning the nominees for election as directors based upon information received by us from such persons:

J. Michael French. On June 10, 2008, we entered into an employment agreement with Mr. French pursuant to which Mr. French began serving as our Chief Executive Officer ("CEO") starting June 23, 2008. On September 11, 2008, Mr. French joined our Board of Directors, and effective October 1, 2008 he added the title of President. Prior to joining us, Mr. French served as President of Rosetta Genomics, Inc. from May 2007 to August 2007. Mr. French also served as Senior Vice President of Corporate Development for Sirna Therapeutics, Inc. ("Sirna") from July 2005 to January 2007, when Sirna was acquired by Merck and Co., Inc. ("Merck"), and he served in various executive positions, including Chief Business Officer, Senior Vice President of Business Development and Vice President of Strategic Alliances, of Entelos, Inc., a pre-IPO biotechnology company, from 2000 to 2005. Mr. French holds a B.S. in aerospace engineering from the U.S. Military Academy at West Point and a M.S. in physiology and biophysics from Georgetown University.

Daniel Peters. Mr. Peters has served on our Board of Directors since June 2008 and currently serves on the Audit and Compensation Committees and serves as Chair of the Nominating and Corporate Governance Committee. Mr. Peters was most recently President and CEO of Medical Diagnostics at GE Healthcare and a corporate officer at GE, retiring at the end of 2007. Prior to his role at GE, Mr. Peters served as Chief Operating Officer at Amersham Health. Previously, Mr. Peters served as the President of Nycomed Amersham Imaging Inc., where he was responsible for managing the company's diagnostic pharmaceutical operations in North, South and Central America. Mr. Peters had been President of Nycomed Imaging Inc. in the Americas from 1994 to 1997. Prior to that, Mr. Peters held roles of increasing responsibility within the U.S. pharmaceuticals business of Sterling Winthrop, being appointed President of the U.S. Pharmaceutical business in 1993. Mr. Peters is currently on the board of Phadia AB in Uppsala Sweden, serving as Chairman. Previously, Mr. Peters served as a Trustee and founding member of the Health Care Institute of New Jersey from 1996 to 2006, a board member of the Pharmaceutical Research and Manufacturers of America from 1995 to 2005, and a board member of the National Pharmaceutical Council from 1990 to 1993. Mr. Peters also served on the board of Diatide Inc. from 1994 to 1997. Mr. Peters holds a bachelors degree from Western Illinois University.

James E. Rothman, Ph.D. Dr. Rothman has served on our Board of Directors since June 2008, and he served as a member of our Scientific Advisory Board from April 2008 until December 2008. Dr. Rothman is one of the world's most distinguished biochemists and cell biologists and is currently the Wallace Professor and Chairman of the Department of Cell Biology at The Yale University School of Medicine. From 2004 until 2007, Dr. Rothman served as Chief Science Advisor of GE Healthcare. He is renowned for discovering the molecular machinery responsible for the transfer of materials among compartments within cells. Prior to joining Yale University in 2008, Dr. Rothman held Professorships at Stanford University from 1978 to 1988; Princeton University from 1988 to 1991; Memorial Sloan-Kettering Cancer Center from 1991 to 2004; and Columbia University from 2004 to 2008. Dr. Rothman's pioneering research in cell biology has been recognized by election to the U.S. National Academy of Sciences in 1993. He has also received numerous international awards, including the Lasker Award in 2002. He is currently a senior advisor to GE and Eli Lilly.

Gregory Sessler. Mr. Sessler has served on our Board of Directors since June 2008 and currently serves as Chair of the Audit Committee and as a member of the Nominating and Corporate Governance Committee of the Board of Directors. Mr. Sessler has served as the Chief Operating Officer since December 2008 and as the Executive Vice President and Chief Financial Officer ("CFO") of Spiration, Inc. since 2002, and is also currently a director and chairman of the audit committee of VLST, Corp. Prior to joining Spiration, Mr. Sessler served as Senior Vice President and CFO of Rosetta Inpharmatics, a leader in informational genomics, from March 2000 until its acquisition by Merck & Co., Inc. in July 2001 for $540 million. Mr. Sessler is a member of the AICPA and FEI, and he previously served on the board of directors of Corixa Corporation. He also serves on the Executive Committee and is a past chairman of the board of directors of the Washington Biotechnology and Biomedical Association. Mr. Sessler holds a bachelors degree, magna cum laude, from Syracuse University and an MBA from the Stanford Graduate School of Business.

Bruce R. Thaw. Mr. Thaw has been a member of our Board of Directors since June 1991 and currently serves as Chairman of the Board and as a member of the Audit and Compensation Committees of our Board of Directors. Since January 2000, Mr. Thaw has served as the President and CEO of Bulbtronics, Inc., a national distributor of technical and specialty light sources and related products to the medical, scientific, entertainment and industrial markets. Mr. Thaw is a practicing attorney and was admitted to the bar of the State of New York in 1978 and the California State Bar in 1983. From 1984 to 2001, Mr. Thaw served as our general counsel. From 1990 until April 2007, Mr. Thaw served as a member of the board of directors of SafeNet, Inc., a company that designs, manufactures and markets information security systems, products and services that protect and secure digital identities, communications, intellectual property and applications over wide area networks and virtual private networks. Mr. Thaw holds a B.B.A. degree in Banking and Finance from Hofstra University and a J.D. degree from the Hofstra University School of Law.

Vote Required and Board of Directors' Recommendation

Assuming a quorum is present, the affirmative vote of a plurality of the votes cast at the Annual Meeting, either in person or by proxy, is required for the election of a director. For purposes of the election of directors, abstentions and broker non-votes will have no effect on the result of the vote.

THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT STOCKHOLDERS VOTE "FOR" ALL OF THE NOMINEES NAMED IN PROPOSAL NO. 1.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS

As of March 31, 2009, we are not aware of any beneficial owners with greater than 5% of our outstanding shares of Common Stock.

SECURITY OWNERSHIP OF MANAGEMENT

Set forth below is certain information as of March 31, 2009 for (i) the members of and nominees for the Board of Directors, (ii) our executive officers named in the Summary Compensation Table below, and (iii) our directors and executive officers as a group. Unless otherwise indicated, the business address of each person in the table below is c/o MDRNA, Inc., 3830 Monte Villa Parkway, Bothell, Washington 98021. No shares identified below are subject to a pledge.

Name	Age	Number of Shares(1)	Percent of Shares Outstanding (%)(1)
Alexander D. Cross, Director	77	76,000(2)	*
J. Michael French, Director, President and CEO	49	10,000(3)	*
Daniel Peters, Director	57	—(4)	*
John V. Pollock, Director	70	83,333(5)	*
Steven C. Quay, Director (Former Chairman, CEO and CSO)	58	2,870,906(6)	7.9%
James E. Rothman, Director	58	104,371(7)	*
Gregory Sessler, Director	56	—(8)	*
Bruce R. Thaw, Chairman of the Board of Directors	56	210,041(9)	*
Bruce R. York, CFO	54	44,899(10)	*
Barry Polisky, CSO (employment started January 2, 2009)	63	—	*
Gordon C. Brandt, Former President	49	41,705(11)	*
Timothy M. Duffy, Former CBO	48	56,395(12)	*
All directors and executive officers as a group (10 persons)	—	3,399,560(13)	9.2%

* Beneficial ownership of less than 1.0% is omitted.

(1) Except as otherwise noted below, includes all outstanding shares of Common Stock, shares of Common Stock underlying vested options, and all outstanding restricted shares of Common Stock (both vested and unvested), that are owned beneficially by the individual listed with sole voting and/or investment power. All references to "vested" options shall include all such options that are exercisable as of March 31, 2009, as well as those options that will become exercisable within 60 days of March 31, 2009.

(2) Includes vested options to purchase 38,000 shares of Common Stock and 5,332 unvested restricted shares of Common Stock.

(3) None of Mr. French's 1,260,000 options to purchase Common Stock vest within 60 days of March 31, 2009.

(4) None of Mr. Peter's 45,000 options to purchase Common Stock vest within 60 days of March 31, 2009.

(5) Includes vested options to purchase 52,500 shares of Common Stock and 4,999 unvested restricted shares of Common Stock.

(6) Dr. Quay was terminated as our CSO and resigned as our Chairman of the Board on October 27, 2008. Dr. Quay had previously resigned as CEO effective June 23, 2008. Under the terms of his employment agreement with us, following his termination as CSO, Dr. Quay remained as an employee through November 30, 2008 and all of his unvested stock options and restricted stock became fully vested as of that date. Dr. Quay surrendered, without consideration, 700,000 underwater options on October 28, 2008 and 800,000 underwater options on March 16, 2009. Includes vested options to purchase 1,704,247 shares of Common Stock and 165 shares of Common Stock held by his spouse.

(7) Includes vested options to purchase 104,371 shares of Common Stock granted to Dr. Rothman in connection with his service on our Scientific Advisory Board.

(8) None of Mr. Sessler's 60,000 options to purchase Common Stock vest within 60 days of March 31, 2009.

(9) Includes vested options to purchase 46,000 shares of Common Stock and 4,999 unvested restricted shares of Common Stock.

(10) Includes vested options to purchase 9,667 shares of Common Stock and 13,417 unvested restricted shares of Common Stock.

(11) Dr. Brandt was terminated in connection with our reduction in force in August 2008. Under the terms of his employment agreement with us, he remained as an employee through the end of September 2008 and all of his unvested stock options and restricted stock became fully vested as of September 30, 2008. As of that date, Dr. Brandt held 41,705 shares of Common Stock and held vested options to purchase 65,532 shares of Common Stock. The options expired unexercised on December 30, 2008 in accordance with their terms. The Common Stock ownership information is based upon information available to us as of September 30, 2008 and may not reflect transactions subsequent to that date.

(12) Mr. Duffy was terminated in connection with our reduction in force in August 2008. Under the terms of his employment agreement with us, he remained as an employee through the end of September 2008 and all of his unvested stock options and restricted stock became fully vested as of September 30, 2008. As of that date, Mr. Duffy held 56,395 shares of Common Stock and held vested options to purchase 87,984 shares of Common Stock. The options expired unexercised on December 30, 2008 in accordance with their terms. The Common Stock ownership information is based upon information available to us as of September 30, 2008 and may not reflect transactions subsequent to that date.

(13) Includes vested options to purchase 2,754,785 shares of Common Stock, 28,747 unvested restricted shares of Common Stock and 165 shares of Common Stock indirectly held by spouses. Dr. Brandt and Mr. Duffy were excluded since they were no longer employed by us on December 31, 2008.

Biographical information concerning our CEO is set forth above under the caption "Proposal No. 1 — Election of Directors." Biographical information concerning our remaining executive officers is set forth below.

Bruce R. York. Following the resignation of our previous CFO in January 2008, Mr. York was appointed to serve as our CFO and Secretary. He joined us as our Director, Accounting and Corporate Controller in August 2004. In September 2005, he was appointed our Senior Director, Finance, interim Chief Accounting Officer and interim Assistant Secretary. Effective January 1, 2006, the interim titles were removed. Prior to joining us, he served as VP, CFO and Corporate Secretary of Cellular Technical Services Company, Inc. from 1999 to 2004. He served as Director of Finance for Cell Therapeutics, Inc. from 1998 to 1999, was employed by Physio Control International Corporation from 1987 to 1998, holding positions of Director of Business Planning, Director of Finance — Europe, Director of Finance and Corporate Controller and Manager of Tax and Assets and was employed by Price Waterhouse from 1978 to 1987. He earned a B.A. in government from Dartmouth College and an M.B.A. in finance and accounting from the Amos Tuck School of Business at Dartmouth. Mr. York, age 54, has been a licensed CPA since 1979.

Barry Polisky, Ph.D. Dr. Polisky has served as our Chief Scientific Officer since January 2, 2009. Previously, he served as a consultant to Merck from February 2008 to August 2008, and served as Research Vice President of Merck from January 2007 to January 2008. Dr. Polisky also served as Chief Scientific Officer and Senior Vice President of Sirna from March 2005 to January 2007, when Sirna was acquired by Merck, and served Sirna as Senior Vice President of Research from December 2003 to February 2005 and as Vice President of Research from June 2002 to December 2003. Prior to joining Sirna, Dr. Polisky served as Vice-President of Research at ThermoBiostar, Inc. from 1999 to 2002, where he developed a non-instrumented SNP diagnostic platform. Dr. Polisky, age 63, received his Ph.D. in molecular biology from the University of Colorado and conducted post-doctoral work in the Department of Biochemistry and Biophysics, University of California, San Francisco.

Certain Relationships and Related Transactions

Contractual Arrangements. Pursuant to the terms and conditions of Mr. French's employment agreement, we agreed, for the term of Mr. French's employment with us, to nominate Mr. French for successive terms as a member of the Board of Directors. We are obligated to use all best efforts to cause Mr. French to be elected to the Board of Directors at the Annual Meeting.

Independence of the Board of Directors

The Board of Directors has adopted NASDAQ's standards for determining the independence of its members and believes that it interprets these requirements conservatively. In applying these standards, the Board of Directors considers commercial, industrial, banking, consulting, legal, accounting, charitable and familial relationships, among others, in assessing the independence of directors, and must disclose any basis for determining that a relationship is not material. The Board of Directors has determined that a majority of the current members of the Board of Directors, namely Alexander D. Cross, Daniel Peters, John V. Pollock, Gregory Sessler and Bruce R. Thaw, are independent directors within the meaning of such NASDAQ independence standards in terms of independence from management, such members constituting five (5) of the eight (8) current members of the Board of Directors. The Board also has determined that a majority of the nominees for the Board of Directors, namely Daniel Peters, Gregory Sessler and Bruce R. Thaw, are independent directors within the meaning of such NASDAQ independence standards in terms of independence from management during the past year, such members constituting three (3) of the five (5) director nominees. In making these independence determinations, the Board of Directors did not exclude from consideration as immaterial any relationship potentially compromising the independence of any of the above directors.

Meetings of the Board of Directors

The Board of Directors held 14 meetings during 2008. During 2008, all incumbent directors attended more than 75% of the aggregate number of meetings of the Board of Directors. We do not have a formal policy regarding attendance by members of the Board of Directors at the annual meetings of stockholders, but we strongly encourage all members of the Board of Directors to attend our annual meetings and expect such attendance except in the event of extraordinary circumstances. All incumbent members of the Board of Directors attended our annual meeting of stockholders on June 10, 2008.

Executive Sessions of the Board of Directors consisting only of independent directors will be held at least twice per year, and periodically as determined by the independent directors. Such Executive Sessions will typically occur immediately following regularly scheduled meetings of the Board of Directors or at any other time and place as the independent directors may determine. The Board of Directors had previously designated Bruce R. Thaw to serve as our Lead Independent Director. In this capacity, Mr. Thaw was generally responsible for organizing, managing and presiding over the Executive Sessions of the Board of Directors and performing such other oversight functions from time to time as the independent directors deem necessary or appropriate, and reporting on outcomes of the Executive Sessions and such other activities to the Board of Directors and CEO as appropriate. Upon the resignation of Steven C. Quay as the Chairman of our Board of Directors in September, 2008, Mr. Thaw was elected Chairman of the Board of Directors and has continued to serve in that capacity. Interested parties may submit matters for consideration to the independent directors by utilizing the procedures identified under "Stockholder Communications" in this Proxy Statement. During 2008, the independent directors met in Executive Session four times.

Committees of the Board of Directors

The Board of Directors has three standing committees: the Audit Committee, the Compensation Committee and the Nominating and Corporate Governance Committee. The Board of Directors has adopted written charters for each of these Committees, which we make available free of charge on or through our Internet website, as well as items related to corporate governance matters, including the charters of the Audit, Compensation and Nominating and Corporate Governance Committees of the Board of Directors and our Code of Business Conduct and Ethics applicable to all employees, officers and directors. We maintain our Internet website at www.mdrnainc.com. You can access our committee charters and code of conduct on our website by first clicking "About MDRNA" and then "Corporate Governance." We intend to disclose on our Internet website any amendments to or waivers from our Code of Business Conduct and Ethics, as well as any amendments to the charters of any of the Audit, Compensation or Nominating and Corporate Governance Committees of the Board of Directors. Any stockholder also may obtain copies of these documents, free of charge, by sending a request in writing to: MDRNA, Inc., Investor Relations Department, 3830 Monte Villa Parkway, Bothell, Washington 98021. The current members of these three committees are identified in the following table:

Director	Chairman	Audit Committee	Compensation Committee	Nominating and Corporate Governance Committee
Alexander D. Cross		X		X
J. Michael French				
Daniel Peters		X	X	Chair
John V. Pollock			Chair	X
Steven C. Quay				
James E. Rothman				
Gregory Sessler		Chair		X
Bruce R. Thaw	X	X	X	

Audit Committee. The Audit Committee, which currently consists of Gregory Sessler, Chairman, Alexander D. Cross, Daniel Peters and Bruce R. Thaw, held eight meetings during 2008. All incumbent directors who served as members of the Audit Committee attended at least 75% of the meetings during the periods served as committee members in 2008. Among other functions, the Audit Committee authorizes and approves the engagement of the independent registered public accounting firm, reviews the results and scope of the audit and other services provided by the independent registered public accounting firm, reviews our financial statements, reviews and evaluates our internal control functions, approves or establishes pre-approval policies and procedures for all professional audit and permissible non-audit services provided by the independent registered public accounting firm and reviews and approves any proposed related party transactions.

The Board of Directors has determined that each of Gregory Sessler, Alexander D. Cross, Daniel Peters and Bruce R. Thaw is an independent director within the meaning of the NASDAQ independence standards and Rule 10A-3 promulgated by the SEC under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). In addition, the Board of Directors has determined that each member of the Audit Committee qualifies as an Audit Committee Financial Expert under applicable SEC Rules and satisfies the NASDAQ standards of financial literacy and financial or accounting expertise or experience.

Compensation Committee. The Compensation Committee, which currently consists of John V. Pollock, Chairman, Daniel Peters and Bruce R. Thaw, held eight meetings during 2008. All incumbent directors who served as members of the Compensation Committee attended at least 75% of the meetings during the periods served as committee members in 2008. The Board of Directors has determined that each of the members of the Compensation Committee is an independent director within the meaning of the NASDAQ independence standards.

The Compensation Committee's functions include reviewing and approving the compensation and benefits for our executive officers, administering our equity compensation plans and making recommendations to the Board of Directors regarding these matters. The CEO does not participate in the determination of his own compensation or the compensation of directors. However, he makes recommendations to the committee regarding the amount and form of the compensation of the other executive officers and key employees, and he often participates in the committee's deliberations about their compensation. No other executive officers participate in the determination of the amount or form of the compensation of executive officers or directors. In certain cases, the Compensation Committee has retained Mercer Human Resource Consulting, a human resource and compensation consulting firm, as its independent compensation consultant, to assist it in reviewing and approving the compensation and benefits for our executive officers. The consultant served at the request of the committee, and its fees were approved by the committee. The consultant has provided the committee with information regarding the compensation paid by our competitors and other employers who compete with us for executives.

Nominating and Corporate Governance Committee. The Nominating and Corporate Governance Committee, which currently consists of Daniel Peters, Chairman, Gregory Sessler, John V. Pollock and Alexander D. Cross, held three meetings during 2008. All incumbent directors who served as members of the Nominating and Corporate Governance Committee attended at least 75% of the meetings during the periods served as committee members in 2008, except John V. Pollock, who attended one of the two meetings held during his tenure which began June 10, 2008. The Nominating and Corporate Governance Committee searches for and recommends to the Board of Directors potential nominees for director positions and makes recommendations to the Board of Directors regarding the size, composition and compensation of the Board of Directors and its committees. The Board of Directors has determined that each of the members of the Nominating and Corporate Governance Committee are independent directors within the meaning of the NASDAQ independence standards.

In selecting candidates for the Board of Directors, the Nominating and Corporate Governance Committee begins by determining whether the incumbent directors whose terms expire at the annual meeting of stockholders desire and are qualified to continue their service on the Board of Directors. We are of the view that the continuing service of qualified incumbents promotes stability and continuity in the board room, giving us the benefit of the familiarity and insight into our affairs that our directors have accumulated during their tenure, while contributing to the Board of Directors' ability to work as a collective body. Accordingly, it is the policy of the Nominating and Corporate Governance Committee, absent special circumstances, to nominate qualified incumbent directors who continue to satisfy the Nominating and Corporate Governance Committee's criteria for membership on the Board of Directors, whom the Nominating and Corporate Governance Committee believes will continue to make important contributions to the Board of Directors and who consent to stand for re-election and, if re-elected, will continue their service on the Board of Directors. If there are positions on the Board of Directors for which the Nominating and Corporate Governance Committee will not be re-nominating an incumbent director, or if there is a vacancy on the Board of Directors, the Nominating and Corporate Governance Committee will solicit recommendations for nominees from persons whom the Nominating and Corporate Governance Committee believes are likely to be familiar with qualified candidates, including members of our Board of Directors and our senior management. The Nominating and Corporate Governance Committee may also engage a search firm to assist in the identification of qualified candidates. The Nominating and Corporate Governance Committee will review and evaluate each candidate whom it believes merits serious consideration, taking into account all available information concerning the candidate, the existing composition and mix of talent and expertise on the Board of Directors and other factors that it deems relevant. In conducting its review and evaluation, the Committee may solicit the views of management and other members of the Board of Directors and may, if deemed helpful, conduct interviews of proposed candidates.

The Nominating and Corporate Governance Committee generally requires that all candidates for the Board of Directors be of the highest personal and professional integrity and have demonstrated exceptional ability and judgment. The Nominating and Corporate Governance Committee will consider whether such candidate will be

effective, in conjunction with the other members of the Board of Directors, in collectively serving the long-term interests of our stockholders. In addition, the Nominating and Corporate Governance Committee requires that all candidates have no interests that materially conflict with our interests and those of our stockholders, have meaningful management, advisory or policy making experience, have a general appreciation of the major business issues facing us and have adequate time to devote to service on the Board of Directors. We also require that a majority of our directors be independent, at least three directors have the financial literacy necessary for service on the Audit Committee under applicable NASDAQ rules and at least one director qualifies as an Audit Committee Financial Expert in accordance with applicable SEC rules.

The Nominating and Corporate Governance Committee will consider stockholder recommendations for nominees to fill director positions, provided that the Nominating and Corporate Governance Committee will not entertain stockholder nominations from stockholders who do not meet the eligibility criteria for submission of stockholder proposals under SEC Rule 14a-8 of Regulation 14A under the Exchange Act. Stockholders may submit written recommendations for committee appointments or recommendations for nominees to the Board of Directors, together with appropriate biographical information and qualifications of such nominees as required by our Bylaws, to our Corporate Secretary following the same procedures as described in "Stockholder Communications" in this Proxy Statement. In order for the Nominating and Corporate Governance Committee to consider a nominee for directorship submitted by a stockholder, such recommendation must be received by the Corporate Secretary by the time period set forth in our most recent proxy statement for the submission of stockholder proposals under SEC Rule 14a-8 of Regulation 14A under the Exchange Act. The Corporate Secretary shall then deliver any such communications to the Chairman of the Nominating and Corporate Governance Committee. The Nominating and Corporate Governance Committee will evaluate stockholder recommendations for candidates for the Board of Directors using the same criteria as for other candidates, except that the Nominating and Corporate Governance Committee may consider, as one of the factors in its evaluation of stockholder recommended candidates, the size and duration of the interest of the recommending stockholder or stockholder group in our equity.

Compensation Committee Interlocks and Insider Participation

No member of our Compensation Committee was at any time during fiscal 2008, or at any time in the past, one of our officers or employees, or had a relationship in fiscal 2008 requiring disclosure under applicable SEC regulations. None of our executive officers currently serves, or served during fiscal 2008, as a member of the board of directors or compensation committee of any entity that has one or more executive officers serving as a member of our Board or Compensation Committee.

Stockholder Communications

All stockholder communications must (i) be addressed to our Corporate Secretary at our address, (ii) be in writing either in print or electronic format, (iii) be signed by the stockholder sending the communication, (iv) indicate whether the communication is intended for the entire Board of Directors, the Nominating and Corporate Governance Committee, or the independent directors, (v) if the communication relates to a stockholder proposal or director nominee, identify the number of shares held by the stockholder, the length of time such shares have been held, and the stockholder's intention to hold or dispose of such shares, provided that the Board of Directors and the Nominating and Corporate Governance Committee will not entertain shareholder proposals or shareholder nominations from shareholders who do not meet the eligibility and procedural criteria for submission of shareholder proposals under Commission Rule 14a-8 of Regulation 14A under the Exchange Act and (vi) if the communication relates to a director nominee being recommended by the stockholder, must include appropriate biographical information of the candidate as is required by our Bylaws.

Upon receipt of a stockholder communication that is compliant with the requirements identified above, the Corporate Secretary shall promptly deliver such communication to the appropriate member(s) of the Board of Directors or committee member(s) identified by the stockholder as the intended recipient of such communication

by forwarding the communication to either the chairman of the Board of Directors with a copy to the CEO, the chairman of the Nominating and Corporate Governance Committee, or to each of the independent directors, as the case may be.

The Corporate Secretary may, in his or her sole discretion and acting in good faith, provide copies of any such stockholder communication to any one or more of our directors and executive officers, except that in processing any stockholder communication addressed to the independent directors, the Corporate Secretary may not copy any member of management in forwarding such communications. In addition, the Secretary may, in his or her sole discretion and acting in good faith, not forward certain items if they are deemed of a commercial or frivolous nature or otherwise inappropriate for consideration by the intended recipient and any such correspondence may be forwarded elsewhere in the Company for review and possible response.

PROPOSAL NO. 2

RATIFICATION OF APPOINTMENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

KPMG LLP served as our independent registered public accounting firm for the year ended December 31, 2008, has been our independent registered public accounting firm for each completed fiscal year beginning with the year ended December 31, 1996, and has been appointed by the Audit Committee to continue as our independent registered public accounting firm for the fiscal year ending December 31, 2009. In the event that ratification of this appointment of independent registered public accounting firm is not approved by the affirmative vote of a majority of votes cast on the matter, then the appointment of our independent registered public accounting firm will be reconsidered by the Audit Committee. Representatives of KPMG LLP are expected to be present at the annual meeting to respond to appropriate questions and will be given the opportunity to make a statement if they desire to do so.

Your ratification of the appointment of KPMG LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2009 does not preclude the Audit Committee from terminating its engagement of KPMG LLP and retaining a new independent registered public accounting firm, if it determines that such an action would be in our best interest. Total fees billed to us by KPMG LLP for the years ended December 31, 2008 and 2007 were $329,850 and $483,827, respectively, and were comprised of the following:

Audit Fees. The aggregate fees billed for professional services rendered in connection with (i) the audit of our annual financial statements, (ii) the audit of our internal controls over financial reporting, (iii) the review of the financial statements included in our Quarterly Reports on Form 10-Q for the quarters ended March 31, June 30 and September 30, (iv) consents and comfort letters issued in connection with equity offerings and (v) services provided in connection with statutory and regulatory filings or engagements were $309,655 for the year ended December 31, 2008 and $483,827 for the year ended December 31, 2007.

Audit-Related Fees. We incurred $20,195 in audit-related fees in 2008 for the audit of our 401(k) plan for the year ended December 31, 2007. We did not incur any audit-related fees for the year ended December 31, 2007.

Tax Fees. The aggregate fees billed for professional services rendered in connection with tax compliance, tax planning and federal and state tax advice were zero for the years ended December 31, 2008 and December 31, 2007.

All Other Fees. We did not incur any such other fees for the years ended December 31, 2008 and December 31, 2007.

Pre-Approval Policies and Procedures

Pursuant to its charter, the Audit Committee has the sole authority to appoint or replace our independent registered public accounting firm (subject, if applicable, to stockholder ratification). The Audit Committee is directly responsible for the compensation and oversight of the work of the independent registered public accounting firm (including resolution of disagreements between management and the independent registered public accounting firm regarding financial reporting) for the purpose of preparing or issuing an audit report or related work. The independent registered public accounting firm is engaged by, and reports directly to, the Audit Committee.

The Audit Committee pre-approves all auditing services and permitted non-audit services (including the fees and terms thereof) to be performed for us by our independent registered public accounting firm, subject to the *de minimis* exceptions for non-audit services described in Section 10A(i)(1)(B) of the Exchange Act and SEC Rule 2-01(c)(7)(i)(C) of Regulation S-X, provided that all such excepted services are subsequently approved by

the Audit Committee prior to the completion of the audit. In the event pre-approval for such auditing services and permitted non-audit services cannot be obtained as a result of inherent time constraints in the matter for which such services are required, the Chairman of the Audit Committee has been granted the authority to pre-approve such services, provided that the estimated cost of such services on each such occasion does not exceed $15,000, and the Chairman of the Audit Committee reports for ratification such pre-approval to the Audit Committee at its next scheduled meeting. The Audit Committee has complied with the procedures set forth above, and has otherwise complied with the provisions of its charter.

Vote Required and Board of Directors' Recommendation

Assuming a quorum is present, the affirmative vote of a majority of the shares present at the Annual Meeting and entitled to vote, either in person or by proxy, is required for approval of Proposal No. 2. For purposes of the ratification of our independent registered public accounting firm, abstentions will have the same effect as a vote against this proposal and broker non-votes will have no effect on the result of the vote.

THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT STOCKHOLDERS VOTE "FOR" PROPOSAL NO. 2.

PROPOSAL NO. 3

APPROVAL OF AN AMENDMENT TO OUR CERTIFICATE OF INCORPORATION TO EFFECT A REVERSE STOCK SPLIT AT THE DISCRETION OF THE BOARD OF DIRECTORS

We are seeking your approval of an amendment to our amended and restated certificate of incorporation to authorize our Board of Directors to effect a reverse stock split of our outstanding Common Stock in the range of one-for-two to one-for-ten without further approval of our shareholders, upon a determination by our Board of Directors, in consultation with our investment bankers, that such a reverse stock split is in our and our shareholders' best interests. As of the date hereof, we do not have any plan, commitment, arrangement, understanding or agreement to issue any of the additional shares of Common Stock that would become available as a result of the reverse split.

Our Common Stock is presently listed on The NASDAQ Global Market. In August 2008, our stock price began trading below $1.00 per share and remained below that threshold for more than 30 days, resulting in a notification in September 2008 from NASDAQ, which oversees The NASDAQ Global Market, that unless we were able to raise our stock price above $1.00 per share for a minimum of 10 consecutive business days prior to March 18, 2009, our Common Stock may be delisted from The NASDAQ Global Market. On October 16, 2008, NASDAQ temporarily suspended the bid price requirement rules for all NASDAQ listed companies until April 20, 2009. This suspension has been further extended until July 20, 2009. We had 154 calendar days remaining to regain compliance on October 16, 2008, and, accordingly, our new compliance date is December 21, 2009. Our stock price is currently trading below $1.00, and we may need to effect a reverse stock split to regain compliance with NASDAQ's $1.00 minimum bid price requirement when it goes back into effect.

We believe that a reverse stock split may help facilitate our continued compliance with the NASDAQ minimum bid price rule by increasing the bid price of our Common Stock, although we cannot assure you that this will be the case or that any such price increase can be sustained. If we do not maintain compliance and our Common Stock is delisted from The NASDAQ Global Market, trading in our Common Stock would have to be conducted on a regional stock exchange, if available, or in the over-the-counter market on an electronic bulletin board established for unlisted securities such as the Pink Sheets or the OTC Bulletin Board. Any of these would likely significantly decrease the liquidity of our Common Stock.

Additionally, our investment bankers have advised that it may be in our best interests to increase the per-share price of our Common Stock through a reverse stock split in order to enhance the desirability and marketability of our Common Stock to the financial community and to attract different investors in future financings and in regular market trading. Many institutional investors have policies prohibiting them from holding lower-priced stocks in their own portfolios, which reduces the number of potential buyers of our Common Stock. In addition, analysts at many leading brokerage firms are reluctant to recommend lower-priced stocks to their clients or monitor the activity of lower-priced stocks. A variety of brokerage house policies and practices also tend to discourage individual brokers within those firms from dealing in lower-priced stocks. Some of those policies and practices pertain to the payment of brokers' commissions and to time-consuming procedures that function to make the handling of lower-priced stocks unattractive to brokers from an economic standpoint. We believe that if the reverse stock split has the effect of increasing the trading price of our Common Stock, the investment community may find our Common Stock to be more attractive, which could promote greater liquidity for our existing shareholders.

As a result, the Board of Directors has determined that it may be in our best interest to effect a reverse stock split in the near future in an effort to increase the per-share price of our Common Stock. As such, we are asking our shareholders to approve an amendment to our amended and restated certificate of incorporation authorizing a reverse stock split in the range of one-for-two to one-for-ten and granting the Board of Directors the discretion to effect the reverse stock split within this range at any time, and at such ratio that it determines appropriate. Further discussion of the reasons for, and possible consequences of, the reverse stock split can be found below in the subsections titled "Reasons for the Reverse Stock Split" and "Possible Effects of the Reverse Stock Split."

If this proposal is approved, the Board of Directors will have the authority, but not the obligation, in its sole discretion and without any further action on the part of the shareholders, to effect, at any time it believes to be most advantageous to us and to our shareholders, a reverse stock split in the range of one-for-two to one-for-ten. This Proposal would give the Board the authority to implement one, but not more than one, reverse stock split. A reverse stock split would be effected by the filing of an amendment to our amended and restated certificate of incorporation with the Secretary of State of the State of Delaware. The Board of Directors will have the ability to decline to file the amendment to our amended and restated certificate of incorporation without further shareholder action if it subsequently determines that a reverse stock split is no longer in our best interest.

If the reverse stock split is effected by the Board of Directors, the number of shares of Common Stock owned by each shareholder will be reduced by the same proportion as the reduction in the total number of shares of Common Stock outstanding, so that the percentage of the outstanding Common Stock owned by each shareholder after the reverse stock split will remain approximately the same as the percentage owned before the reverse stock split. The proportions may not be exactly the same due to the treatment of fractional shares that may result from the reverse stock split. The proposed reverse stock split will reduce the number of shares of outstanding Common Stock; however, it will not have the effect of reducing the number of shares of authorized Common Stock. Therefore, (i) assuming we effected a one-for-two reverse stock split on the Record Date for this Annual Meeting, following such reverse split we would continue to have 90 million shares of authorized Common Stock but there would only be approximately 17,417,080 shares of Common Stock issued and outstanding, and (ii) assuming we effected a one-for-ten reverse stock split on the Record Date for this Annual Meeting, following such reverse split we would continue to have 90 million shares of authorized Common Stock but there would only be approximately 3,484,416 shares of Common Stock issued and outstanding. As a result of these factors, the reverse stock split would in effect create "headroom" in the form of more available authorized but unissued shares of Common Stock. Assuming passage of the reverse stock split, we do not have any plan, commitment, arrangement, understanding or agreement, written or oral, to utilize such additional "headroom" to issue Common Stock.

The reverse stock split will not affect any shareholder's individual proportionate voting power, except to a minor extent due to the handling of fractional shares.

We have granted options to purchase our Common Stock and restricted stock awards to our employees as authorized by our 2000 Non-Qualified Stock Option Plan, our 2002 Stock Option Plan, our 2004 Stock Incentive Plan and our 2008 Stock Incentive Plan (collectively, the "Plans"). In addition, our 2007 Employee Stock Purchase Plan (the "ESPP") allows eligible employees to purchase our Common Stock at a discount. We will continue to grant options to purchase our Common Stock and awards of restricted stock to our employees as authorized by our Plans and will continue to allow employees to purchase our Common Stock under the ESPP. The terms of each of the Plans and the ESPP provide for appropriate adjustment in the number and class of shares reserved for granting of awards and in the number, class and prices of shares covered by the awards granted pursuant to the Plans but not yet exercised. If the reverse split is implemented, the Board of Directors or the applicable Plan or ESPP administrator will take the above-mentioned appropriate action(s). We will also make appropriate adjustments to any outstanding stock options granted outside of the Plans to reflect the reverse stock split, including adjustments to the 1,099,963 options granted to Mr. French as an employment inducement grant in June 2008.

As our Common Stock is registered under the Exchange, we are subject to the reporting and other requirements of the Exchange Act. The reverse split, if implemented, will not affect the registration of our Common Stock under the Exchange Act or our reporting or other requirements thereunder. As of the date of this proxy statement, our Common Stock is traded on The NASDAQ Global Market under the symbol "MRNA" subject to our continued satisfaction of The NASDAQ Global Market listing requirements. If the reverse stock split is implemented, our Common Stock will continue to be reported under the symbol "MRNA" (although, in accordance with NASDAQ rules, the letter "D" will be added to the end of the trading symbol for a period of 20 trading days from the effective date of the reverse stock split to indicate that the reverse stock split has

occurred). While the primary reason for the proposed reverse stock split is to meet the continued listing requirements of The NASDAQ Global Market, there can be no assurance that our Common Stock will continue to be listed on The NASDAQ Global Market or that we will be able to conform to all applicable listing requirements. Further, as the reverse stock split is also being considered for strategic purposes relating to potential financings, the reverse stock split may, if effected by the Board, occur whether or not our Common Stock continues to be listed on The NASDAQ Global Market.

In addition to our non-compliance with NASDAQ's minimum bid price requirement, we also do not currently comply with the $10 million minimum stockholders' equity requirement for The NASDAQ Global Market. On March 4, 2009, we received a NASDAQ Staff Determination indicating that our Common Stock would be subject to delisting from The NASDAQ Global Market as a result of the stockholders' equity deficiency. We have requested an oral hearing before a NASDAQ Listing Qualifications Panel to review the Staff Determination, which will stay any action with respect to the Staff Determination until the Panel renders a decision subsequent to the hearing. The hearing is scheduled for April 23, 2009.

Reasons for the Reverse Stock Split

Complying with the continued listing requirements for our Common Stock on The NASDAQ Global Market is the primary reason for the reverse stock split. Based upon the current market price of our Common Stock, we do not satisfy the $1.00 minimum bid price requirement necessary for such a listing. The requirement has been temporarily suspended by NASDAQ until July 20, 2009, and we will have 154 days after the suspension is lifted to meet this requirement. We may need to effect a reverse stock split to regain compliance with NASDAQ's $1.00 minimum bid price requirement when it becomes effective again in order to maintain such listing.

In addition, our investment bankers have advised us that it may be advantageous to increase the per-share price of our stock through a reverse stock split to appeal to a broader range of investors in potential future financing transactions. Consequently, the Board of Directors intends to amend our amended and restated certificate of incorporation to authorize a reverse stock split and to subsequently effect such a reverse stock split only if it believes that a decrease in the number of shares outstanding is likely to improve compliance with The NASDAQ Global Market listing standards or make our stock more attractive to potential investors for future financings. A reverse stock split would result in a recapitalization intended to increase the per share value of our Common Stock. However, even if we effect the reverse stock split, there can be no assurance of either an immediate or a sustainable increase in the per share trading price of our Common Stock.

Our Board of Directors believes that a reverse stock split would also be beneficial for the following reasons:

- It could heighten the interest of the financial community in us and potentially broaden the pool of investors that may consider investing in us by increasing the trading price of our Common Stock and decreasing the number of outstanding shares of our Common Stock;
- It could help to attract institutional investors who have internal policies that either prohibit them from purchasing stocks below a certain minimum price or tend to discourage individual brokers from recommending such stocks to their customers; and
- It may also encourage investors who had previously been dissuaded from purchasing our Common Stock because commissions on lower-priced stocks generally represent a higher percentage of the stock price than commissions on higher-priced stocks.

Text of the Proposed Amendment

If the Board determines to effect the reverse stock split following the approval of the proposal by the shareholders, we propose to amend our amended and restated certificate of incorporation by adding a second paragraph to Article FOURTH, paragraph (a), substantially as follows:

"Effective at the close of business, Pacific Time, on , (the "Effective Time"), each ( ) outstanding shares of the Corporation's Common Stock will be exchanged and combined, automatically, without further action, into one (1) share of Common Stock. At the Effective Time, there shall be no change in the number of authorized shares, including the number authorized for each class of shares, which the Corporation shall have the authority to issue. Any fraction of a share of Common Stock that would otherwise have resulted from the foregoing exchange and combination shall be converted into the right to receive a cash payment from the Corporation for such fractional shares. The cash payment from the Corporation will be determined by multiplying the fractional amount of the share of Common Stock by $."

Possible Effects of the Reverse Stock Split

Once the reverse stock split is implemented, our common shareholders will own a fewer number of shares than they currently own. Although the Board expects that the reduction in outstanding shares of Common Stock will result in an increase in the per share price of our Common Stock, there is no assurance that such a result will occur. Similarly there is no assurance that the reverse stock split will result in a permanent increase in the per share price, which can be dependent on several factors.

Should the per share price of our Common Stock decline upon implementation of the reverse stock split, the percentage decline may be greater than would occur in the absence of the reverse split.

The anticipated resulting increase in per-share price of our Common Stock is expected to encourage interest in our Common Stock and possibly promote greater liquidity for our shareholders. However, such liquidity could also be adversely affected by the reduced number of shares that would be outstanding after the reverse stock split.

The reverse stock split could be viewed negatively by the market and, consequently, could lead to a decrease in our overall market capitalization. It is often the case that the reverse-split adjusted stock price and market capitalization of companies that effect a reverse stock split decline.

The primary purpose for the proposed reverse stock split is to comply with the continued listing standards for The NASDAQ Global Market. However, there can be no assurance that the reverse stock split alone will guarantee our continued listing on The NASDAQ Global Market. If we are unable to continue to list our Common Stock on The NASDAQ Global Market, our liquidity may be negatively affected.

The number of shares held by each individual shareholder will be reduced if the reverse stock split is implemented. This will increase the number of shareholders who hold less than a "round lot," or 100 shares. Typically, the transaction costs to shareholders selling "odd lots" are higher on a per share basis. Consequently, the reverse stock split could increase the transaction costs to existing shareholders in the event they wish to sell all or a portion of their shares.

Procedures for Effecting the Reverse Stock Split and Filing an Amendment to Our Amended and Restated Certificate of Incorporation

If the shareholders approve the reverse stock split and the Board of Directors subsequently determines that it is in our best interests to effect a reverse stock split, the amendment to our amended and restated certificate of incorporation will become effective upon the filing of an amendment to our amended and restated certificate of incorporation with the Secretary of State of the State of Delaware. The actual timing of any such filing will be made by the Board at such time as the Board believes to be most advantageous to us and to our shareholders.

Payment for Fractional Shares

No fractional shares of Common Stock would be issued as a result of the reverse stock split, if any. Instead, each shareholder otherwise entitled to a fractional share would be entitled, upon surrender of the applicable stock certificate(s), to receive a cash payment (without interest) in lieu of such fractional share.

Exchange of Pre-Reverse Stock Split Shares with Post-Reverse Stock Split Shares

If we implement a reverse stock split, our transfer agent will act as our exchange agent to act for holders of Common Stock in implementing the exchange of their pre-reverse stock split shares for post-reverse stock split shares.

Registered Book Entry Shareholder. Holders of Common Stock holding all of their shares electronically in book-entry form with our transfer agent do not need to take any action (the exchange will be automatic) to receive post-reverse stock split shares or cash payment in lieu of any fractional share interest (as described above under subsection "Payment for Fractional Shares"), if applicable.

Registered Certificated Shareholder. Some of our shareholders hold their shares in certificate form or a combination of certificate and book-entry entry form. If any of your shares are held in certificate form, you will receive a transmittal letter from our transfer agent as soon as practicable after the effective date of the reverse stock split. The letter of transmittal will contain instructions on how to surrender your certificate(s) representing your pre-reverse stock split shares to the transfer agent. Upon receipt of your pre-reverse stock split certificate(s), you will be issued the appropriate number of shares electronically in book-entry form under the Direct Registration System ("DRS"), and if you are entitled to a payment in lieu of any fractional share interest, payment will be made as described above under subsection "Payment for Fractional Shares." No new shares in book-entry form will be issued and no payment in lieu of any fractional share interest will be made to you until you surrender your outstanding pre-reverse stock split certificate(s), together with the properly completed and executed letter of transmittal, to the transfer agent. At any time after receipt of your DRS statement, you may request a stock certificate representing your ownership interest.

SHAREHOLDERS SHOULD NOT DESTROY ANY STOCK CERTIFICATES AND SHOULD NOT SUBMIT ANY CERTIFICATES UNTIL REQUESTED TO DO SO.

Accounting Adjustments

We anticipate that adjustments to our financial statements to reflect the reverse stock split, if any, will be minimal. Our stockholders' equity, in the aggregate, will remain unchanged. Our historical earnings per share data would also be restated to reflect the reverse stock split.

Certain Material U.S. Federal Income Tax Consequences of the Reverse Stock Split

The following summary of the federal income tax consequences of a reverse stock split, if any, is for general information only, and it is not intended to be, nor should it be construed to be, legal or tax advice to any particular shareholder. The summary does not address shareholders subject to special rules, such as persons who acquired shares of our Common Stock in compensatory transactions, certain financial institutions, tax-exempt entities, regulated investment companies, insurance companies, partnerships or other pass-through entities, persons who are not U.S. citizens or taxed as U.S. resident aliens, persons subject to the alternative minimum tax, traders in securities that elect to use a mark-to-market method of accounting, individual retirement accounts or tax-deferred accounts, dealers in securities or currencies, persons holding shares in connection with a hedging transaction, "straddle," conversion transaction or a synthetic security or other integrated transaction, and shareholders whose "functional currency" is not the U.S. dollar. The following summary also assumes that shares of our Common Stock both before and after the reverse stock split are held as a "capital asset" as defined by the Internal Revenue Code of 1986, as amended (the "Code"), which is generally property held for investment. This

summary is based on current law, including the Code, administrative pronouncements, judicial decisions, existing and proposed Treasury Regulations, and interpretations of the foregoing, all as of March 31, 2009. All of the foregoing authorities are subject to change (possibly with retroactive effect) and any such change may result in U.S. federal income tax consequences to a stockholder that are materially different from those described below. This summary does not address tax considerations under state, local, foreign and other laws.

Federal Income Tax Consequences to the Company. No gain or loss will be recognized by us as a result of a reverse stock split.

Federal Income Tax Consequences to the Shareholders. The reverse stock split is intended to constitute a reorganization within the meaning of section 368 of the Code. Provided the reverse stock split does qualify as a reorganization, a shareholder generally will not recognize gain or loss for U.S. federal income tax purposes on the reverse stock split (except with respect to any cash received in lieu of a fractional share as described below). The aggregate adjusted basis of the post-reverse stock split shares will be the same as the aggregate adjusted basis of the pre-reverse stock split shares exchanged therefore (excluding any portion of the shareholder's basis allocated to fractional share interests), and the holding period(s) of the post-reverse stock split shares received will include the shareholder's respective holding period(s) for the pre-reverse stock split shares exchanged.

Because the cash payment for fractional share interests represents a mere mechanical rounding off incident to the reverse stock split, a shareholder who receives cash for fractional shares should generally recognize gain or loss, as the case may be, for U.S. federal income tax purposes measured by the difference between the amount of cash received and the tax basis of such shareholder's pre-reverse stock split shares corresponding to the fractional share interest. Such gain or loss will be capital gain or loss, and any such capital gain or loss will generally be long-term capital gain or loss to the extent such shareholder's holding period exceeds 12 months. The deductibility of capital losses may be subject to certain limitations.

Backup Withholding. A non-corporate shareholder may be subject to backup withholding at a 28% rate on cash payments received pursuant to the reverse stock split unless such shareholder provides a correct taxpayer identification number to his or her broker or to us and otherwise complies with applicable requirements of the backup withholding rules. Backup withholding is not an additional U.S. federal income tax. Rather, any amount withheld under these rules will be creditable against the shareholder's U.S. federal income tax liability, provided the required information is furnished to the Internal Revenue Service.

Our view regarding the tax consequences of the reverse stock split is not binding on the Internal Revenue Service or the courts. ACCORDINGLY, EACH SHAREHOLDER SHOULD CONSULT HIS OR HER TAX ADVISOR TO DETERMINE THE PARTICULAR TAX CONSEQUENCES TO HIM OR HER OF A REVERSE STOCK SPLIT, INCLUDING THE APPLICATION AND EFFECT OF FEDERAL, STATE, LOCAL AND/OR FOREIGN INCOME TAX AND OTHER LAWS.

Vote Required and Board of Directors' Recommendation

Assuming a quorum is present, the affirmative vote of a majority of the votes entitled to be cast by holders of our Common Stock, either in person or by proxy, is required for approval of Proposal No. 3. For purposes of approval of the proposed reverse split of our Common Stock, abstentions from voting and broker non-votes will have the same effect as a vote against this proposal.

THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT STOCKHOLDERS VOTE "FOR" PROPOSAL NO. 3.

REPORT OF THE AUDIT COMMITTEE OF THE BOARD OF DIRECTORS

The Audit Committee of the Board of Directors, on behalf of the Board of Directors, serves as an independent and objective party to monitor and provide general oversight of the integrity of our financial statements, the independent registered public accounting firm's qualifications and independence, the performance of the independent registered public accounting firm, the compliance by us with legal and regulatory requirements and our standards of business conduct. The Audit Committee performs these oversight responsibilities in accordance with its Amended and Restated Audit Committee Charter.

Our management is responsible for preparing our financial statements and our financial reporting process. Our independent registered public accounting firm is responsible for expressing an opinion on the conformity of our audited financial statements to generally accepted accounting principles in the United States of America. The Audit Committee met with the independent registered public accounting firm, with and without management present, to discuss the results of their examinations, their evaluations of our internal controls, and the overall quality of our financial reporting.

In this context, the Audit Committee has reviewed and discussed the audited financial statements for the year ended December 31, 2008 with management and with the independent registered public accounting firm. The Audit Committee has discussed with the independent registered public accounting firm the matters required to be discussed by Statement on Auditing Standards No. 61 (Communications with Audit Committees), which includes, among other items, matters related to the conduct of the audit of our annual financial statements and the audit of our internal controls over financial reporting.

The Audit Committee has also received the written disclosures and the letter from the independent registered public accounting firm required by applicable requirements of the Public Company Accounting Oversight Board regarding the independent accountant's communications with the Audit Committee concerning independence, and has discussed with the independent registered public accounting firm the issue of its independence from us and management. In addition, the Audit Committee has considered whether the provision of non-audit services by the independent registered public accounting firm in 2008 is compatible with maintaining the registered public accounting firm's independence and has concluded that it is.

Based on its review of the audited financial statements and the various discussions noted above, the Audit Committee recommended to the Board of Directors that the audited financial statements be included in our Annual Report on Form 10-K for the year ended December 31, 2008.

Each of the members of the Audit Committee is independent as defined under the standards of the SEC and NASDAQ, and meets all other requirements of NASDAQ and of such rules of the SEC.

Respectfully submitted by the Audit Committee,

Gregory Sessler, Chairman
Alexander D. Cross
Daniel Peters
Bruce R. Thaw

The foregoing Audit Committee Report does not constitute soliciting material and shall not be deemed filed or incorporated by reference into any other Company filing under the Securities Act of 1933, as amended (the "Securities Act"), or the Exchange Act, except to the extent we specifically incorporate this Audit Committee Report by reference therein.

COMPENSATION DISCUSSION AND ANALYSIS

General

Our Compensation Committee is composed entirely of independent, outside directors. Its functions include establishing our general compensation policies, reviewing and approving compensation for executive officers, and administering our stock-based incentive plans. One important goal of the Compensation Committee is to have the members of the committee design compensation packages for our executive officers sufficient to attract and retain persons of exceptional quality and to provide effective incentives to motivate and reward such executives for achieving the scientific, financial and strategic goals essential to our long-term success and growth in stockholder value.

We compensate our executive officers through a combination of base salary, cash bonus awards and performance-based equity compensation. Our compensation program is designed to attract and retain the best possible executive talent, to tie annual and incentive cash and long term equity compensation to the achievement of measurable corporate, business and individual performance objectives, and to align compensation incentives available to our executives with the goal of creating stockholder value. To this end, we tie a substantial portion of our executive officers' overall compensation to measurable annual corporate milestones and to the achievement of individual goals for the executive officers that are specific to their areas of responsibility and relate to the corporate milestones. In addition, we provide our executives a variety of other benefits that we also make available to all salaried employees.

Our CEO, our CFO and our most senior Human Resources executive are typically invited to attend meetings of the Compensation Committee. For compensation decisions, including decisions regarding the grant of equity compensation relating to executive officers (other than our CEO), the Compensation Committee considers the recommendations of our CEO. The input of our CEO, our CFO and our most senior Human Resources executive helps us evaluate our compensation practices and assists us with developing and implementing our executive compensation program and philosophy. Based on information presented to us by Mercer Human Resource Consulting ("Mercer"), a human resource and compensation consulting firm we retained to advise the Compensation Committee, we believe we have generally established our executive officers' base salary and incentive compensation at approximately the median of market ranges for companies in our peer group. Our equity component, based upon increasing shareholder value, can increase our executives' total compensation above the median. As a result, we believe the total compensation of our executive officers is equitable when compared to executive officers from a peer group of competitive companies.

Establishing Compensation Opportunities and Compensation Philosophy

Overall, our aim is to offer our executive officers total compensation opportunities that represent a competitive level among a peer group of companies. Accordingly, Mercer has helped us identify a peer group of competitive companies to which we may refer when establishing executive compensation and has assisted us with, among other things, structuring our various compensation programs and determining appropriate levels of salary, bonus and other compensatory awards payable to our executive officers and other employees. Mercer has also guided us in the development of near-term and long-term individual performance objectives established by the Compensation Committee. The Compensation Committee also may consider other factors to adjust executive compensation after appropriate research and deliberation.

Benchmarking of Base Compensation and Equity Holdings

With information provided by Mercer regarding compensation programs for executive officers, our Compensation Committee performs periodic strategic reviews of the cash compensation and share and option holdings of our executive officers to determine whether they provide adequate incentives and motivation to our executive officers and whether they adequately compensate our executive officers relative to the comparable officers in other competitive companies. Mercer identified such competitive companies as companies that most

closely matched our core businesses and stage of development. In addition to the information supplied by Mercer regarding compensation for executive officers of a peer group of competitive companies, the Compensation Committee also reviews other salary and compensation surveys from various sources, such as Aon Consulting, Inc., for guidance in setting compensation for our executive officers.

Allocation among Compensation Components

Our typical executive compensation package has historically consisted of three main components: (1) base salary; (2) cash bonuses; and (3) stock options and restricted stock awards. We view these three components of our executive compensation program as related but distinct. Although the Compensation Committee reviews the total compensation of our executive officers, we do not believe that significant compensation derived from one component of compensation should negate or reduce compensation from any other components. We determine the appropriate level for each compensation component based in part, but not exclusively, on the market for executive compensation, utilizing the survey data referred to above, individual performance, our view of internal equity and consistency and other information we deem relevant. We believe that, as is common in the biotechnology sector, stock-related awards are the primary motivator in attracting and retaining executives, and that salary and cash bonus awards are secondary considerations. Except as described below, due to the small size of our executive team and the need to tailor each executive officer's award to attract and retain that executive officer, the Compensation Committee has not adopted any formal or informal policies or guidelines for allocating compensation between long-term and currently paid out compensation, between cash and non-cash compensation, or among different forms of compensation. The table below gives a breakdown among major compensation components received in 2008 by the Named Executive Officers set forth in the Summary Compensation Table below, and treats the equity compensation component consistently with the Summary Compensation Table methodology.

Name	Base Salary	Cash Bonus Awards	Equity Compensation
J. Michael French, President and CEO	37%	0%	63%
Bruce R. York, CFO	62%	0%	38%
Steven C. Quay, Director (Former CEO, CSO)*	10%	0%	90%
Gordon C. Brandt, (Former President)*	43%	0%	57%
Timothy M. Duffy, (Former CBO)*	30%	0%	70%

* Dr. Quay resigned as CEO effective June 23, 2008, and he was terminated as CSO effective October 27, 2008 (although he continued to serve as an employee until November 30, 2008). Dr. Brandt and Mr. Duffy were terminated in a reduction in force effective September 30, 2008. Percentage calculations above for Dr. Brandt and Mr. Duffy exclude severance payments made, which were categorized as All Other Compensation on the Summary Compensation Table, and also exclude severance payments accrued for Dr. Quay.

Description of Our Compensation Components

We provide the following compensation components to our executives:

Base Salary. The Compensation Committee's approach is to offer base salaries targeted near the median of the range of salaries for executives in similar positions and with similar responsibilities at our peer group of competitive companies. To that end, the Compensation Committee evaluates the competitiveness of our base salaries based upon information drawn from various sources, including published and proprietary survey data, consultants' reports and our own experience in recruiting and training executives and professionals. The base salaries for 2008 for the Named Executive Officers are intended to be consistent with competitive practice and the executive officer's level of responsibility and were based upon the terms of employment contracts with the Named Executive Officers. Base salaries of the Named Executive Officers are reviewed annually by the Compensation Committee and may be increased in accordance with the terms of the executive officers' respective employment agreements and certain performance criteria, including, without limitation, (i) individual

performance, (ii) our performance as a company, (iii) the functions performed by the executive officer and (iv) changes in the compensation peer group in which we compete for executive talent. The Compensation Committee uses its discretion to determine the weight given to each of the factors listed above and such weight may vary from individual to individual.

The Compensation Committee recommends the salary for our CEO and, with the aid of the CEO, for each executive officer below the CEO level, for approval by the full Board of Directors. Our 2008 salary increases were part of our normal annual salary review and reflected the Compensation Committee's review of the compensation levels in our peer group of competitive companies, in addition to considering any expansion of job responsibilities during the periods being reviewed.

Cash Incentive Bonuses. In addition to base salary, pursuant to their employment agreements, our executive officers are eligible to receive discretionary incentive bonuses, from time to time, upon the achievement of certain scientific, financial and other business milestones related to company and individual performance. At the beginning of each year, the Compensation Committee and our CEO review each executive's job responsibilities and goals for the upcoming year and establish performance criteria for achieving the target bonus amount (or portions thereof) expressed as a percentage of base salary. Once established by the Compensation Committee these criteria are submitted for approval to the full Board of Directors on an annual basis, and include specific goals and objectives relating to the achievement of clinical, regulatory, business and/or financial milestones. For 2008, these goals and objectives included metrics on shareholder value, business partnering, new feasibility studies, expansion of our patent portfolio, advancement of clinical products, balance sheet strength, systems improvements and uptime, manufacturing shipments and production of preclinical and clinical supplies. The Compensation Committee uses its discretion to determine the weight given to each of the goals and objectives listed above. The Compensation Committee believed the targets provided realistic, motivating incentives for achieving the performance desired by our board of directors. The Named Executive Officers may be awarded cash bonuses higher than their respective target cash bonus amount in the discretion of the Compensation Committee, subject to certain limitations as specified in each Named Executive's respective employment contract, if applicable. In addition, the Compensation Committee, in its discretion, may award a cash bonus to any Named Executive Officer below that of his respective stated target cash bonus in the event his target goals and objectives are not fully met.

At year-end the Compensation Committee evaluates individual and corporate performance against the target goals for the recently completed year, in conformance with its evaluation process, and then approves the employee bonus program incentive level for our CEO, and for each officer below the CEO level based on the CEO's recommendations. The following table shows the target discretionary cash incentive bonuses and the applicable payout range as a percentage of base salary for each of the named executive officers (including four former executive officers who no longer served as executive officers as of December 31, 2008), actual awards under our cash incentive bonus plan, and the actual awards as a percentage of salary earned in 2008. Due to our performance during 2008 and general market conditions, the Compensation Committee did not approve any discretionary cash incentive bonuses for executive officers in recognition of services performed in during the 2008 fiscal year.

2008 Annual Cash Incentive Bonuses

Name	Target Payout as a % of Salary	Payout Range as % of Salary	Actual Award ($)	Award as a % of Salary Earned
J. Michael French	40%	(1)	none	0%
Bruce R. York	40%	(1)	none	0%
Steven C. Quay	50%	0 - 50%	none	0%
Gordon C. Brandt	40%	(1)	none	0%
Timothy M. Duffy	40%	(1)	none	0%

(1) Range not defined. May be more or less than target of 40% at the discretion of the CEO and Compensation Committee in accordance with the executive's employment contract.

If an executive officer is terminated prior to the scheduled payment date, his or her incentive bonus will be forfeited, subject to contractual provisions in his or her employment agreements. Neither the Compensation Committee nor the board of directors has considered whether we would attempt to recover any portion of cash incentive bonus payments to the extent such payments were determined and paid based on our financial results if our financial results are later restated in a downward direction.

Stock options and restricted stock grants. We believe that long-term company performance is best achieved through an ownership culture that encourages long-term performance by our executive officers through the use of stock-based awards. We grant stock options and other stock awards in order to provide certain executive officers with a competitive total compensation package and to reward them for their contribution to the long-term growth in value of the company and the long-term price performance of our common stock. Grants of stock options and other stock awards are designed to align the executive officer's interest with that of our stockholders although we do not currently have formal guidelines specifying security ownership requirements for our executive officers. To assist us in retaining employees and encouraging employees to seek long-term appreciation in the value of our stock, the benefits of the awards generally vest over a specified period, usually three years, and therefore a grantee must remain with us for a specified period to enjoy the full potential economic benefit of an award. The Compensation Committee may consider as one of a number of factors the level of an executive officer's realizable compensation from awards granted in prior years when making decisions with respect to awards being granted to that executive officer for the most recently ended fiscal year.

We maintain four compensation plans under which equity compensation awards may be made to employees: the MDRNA, Inc. Amended and Restated 2000 Nonqualified Stock Option Plan, the MDRNA, Inc. 2002 Stock Option Plan, the 2004 Stock Incentive Plan, and the 2008 Stock Incentive Plan (collectively herein, the "Employee Option Plans"). Additionally, all employees and officers may participate in our Employee Stock Purchase Plan which commenced October 1, 2007 on a payroll deduction basis in two six-month purchase periods per year subject to IRS and Company purchase limits. We may award options under the 2000 and 2002 plans, and a variety of stock-based units, including options and restricted stock, under our 2004 and 2008 Plans. Awards granted under the Employee Option Plans are based on a number of factors, including (i) the executive officer's or key employee's position with us, (ii) his or her performance and responsibilities, (iii) the extent to which he or she already holds an equity stake with us, (iv) equity participation levels of comparable executives and key employees at other companies in the compensation peer group and (v) individual contribution to the success of our financial performance. However, the Employee Option Plans do not provide any formulated method for weighing these factors, and a decision to grant an award is based primarily upon the evaluation by the Compensation Committee, in consultation with our CEO, of the performance and responsibilities of and the retention strategy for the individual in question. Awards to executive officers are first reviewed and approved by the Compensation Committee, which then makes a recommendation for final approval by our Board of Directors.

Stock awards to newly-hired employees (including, without limitation, executive officers) are made on the start date of employment and are approved by the CEO based upon guidelines from and authority delegated to him by the Compensation Committee. Other than grants to newly-hired employees, option grants are generally planned to be awarded in February of each year at the regularly scheduled meetings of the Compensation Committee and the Board of Directors. Our programs, policies and practices do not time option grants with the release of any non-public information for newly-hired executive officers. As a part of its agenda for each meeting, the Compensation Committee reviews and approves all grants of options and awards made by our CEO since the previous meeting. Restricted stock awards may be made to attract and retain talented employees in a competitive market and to align the interest of the employee with that of the shareholder. Because shares of restricted stock have a defined value at the time the restricted stock awards are made, restricted stock awards are often perceived as having more immediate value than stock options, which have a less determinable value when

granted, and thus we typically grant fewer shares of restricted stock than stock options. Furthermore, any unvested restricted stock holdings are subject to forfeiture upon termination of employment.

The exercise price of all option awards granted to Named Executive Officers in 2008 was equal to the closing price of our common stock on the date of the grant.

Other Compensation. We maintain broad-based benefits that are provided to all employees, including health insurance, life and disability insurance, dental insurance and a 401(k) plan. In certain circumstances, on a case-by-case basis, we have used cash signing bonuses, which may have time-based repayment terms, when certain executives and senior non-executives have joined us. We do not provide any special reimbursement for perquisites such as country clubs, automobiles, corporate aircraft, living or security expenses for our employees or for any executive officers. We may reimburse approved reasonable temporary travel expenses for executives living outside of the Seattle area, based upon employment agreements.

401(k) Savings Plan. We maintain a tax-qualified 401(k) savings and profit-sharing plan for our eligible employees (the "401(k) Plan"). Employees who have attained the age of 21 and completed at least three months and at least 250 hours of service with us are eligible to elect to defer up to the lesser of $15,500 during calendar year 2008 or 100% of their base pay on a pre-tax basis. Participants age 50 and older may make additional pre-tax contributions to the 401(k) Plan of up to $5,000 during calendar year 2008. We may make discretionary matching or profit-sharing contributions to the 401(k) Plan on behalf of eligible participants in any plan year, as may be determined by the Board of Directors. For calendar year 2008, the Board of Directors decided to match employee pre-tax contributions of up to 6% of compensation at 25 cents for each dollar contributed by the employee. Accordingly, we made discretionary matching contributions of approximately $115,585 to the 401(k) Plan for calendar year 2008, including matching contributions for named executive officers as follows: $0 for Mr. French, $3,735 for Mr. York, $3,843 for Dr. Quay, $2,981 for Dr. Brandt and $2,807 for Mr. Duffy.

Pension Benefits. We do not offer qualified or non-qualified defined benefit plans to our executive officers or employees. In the future, our Compensation Committee may elect to adopt qualified or non-qualified defined benefit plans if the Compensation Committee determines that doing so is in our best interests.

Nonqualified Deferred Compensation. None of our Named Executive Officers participates in or has account balances in non-qualified defined contribution plans or other deferred compensation plans maintained by us. To date, we have not had a significant reason to offer such non-qualified defined contribution plans or other deferred compensation plans. In the future, the Compensation Committee may elect to provide our executive officers or other employees with non-qualified defined contribution or deferred compensation benefits if the Compensation Committee determines that doing so is in our best interests.

Severance and Change of Control Arrangements. As discussed more fully in the section below entitled "Employment Agreements," our executive officers are entitled to certain benefits upon the termination of their respective employment agreements, including terminations arising in connection with a change of control of our company. The severance agreements are intended to mitigate some of the risk that our executive officers may bear in working for a developing company such as ours.

Policies Regarding Tax Deductibility of Compensation. Within our performance-based compensation program, we aim to compensate the Named Executive Officers in a manner that is tax-effective for us. Section 162(m) of the Internal Revenue Code restricts the ability of publicly held companies to take a federal income tax deduction for compensation paid to certain of their executive officers to the extent that compensation exceeds $1.0 million per covered officer in any fiscal year. However, this limitation does not apply to compensation that is performance-based.

The non-performance based compensation paid in cash to our executive officers in 2008 did not exceed the $1.0 million limit per officer, and the Compensation Committee does not anticipate that the non-performance based compensation to be paid in cash to our executive officers in 2009 will exceed that limit.

EXECUTIVE COMPENSATION

The following table sets forth information regarding compensation earned during 2008, 2007 and 2006 by our CEO, our CFO and our other most highly compensated executive officers ("Named Executive Officers").

SUMMARY COMPENSATION TABLES

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)(1)	Option Grants ($)(1)	Non-Equity Incentive Plan Compensation ($)(2)	Change in Pension Value and Non-qualified Deferred Compensation Earnings ($)	All Other Compensation ($)(3)	Total ($)
J. Michael French, ... President, CEO and Director(4)	2008	176,286	—	—	296,081	—	—	—	472,367
Bruce R. York, ...	2008	224,156	—	42,305	98,018	—	—	3,735	368,214
CFO and Secretary(5)	2007	183,678	—	46,752	—	18,343	—	2,751	251,524
	2006	175,950	—	49,731	—	17,595	—	2,639	245,915
Steven C. Quay, ...	2008	511,164	—	959,341	3,901,889	—	—	3,843	5,376,237
Director (Former	2007	525,000	—	617,565	1,556,927	—	—	5,124	2,704,616
Chairman, CEO	2006	500,000	—	617,565	1,582,331	214,500	—	3,563	2,917,959
and CSO)(6)									
Gordon C. Brandt, ...	2008	318,752	—	217,474	197,885	—	—	96,381	830,492
Former President(7)	2007	287,005	—	112,184	101,317	—	—	3,875	504,381
	2006	275,000	—	64,185	107,462	89,078	—	3,266	538,991
Timothy M. Duffy, ...	2008	209,195	—	257,330	230,402	—	—	252,307	949,234
Former CBO(8)	2007	249,500	—	183,488	148,371	—	—	3,736	585,095
	2006	238,109	—	159,505	100,759	84,547	—	3,572	586,492

(1) The amounts listed in the Stock Awards and Option Awards columns are the amounts of compensation cost recognized for financial reporting purposes related to awards in current and prior fiscal years. See Notes to our consolidated financial statements for the year ended December 31, 2008 for details as to the assumptions used to determine the fair value of the option awards. See also our discussion in our Form 10-K for the year ended December 31, 2008 of stock-based compensation under "Management's Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies." Additionally, see the detailed information and footnotes contained in the 2008 Outstanding Equity Awards at Fiscal Year-End Table.

(2) The amounts listed in the Non-Equity Incentive Plan Compensation column for 2006 included cash incentive bonuses accrued during 2006 and paid in February 2007 after approval by the Compensation Committee.

(3) The amounts listed in the All Other Compensation column are 401(k) plan matching contributions made by us to executives' respective 401(k) plan contributions and severance payments made to Dr. Brandt and Mr. Duffy.

(4) Mr. French joined MDRNA as CEO on June 23, 2008, became a Director on September 11, 2008 and became President on October 1, 2008.

(5) Mr. York was promoted to CFO effective January 4, 2008.

(6) Dr. Quay resigned as CEO effective June 23, 2008 and as Chairman of the Board effective October 27, 2008. He was terminated as CSO effective October 27, 2008, although he continued to serve as an employee until November 30, 2008.

(7) Dr. Brandt was terminated in connection with our reduction in force in August 2008. Under the terms of his employment agreement with us, he remained as an employee through the end of September 2008 and all of

his unvested stock options and restricted stock became fully vested as of September 30, 2008. The 2008 amount in All Other Compensation includes $93,400 in 2008 cash severance payments that were being paid out over a 12 month period beginning October 2008. The 2009 severance payments to be made will total $272,600.

(8) Mr. Duffy was terminated in connection with our reduction in force in August 2008. Under the terms of his employment agreement with us, he remained as an employee through the end of September 2008 and all of his unvested stock options and restricted stock became fully vested as of September 30, 2008. The 2008 amount in All Other Compensation includes $249,500 in severance payments paid in 2008 in a lump sum.

Employment Agreements

We have entered into employment agreements with two of our Named Executive Officers who were serving as executive officers on December 31, 2008; Mr. French and Mr. York. We have also entered into employment agreements with our three other Named Executive Officers — Drs. Quay and Brandt and Mr. Duffy — none of whom continued to be employed by us as of December 31, 2008. These agreements are summarized below and provide that such executive officers shall receive certain payments from us in the event of certain change of control or termination events. For a description of the potential payments upon termination or change of control to be paid to Mr. French and Mr. York, and of the payments paid or to be paid to Dr. Quay, Dr. Brandt and Mr. Duffy in connection the termination of their employment with us, please see "Potential payments upon termination or change in control arrangements" and "2008 Potential Payments upon Termination or Change in Control Tables" below. We also entered into an employment agreement with Dr. Barry Polisky on October 27, 2008, who commenced employment as our Chief Scientific Officer on January 2, 2009, a summary of which is included in the Current Report on Form 8-K that we filed with the SEC on October 30, 2008.

J. Michael French

On June 10, 2008, we entered into an employment agreement (the "French Agreement") with J. Michael French pursuant to which he will serve as our Chief Executive Officer for a term beginning on June 23, 2008 and ending on June 9, 2011. Mr. French was subsequently elected President effective October 1, 2008, and became a Director after election by the Board on September 11, 2008. A copy of the French Agreement was filed as Exhibit 10.2 to our Current Report on Form 8-K dated June 10, 2008.

Pursuant to the French Agreement, Mr. French will be entitled to annual base compensation of $340,000, with any increase in base compensation to be set by the Board from time to time as determined by the Board or the Compensation Committee thereof, with the target for each year being the 50th percentile of the Radford survey. He is also eligible to receive annual performance-based incentive cash compensation, with the targeted amount of such incentive cash compensation being 40% of his annual base compensation for the year, but with the actual amount to be determined by the Board or the Compensation Committee thereof. Mr. French is also entitled to receive a total relocation allowance in the amount of approximately $100,000 to be paid in 2009.

Under the French Agreement, he was granted options to purchase up to 1,260,000 shares of Common Stock. The options have a term of 10 years beginning on June 23, 2008, and will vest according to the following schedule:

- 420,000 options will become exercisable on June 23, 2009 at an exercise price equal to $1.27 per share, which was the closing price of the Common Stock on the NASDAQ Global Market on June 23, 2008;
- 105,000 options will vest on each of September 10, 2009, December 10, 2009, March 10, 2010 and June 10, 2010 (for an aggregate of 420,000 options during such period) at an exercise price equal to $2.27 per share; and
- 105,000 options will vest on each of September 10, 2010, December 10, 2010, March 10, 2011 and June 9, 2011 (for an aggregate of 420,000 options during such period) at an exercise price equal to $3.27 per share.

In the event that Mr. French's employment is terminated without cause or he chooses to terminate his employment for good reason, all of Mr. French's options that are outstanding on the date of termination shall be fully vested and exercisable upon such termination and shall remain exercisable for the remainder of their terms. In addition, he will receive (i) base salary, (ii) incentive cash compensation determined on a pro-rated basis as to the year in which the termination occurs, (iii) pay for accrued but unused paid time off, and (iv) reimbursement for expenses through the date of termination, plus an amount equal to 12 months of his specified base salary at the rate in effect on the date of termination. In the event that his employment is terminated for cause or he chooses to terminate his employment other than for good reason, vesting of the options shall cease on the date of termination and any then unvested options shall terminate, however the then-vested options shall remain vested and exercisable for the remainder of their respective terms. He will also receive salary, a pro-rated amount of incentive cash compensation for the fiscal year in which the termination occurs, pay for accrued but unused paid time off, and reimbursement of expenses through the date of termination.

In the event that Mr. French's employment is terminated due to death or disability, Mr. French or his estate, as applicable, is entitled to receive (i) salary, reimbursement of expenses, and pay for accrued but unused paid time off; (ii) incentive cash compensation determined on a pro-rated basis as to the year in which the termination occurs; and (iii) a lump sum equal to base salary at the rate in effect on the date of termination for the lesser of (a) twelve (12) months and (b) the remaining term of the French Agreement at the time of such termination. In addition, vesting of all of Mr. French's options that are outstanding on the date of termination shall cease, and any then vested options shall remain exercisable as specified in the applicable grant agreements.

In the event that Mr. French's employment is terminated by us (other than for cause) or by Mr. French (for good reason), and in either case other than because of death or disability, during the one-year period following a change in control of our company, then Mr. French will be entitled to receive as severance: (i) salary, expense reimbursement and pay for unused paid time off through the date of termination; (ii) a lump-sum amount equal to the greater of (x) twelve (12) months of base salary, and (y) the balance of his base salary to the end of the term of the French Agreement, in each case at the rate in effect on the date of termination; (iii) the amount of his incentive cash compensation for the fiscal year in which the date of termination occurs (determined on a pro-rated basis); and (iv) an additional lump-sum payment equal to fifty percent (50%) of his base salary for such year. In addition, all of Mr. French's outstanding stock options shall be fully vested and exercisable upon a change of control and shall remain exercisable as specified in the option grant agreements.

Pursuant to the French Agreement, a change in control generally means (i) the acquisition by any person or group of 40% or more of our voting securities, (ii) our reorganization, merger or consolidation, or sale of all or substantially all of our assets, following which our stockholders prior to the consummation of such transaction hold 60% or less of the voting securities of the surviving or acquiring entity, as applicable, (iii) a turnover of the majority of the Board as currently constituted, provided that under most circumstances any individual approved by a majority of the incumbent Board shall be considered as a member of the incumbent Board of Directors for this purpose, or (iv) a complete liquidation or dissolution of us.

The French Agreement also provides that we will, in connection with each election of our directors during the term of the French Agreement, nominate, recommend and use our best efforts to cause the election to the Board of Directors of Mr. French.

In general, Mr. French has agreed not to compete with us for six months following the end of the employment term or to solicit our partners, clients or employees for one year following the end of the employment term. These non-compete and non-solicitation agreements may not be enforceable in some jurisdictions.

Bruce R. York

On March 7, 2008, we entered into a new employment agreement (the "York Agreement") with Bruce R. York in connection with Mr. York being named our Secretary and Chief Financial Officer, for a term of three

years ending on March 7, 2011. A copy of the York Agreement was filed as Exhibit 10.1 to our Current Report on Form 8-K dated March 7, 2008.

Pursuant to the York Agreement, Mr. York will be entitled to annual base compensation of $250,000, and he will be eligible for increases in his base salary as may be determined by our Board of Directors. Effective for our fiscal year that began on January 1, 2008, and each calendar year thereafter during the term of the York Agreement, Mr. York's targeted incentive cash compensation is 40% of his annual base compensation for the year, with the actual amount, which may be more or less than said targeted amount, to be determined by the Board and our Chief Executive Officer.

Under the York Agreement, in the event that, prior to March 7, 2011, we terminate Mr. York's employment without cause or if Mr. York terminates his employment as the result of a substantial diminution in his authority or role as Chief Financial Officer, our failure to pay any amounts of base salary and/or incentive cash compensation, our failure to honor promptly any of our other material obligations under the York Agreement, or a material demotion in Mr. York's title or status, then Mr. York will be entitled to receive as severance a lump sum payment equal to twelve (12) months of his specified base salary at the rate in effect on the date of termination. Upon such event, Mr. York's options and shares of restricted stock shall become fully vested and such options shall become fully exercisable and shall remain exercisable as specified in the applicable grant agreements.

In the event that, prior to March 7, 2011, the York Agreement is terminated due to disability or death, Mr. York or his estate, as applicable, is entitled to receive as severance a lump sum payment equal to his specified base salary at the rate in effect on the date of termination for the lesser of twelve (12) months or the remaining term of the York Agreement. Upon such event, the vesting of Mr. York's options and shares of restricted stock that are outstanding on such termination date shall cease, and any then-vested options shall remain exercisable as specified in the applicable grant agreements.

In the event that Mr. York's employment is terminated by us (other than for cause) or by Mr. York for any reason (other than due to death or disability or for good reason), during the one-year period following a change in control of the Company and prior to March 7, 2011, Mr. York will be entitled to receive as severance a lump sum payment equal to: (i) the greater of twelve (12) months base salary or the balance of his base salary through March 7, 2011, in each case at the rate in effect on the date of termination; (ii) the amount of his incentive cash compensation for the fiscal year in which the date of termination occurs (determined on a pro rated basis); and (iii) an additional lump-sum payment equal to 40% of his base salary for such year. In addition, upon such event, all of Mr. York's options and shares of restricted stock shall become fully vested and such options shall become fully exercisable and shall remain exercisable as specified in the applicable option grant agreements.

Pursuant to the York Agreement, a change in control generally means (i) the acquisition by any person or group of 40% or more of our voting securities, (ii) our reorganization, merger or consolidation, or sale of all or substantially all of our assets, following which our stockholders prior to the consummation of such transaction hold 60% or less of the voting securities of the surviving or acquiring entity, as applicable, (iii) a turnover of the majority of the Board as currently constituted, provided that under most circumstances any individual approved by a majority of the incumbent Board shall be considered as a member of the incumbent Board of Directors for this purpose, or (iv) a complete liquidation or dissolution of us.

Mr. York has agreed not to compete with us for six months following the end of the employment term or to solicit customers or employees of us for one year following the end of the employment term. These non-compete and non-solicitation agreements may not be enforceable in some jurisdictions.

In connection with the entry into the York Agreement, Mr. York also entered into an omnibus amendment to certain of his outstanding restricted stock grant award agreements with us to provide that the terms of the York Agreement shall supersede any conflicting terms contained in the grant awards.

Steven C. Quay, M.D., Ph.D.

On June 10, 2008, we entered into a new employment agreement (the "Quay Agreement") with Dr. Steven C. Quay pursuant to which he agreed to serve as the Chairman of the Board of Directors and Chief Scientific Officer for a term beginning on June 10, 2008 and ending on December 31, 2013. A copy of the Quay Agreement was filed as Exhibit 10.1 to our Current Report on Form 8-K dated June 10, 2008. Dr. Quay resigned as Chairman of the Board, and was terminated as CSO, effective October 27, 2008, although he remained an employee until November 30, 2008.

Pursuant to the Quay Agreement, Dr. Quay was entitled to annual base compensation of $500,000 in 2008, with an annual increase in base compensation of up to five percent for each year thereafter as determined in good faith by the Board or the Compensation Committee, which increase shall be effective on January 1 of each calendar year beginning with the 2009 calendar year. Dr. Quay was also eligible to receive annual incentive cash compensation of up to 50% of his annual base compensation for the year, with the actual amount to be determined by the Board or the Compensation Committee.

Under the Quay Agreement, we granted to Dr. Quay options to purchase up to 1,700,000 shares of Common Stock. The options had a term of 10 years beginning on June 10, 2008, and were originally scheduled to vest according to the following schedule:

- 420,000 options vest on June 10, 2009 at an exercise price equal to $1.19 per share;
- 105,000 options vest on each of September 10, 2009, December 10, 2009, March 10, 2010 and June 10, 2010 (for an aggregate of 420,000 options during such period) at an exercise price equal to $2.19 per share;
- 105,000 options vest on each of September 10, 2010, December 10, 2010, March 10, 2011 and June 10, 2011 (for an aggregate of 420,000 options during such period) at an exercise price equal to $3.19 per share;
- 55,000 options vest on each of September 10, 2011, December 10, 2011, March 10, 2012 and June 10, 2012 (for an aggregate of 220,000 options during such period) at an exercise price equal to $4.19 per share; and
- 55,000 options vest on each of September 10, 2012, December 10, 2012, March 10, 2013 and June 10, 2013 (for an aggregate of 220,000 options during such period) at an exercise price equal to $5.19 per share.

Pursuant to the Quay Agreement, all 1,700,000 options vested on November 30, 2008 in connection with Dr. Quay's termination as an employee of our company. The options remain exercisable for their remaining term.

Under the Quay Agreement, if Dr. Quay's employment is terminated without cause, all of Dr. Quay's options would become fully vested and exercisable upon such termination and would remain exercisable for the remainder of their terms. In addition, Dr. Quay would receive (i) base salary, (ii) incentive cash compensation determined at the maximum annual rate but on a pro-rated basis for the portion of the fiscal year that shall have elapsed when the termination occurs, (iii) pay for accrued but unused vacation time, and (iv) reimbursement for expenses through the date of termination, plus the lesser of (a) the balance of his specified base salary through December 31, 2013, and (b) payment of the equivalent of thirty-six (36) months of his specified base salary.

In general, Dr. Quay has agreed not to compete with us for six months following the end of the employment term or to solicit our partners or employees for one year following the end of the employment term. These non-compete and non-solicitation agreements may not be enforceable in some jurisdictions.

Dr. Gordon C. Brandt

We entered into an employment agreement (the "Brandt Agreement") on December 19, 2007 with Gordon C. Brandt, M.D., in connection with Dr. Brandt being named our President for the period beginning December 19, 2007 and ending December 31, 2010. A copy of the Brandt Agreement was filed as Exhibit 10.1 to our Current Report on Form 8-K dated December 20, 2007. Dr. Brandt was terminated in connection with our reduction in force in August 2008, although he remained as an employee through the end of September 2008.

Pursuant to the Brandt Agreement, Dr. Brandt was entitled to annual base compensation of $376,000 effective December 19, 2007 and was eligible for increases in his base salary as may be determined by our Board of Directors and our CEO. Effective for our fiscal year that began on January 1, 2008, Dr. Brandt's targeted incentive cash compensation under the Brandt Agreement was 50% of his annual base compensation for the year, with the actual amount, which may be more or less than said targeted amount, to be determined by the Board of Directors and our CEO.

Under the Brandt Agreement, in the event that, prior to December 31, 2010, we terminated Dr. Brandt's employment without cause, then in addition to pay for any unused paid time off accrued, Dr. Brandt would be entitled to receive as severance a lump sum payment equal to twelve (12) months of his specified base salary at the rate in effect on the date of termination, the amount of his incentive cash compensation for the fiscal year in which the date of termination occurs (determined on a pro rated basis) and we shall continue to contribute towards the cost of COBRA coverage for six months. Upon such event, Dr. Brandt's options and shares of restricted stock would become fully vested and such options would remain exercisable as specified in the applicable grant agreements.

In connection with the entry into the Brandt Agreement, we and Dr. Brandt also entered into an omnibus amendment to all of his outstanding grant awards to provide that the terms of the Brandt Agreement shall supersede any conflicting terms contained in grant awards.

Timothy M. Duffy

We entered into an employment agreement (the "Duffy Agreement") on September 15, 2006 with Timothy M. Duffy for the period beginning September 15, 2006 and ending June 30, 2009. Mr. Duffy, formerly our Executive Vice President of Marketing, Business Development & Legal, assumed the position of Chief Business Officer on February 12, 2008. A copy of the Duffy Agreement was filed as Exhibit 10.1 to our Current Report on Form 8-K dated September 20, 2006. Mr. Duffy was terminated in connection with our reduction in force in August 2008, although he remained as an employee through the end of September 2008.

Pursuant to the Duffy Agreement, Mr. Duffy was entitled to annual base compensation of $249,500 effective January 1, 2007, and was eligible for increases in his base salary as may be determined by our Board of Directors and our CEO. Effective for our fiscal year that began on January 1, 2007, and each calendar year thereafter during the term of the Duffy Agreement, Mr. Duffy's targeted incentive cash compensation was 40% of his annual base compensation for the year, with the actual amount, which may be more or less than said targeted amount, to be determined by the Board of Directors and our CEO.

Under the Duffy Agreement, in the event that, prior to June 30, 2009, we terminated Mr. Duffy's employment without cause, then in addition to pay for any unused paid time off accrued, Mr. Duffy would be entitled to receive as severance a lump sum payment equal to twelve (12) months of his specified base salary at the rate in effect on the date of termination, the amount of his incentive cash compensation for the fiscal year in which the date of termination occurs (determined on a pro rated basis), and we shall continue to contribute towards the cost of COBRA coverage for six months. Upon such event, Mr. Duffy's options and shares of restricted stock would become fully vested and such options would remain exercisable as specified in the applicable grant agreements.

In connection with the entry into the Duffy Agreement, we and Mr. Duffy also entered into an omnibus amendment to all of his outstanding grant awards to provide that the terms of the Duffy Agreement shall supersede any conflicting terms contained in grant awards.

2008 GRANTS OF PLAN BASED AWARDS TABLE

The following table sets forth information regarding the awards granted to each Named Executive Officer during 2008:

Name	Grant Date	Estimated Future Payouts Under Non-Equity Incentive Plan Awards			Estimated Future Payouts Under Equity Incentive Plan Awards			All Other Stock Awards: Number of Shares of Stock or Units (#)	All Other Option Awards: Number of Securities Underlying Options(2) (#)	Exercise or Base Price of Option Awards ($/Sh)(1)	Grant Date Fair Market Value of Stock and Option Awards Closing Price on Grant Date ($/Sh)(3)
		Threshold ($)	Target ($)	Maximum ($)	Threshold ($)	Target ($)	Maximum ($)				
J. Michael French(4)	6/23/08	—	$340,452	—	—	—	—	—	420,000	$1.27	$0.81
	6/23/08	—	$277,788	—	—	—	—	—	420,000	$2.27	$0.66
	6/23/08	—	$236,922	—	—	—	—	—	420,000	$3.27	$0.56
Bruce R. York	2/12/08	—	$ 39,707	—	—	—	—	14,400	29,000	$2.22	$1.37
	6/10/08	—	$ 93,888	—	—	—	—	—	120,000	$1.19	$0.78
	6/10/08	—	$ 77,028	—	—	—	—	—	120,000	$2.19	$0.64
	6/10/08	—	$ 66,108	—	—	—	—	—	120,000	$3.19	$0.55
Steven C. Quay(5)	6/10/08	—	$391,944	—	—	—	—		420,000	$1.19	$0.93
	6/10/08	—	$353,010	—	—	—	—		420,000	$2.19	$0.84
	6/10/08	—	$325,878	—	—	—	—		420,000	$3.19	$0.78
	6/10/08	—	$159,786	—	—	—	—		220,000	$4.19	$0.73
	6/10/08	—	$150,920	—	—	—	—		220,000	$5.19	$0.69
Gordon C. Brandt	—	—	—	—	—	—	—	—	—	—	—
Timothy M. Duffy	2/12/08	—	$ 47,922	—	—	—	—	14,400	35,000	$2.22	$1.37

(1) The exercise price for all options is greater than or equal to the closing market price of our Common Stock on the date of grant. The restricted stock awards were valued as of the closing price on the date of grant, less $0.006 par value per share.

(2) Restricted stock awards are included in the "All Other Stock Awards" column above. Stock option awards granted in 2008 are included in the "All Other Option Awards" column above. The material terms of these awards, including payout formulas, are described under the heading "Stock Options and Restricted Stock Grants" in the Compensation Discussion and Analysis in this Proxy Statement. The restricted shares and options are scheduled to vest in equal annual increments over three-year periods starting on the first anniversary of the grant dates, so long as the Named Executive Officers remain in continuous employment with us through those dates, in accordance with employment contracts and the plan documents; however, the options granted to Mr. French and Dr. Quay shall vest as set forth in footnotes (4) and (5) to this table. The grant amounts were determined by the CEO in consultation with the Compensation Committee of the Board.

(3) The value of restricted stock and option awards is the grant date fair value determined under FAS 123R. A discussion of the relevant fair value assumptions is set forth in the notes to our 2008 consolidated financial statements. We caution that the amount ultimately realized from the stock and option awards will likely vary based on a number of factors, including our actual operating performance, stock price fluctuations, and the timing of exercises (in the case of options) and sales.

(4) We granted options to purchase up to 1,260,000 shares of Common Stock to Mr. French on June 23, 2008, of which 160,037 options were granted pursuant to our 2008 Stock Incentive Plan, and 1,099,963 options were employment inducement grants. Of these options, (i) 420,000 will become exercisable on June 23, 2009 at

an exercise price of $1.27 per share; (ii) 105,000 options will vest on each of September 10, 2009, December 10, 2009, March 10, 2010, June 10, 2010 at an exercise price of $2.27 per share; (iii) and 105,000 options will vest on each of September 10, 2010, December 10, 2010, March 10, 2011 and June 9, 2011 at an exercise price of $3.27 per share.

(5) We granted options to purchase up to 1,700,000 shares of Common Stock to Dr. Quay on June 10, 2008 pursuant to our 2008 Stock Incentive Plan. Originally, options to purchase 420,000 shares were to vest on June 10, 2009, with the remaining options vesting in quarterly installments until June 10, 2013. However, in connection with the termination of Dr. Quay's employment, all of these options vested on November 30, 2008.

2008 OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END TABLE

The following table sets forth information regarding the outstanding equity awards held by our Named Executive Officers as of December 31, 2008:

		Option Awards					Stock Awards			
Name		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 ($)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested ($)(15)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ($)
J. Michael French ...	(1)	—	420,000	—	$ 1.27	6/23/18	—	—	—	—
	(2)	—	420,000	—	$ 2.27	6/23/18	—	—	—	—
	(3)	—	420,000	—	$ 3.27	6/23/18	—	—	—	—
Bruce R. York	(4)	—	29,000	—	$ 2.22	2/12/18	—	—	—	—
	(5)	—	120,000	—	$ 1.19	6/10/18	—	—	—	—
	(6)	—	120,000	—	$ 2.19	6/10/18	—	—	—	—
	(7)	—	120,000	—	$ 3.19	6/10/18	—	—	—	—
	(8)	—	—	—	—	—	1,031	$ 351	—	—
	(9)	—	—	—	—	—	2,786	$ 947	—	—
	(10)	—	—	—	—	—	14,400	$4,896	—	—
Steven C. Quay	(11)	800,000	—	—	$12.94	5/2/12	—	—	—	—
	(12)	4,247	—	—	$13.16	2/6/17	—	—	—	—
	(13)	420,000	—	—	$ 1.19	6/10/18	—	—	—	—
	(13)	420,000	—	—	$ 2.19	6/10/18	—	—	—	—
	(13)	420,000	—	—	$ 3.19	6/10/18	—	—	—	—
	(13)	220,000	—	—	$ 4.19	6/10/18	—	—	—	—
	(13)	220,000	—	—	$ 5.19	6/10/18	—	—	—	—
Gordon C. Brandt ...	(14)	—	—	—	—	—	—	—	—	—
Timothy M. Duffy ..	(14)	—	—	—	—	—	—	—	—	—

(1) The options become exercisable on June 23, 2009.

(2) The options vest in four even quarterly increments on September 10, 2009, December 10, 2009, March 10, 2010 and June 10, 2010.

(3) The options vest in four even quarterly increments on September 10, 2010, December 10, 2010, March 10, 2011 and June 10, 2011.

(4) The options vest in three even annual increments on February 12, 2009, February 12, 2010 and February 12, 2011.

(5) The options vest on June 10, 2009.

(6) The options vest on June 10, 2010.

(7) The options vest on June 10, 2011.

(8) The remaining stock awards vest on July 14, 2009.

(9) The remaining stock awards vest in two equal installments on July 2, 2009 and July 2, 2010.

(10) The remaining stock awards vest in two equal installments on February 12, 2010 and February 12, 2011.

(11) The options vested in even annual increments over a four-year period on May 2, 2002, August 8, 2003, August 8, 2004 and August 8, 2005. The options remain exercisable for their remaining term.

(12) The options vested as follows: 1,416 options vested on February 6, 2008, and 2,831 options vested on November 30, 2008, the termination date for this former executive. The options remain exercisable for their remaining term.

(13) The options vested on November 30, 2008, the termination date for this former executive. The options remain exercisable for their remaining term.

(14) No outstanding equity awards remain on December 31, 2008 for this former executive.

(15) The market value of shares of stock that have not vested is based upon the closing price of our Common Stock on December 31, 2008, $0.34.

2008 OPTION EXERCISES AND STOCK VESTED TABLE

The following table sets forth the number of shares acquired and the aggregate dollar amount realized pursuant to the exercise of options and restricted stock awards that vested for our Named Executive Officers during 2008:

	Option Awards		Stock Awards	
Name	Number of Shares Acquired on Exercise (#)	Value Realized on Exercise ($)(1)	Number of Shares Acquired on Vesting (#)	Value Realized on Vesting ($)(2)
J. Michael French	—	—	—	—
Bruce R. York	—	—	3,007	3,334
Steven C. Quay	—	—	84,000	60,396
Gordon C. Brandt	—	—	35,000	27,105
Timothy M. Duffy	—	—	39,825	35,953

(1) The aggregate dollar value realized upon the exercise of an option represents the difference between the closing market price of the underlying shares on the date of exercise and the exercise price of the option, multiplied by the number of shares exercised.

(2) The aggregate dollar value realized upon the vesting of restricted stock awards is the fair market value of the underlying shares on the vesting date less par value of $0.006 per share, multiplied by the number of shares vested.

Option repricings

We have not engaged in any option repricings or other modifications, other than as noted related to vesting upon terminations as described in this document, to any of our outstanding equity awards to our Named Executive Officers during fiscal year 2008.

Potential payments upon termination or change in control arrangements

See "Employment Agreements" above for a description of the severance and change in control arrangements for our Named Executive Officers. Each of our Named Executive Officers will be eligible to receive severance payments only if each officer signs a general release of claims. The Compensation Committee, as plan administrator of our Stock Option Plans, has the authority to provide for accelerated vesting of options or restricted stock held by our Named Executive Officers and any other person in connection with certain changes in control of our company.

In those employment agreements with our Named Executive Officers containing a change in control provision, subject to certain exceptions, a change in control is generally defined as (i) the acquisition by any person or group of 40% or more of our voting securities, (ii) our reorganization, merger or consolidation, or sale of all or substantially all of our assets, following which our stockholders prior to the consummation of such transaction hold 60% or less of the voting securities of the surviving or acquiring entity, as applicable, (iii) a turnover of the majority of the Board as currently constituted, provided that under most circumstances any individual approved by a majority of the incumbent Board shall be considered as a member of the incumbent Board of Directors for this purpose, or (iv) a complete liquidation or dissolution of us.

Estimated payments and benefits upon termination

The amount of compensation and benefits payable to each Named Executive Officer who remained an employee of our company on December 31, 2008 under various termination events and circumstances has been estimated in the table below. The amounts shown assume that such termination was effective as of December 31, 2008, our last business day of 2008, and thus includes amounts earned through such time and are estimates of the amounts that would be paid out to the executive officers upon their termination. Amounts under equity awards are determined based on the closing price of our Common Stock on December 31, 2008, which was $0.34 per share. The actual amounts to be paid out can only be determined at the time of such executive officer's separation from our company.

Unless otherwise provided by our plan administrator in stock option or restricted stock award agreements or in employment contracts with our Named Executive Officers, upon termination of a participant's employment or service, participants generally will forfeit any outstanding awards, except that a participant will have (i) 90 days (but in no event after the original expiration date of the award) following termination of employment or service to exercise any then-vested options and (ii) the earlier of one year or the original expiration of the grant if termination of employment or service is a result of the participant's disability or death. In the event of the death or disability of a Named Executive Officer, the Named Executive Officer will receive benefits under our disability plan or payments under our life insurance plan, as appropriate. The terms "cause", "good reason", "change of control" and "disability" have the meanings given to such terms in the employment agreements with our Named Executive Officers.

2008 POTENTIAL PAYMENTS UPON TERMINATION OR CHANGE IN CONTROL TABLE

	Involuntary Not For Cause Termination or For Good Reason	Voluntary or For Cause	Death or Disability	Termination following Change-in-Control
Mr. French				
Lump-sum payment	$340,000	$ —	$340,000	$ 829,041
Accrued Vacation	17,252	17,252	17,252	17,252
Bonus	71,138	71,138	71,138	241,138
Stock Options	—	—	—	—
Cobra reimbursement	24,863	—	—	—
Total	$453,253	$88,390	$428,390	$1,087,431
Mr. York				
Lump-sum payment	$250,000	$ —	$250,000	$ 545,205
Accrued Vacation	24,038	24,038	24,038	24,038
Bonus	100,000	—	100,000	200,000
Restricted Stock	4,562	—	4,562	4,562
Stock Options	—	—	—	—
Cobra reimbursement	12,432	—	—	—
Total	$391,032	$24,038	$378,600	$ 773,805

The lump sum payments represent contractual payments due to the named executives in accordance with their employment contracts based upon their base salaries in effect as of December 31, 2008:

The amounts of $340,000 and $829,041 for Mr. French represent one year's pay at the rate in effect on December 31, 2008 and the amount due through June 9, 2011, the end of his employment contract, respectively.

The amounts of $250,000 and $545,205 for Mr. York represent one year's pay at the rate in effect on December 31, 2008 and the amount due through March 7, 2011, the end of his employment contract, respectively.

Accrued vacation amounts represent the unpaid days of personal time off accrued for each named executive as of December 31, 2008.

Bonus amounts are based upon employment contracts, and are 40% of base salary in effect as of December 31, 2008. Bonus amounts in the change-of-control columns represent payment of two years' bonuses at 40% for Mr. York, and one year at 40% and one year at 50% for Mr. French, based upon employment contracts, calculated using base salaries in effect as of December 31, 2008.

Restricted stock amounts for Mr. York are valued at $0.34, the closing price on December 31, 2008, multiplied by 18,217 outstanding unvested shares assumed to vest as of such date.

Stock option amounts are valued at $0.34, the closing price on December 31, 2008, less the applicable option exercise price, multiplied by the number of outstanding unvested options assumed to vest on such date. As of December 31, 2008, none of the outstanding options were in-the-money.

Cobra reimbursements represent six months of continued company contributions for employer-paid medical insurance in accordance with Mr. York's employment contract, and twelve months in accordance with Mr. French's employment contract.

Payments to Terminated Named Executive Officers

As noted elsewhere in this report, we terminated without cause the employment of Dr. Quay effective November 30, 2008, and each of Dr. Brandt and Mr. Duffy effective September 30, 2008. In connections with these actions, we have made or will make payments to these former executive officers as set forth below:

Dr. Steven C. Quay

Pursuant to his employment agreement, as amended on March 20, 2009, we will pay to Dr. Quay on June 30, 2009, an aggregate amount in cash equal to $865,000 as severance, less lawful withholdings, and have granted 731,725 shares of restricted Common Stock. In addition, on November 30, 2008, Dr. Quay's 42,000 remaining unvested restricted shares became fully vested and unvested options to purchase 1,700,000 shares of Common Stock at a weighted average exercise price of approximately $2.84 per share granted to Dr. Quay pursuant to his employment agreement became fully vested and exercisable in accordance with their terms. Additional unvested options to purchase 2,831 shares of Common Stock at an exercise price of $13.16 per share also became fully vested and exercisable on November 30, 2008. Dr. Quay agreed to surrender, without consideration, for cancellation options to purchase up to an aggregate of 1,500,000 shares of Common Stock, namely options to purchase up to 600,000 shares of Common Stock with an exercise price of $14.72 per share, and options to purchase up to 100,000 shares of Common Stock with an exercise price of $25.00 per share, effective October 28, 2008, and options to purchase up to 800,000 shares of Common Stock with an exercise price of $12.94 per share, effective March 16, 2009.

Dr. Gordon C. Brandt

Pursuant to his employment agreement, Dr. Brandt is to receive a total of one year salary paid out over a 12 month period starting October 2009, of which we had paid to Dr. Brandt an aggregate of $188,000 as of March 31, 2009, and of which we agreed to pay the remaining balance of $178,000 in a lump sum on April 15, 2009. Dr. Brandt's unvested options and restricted stock vested on September 30, 2008. Dr. Brandt was eligible for COBRA, for which we contributed the employer cost portion for six months.

Timothy M. Duffy

Pursuant to his employment agreement, Mr. Duffy received a total of one year salary ($249,500) in October 2008. Mr. Duffy's unvested options and restricted stock vested on September 30, 2008. Mr. Duffy was eligible for COBRA, for which we contributed the employer cost portion for six months.

COMPENSATION OF DIRECTORS

2008 DIRECTOR COMPENSATION TABLE

Name	Fees Earned or Paid in Cash ($)	Stock Awards ($)(1)	Option Awards ($)(1)	Non-Equity Incentive Plan Compensation ($)	Change in Pension Value and Nonqualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
Current Directors							
Alexander D. Cross	$ 39,375	$ 43,592	$ 54,513	—	—	—	$ 137,480
Daniel Peters	30,000	—	19,102	—	—	—	49,102
John V. Pollock	48,250	41,656	54,139	—	—	—	144,045
James E. Rothman(2)	30,000	—	19,102	—	—	—	49,102
Gregory Sessler	45,000	—	25,469	—	—	—	70,469
Bruce R. Thaw	68,500	41,656	60,506	—	—	—	170,662
Subtotal	261,125	126,904	232,831				620,860
Former Directors							
Susan B. Bayh	46,000	40,768	52,600	—	—	—	139,368
Ian R. Ferrier	3,000	53,289	9,260	—	—	—	65,549
Myron Z. Holubiak	11,625	93,103	21,993	—	—	—	126,721
Leslie D. Michelson	5,625	115,280	30,095	—	—	—	151,000
Gerald T. Stanewick	9,000	24,879	9,260	—	—	—	43,139
Devin N. Wenig	2,250	47,995	9,354	—	—	—	59,599
Subtotal	77,500	375,314	132,562				585,376
Total	$338,625	$502,218	$365,393				$1,206,236

(1) The stock and option values listed in the table include the portion of stock and option awards granted in 2008 and prior years that vested during 2008. No grants of restricted shares were made in 2008 to directors. The amounts do not include any estimates of forfeitures (however, for financial statement purposes our assumptions use an estimate of zero forfeitures for outside directors based on our historical experience). See Notes to our consolidated financial statements for the year ended December 31, 2008 for details as to the assumptions used to determine the fair value of the option awards. See also our discussion in our Annual Report on Form 10-K for the year ended December 31, 2008 of stock-based compensation under "Management's Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies."

(2) Dr. Rothman was a member of our Scientific Advisory Board during 2008 and received $75,000 in cash compensation during 2008 for such service. He also received 104,371 options to purchase shares of Common Stock that were fully vested on December 31, 2008 for such service.

J. Michael French, current director, President and CEO, and Steven C. Quay, current director (and former Chairman of the Board, CEO and CSO), have not been included in the Director Compensation Tables because they are Named Executive Officers and do not receive any additional compensation for services provided as a director.

Supplemental Director Award and Option Data Including 2008 Grants and Outstanding Awards at Year-End

Name	2008 Restricted Stock Awards (# shares)	Fair Value of 2008 Restricted Stock Awards ($)(1)	2008 Stock Option Grants (# shares)	Fair Value of Options Granted in 2008 under SFAS 123R ($)(1)	Aggregate Number of Unvested Restricted Stock Awards Outstanding at December 31, 2008 (# shares)	Aggregate Number of Stock Options Outstanding at December 31, 2008 (# shares)
Current Directors						
Alexander D. Cross	—	—	45,000	$34,178	5,332	83,000
Daniel Peters	—	—	45,000	34,178	—	45,000
John V. Pollock	—	—	55,000	41,773	4,999	107,500
James E. Rothman(2)	—	—	45,000	34,178	—	45,000
Gregory Sessler	—	—	60,000	45,570	—	60,000
Bruce R. Thaw	—	—	70,000	53,165	5,000	116,000
Former Directors						
Susan B. Bayh(3)	—	—	55,000	41,773	—	32,500
Ian R. Ferrier(4)	—	—	—	—	—	24,000
Myron Z. Holubiak(4)	—	—	—	—	—	37,000
Leslie D. Michelson(4)	—	—	—	—	—	43,500
Gerald T. Stanewick(4)	—	—	—	—	—	26,000
Devin N. Wenig(4)	—	—	—	—	—	46,000

(1) All of the options granted to our non-executive directors during 2008 were granted on June 10, 2008, the date of our annual meeting of stockholders, when the fair market value was $1.19 per share. The grant date fair value for 2008 option awards was $0.76 per share, calculated using Black Scholes methodology under SFAS 123R. No grants of restricted stock awards were made to directors during 2008.

(2) Excludes 104,371 options granted to Dr. Rothman for his service on our Scientific Advisory Board.

(3) Options outstanding at December 31, 2008 expire on April 9, 2009.

(4) Options outstanding at December 31, 2008 expire on June 10, 2010.

In 2008, the components of compensation for the Board of Directors, as approved and ratified by the Nominating and Corporate Governance Committee of the Board of Directors, were as follows:

(a) for the year beginning June 2008, an annual retainer of $30,000 paid to non-employee members of the Board of Directors and equity awards of 30,000 options (45,000 options for the year beginning June 2008 only) as the annual retainer;

(b) a retainer of $25,000 and 25,000 options for the director named as Lead Independent Director;

(c) for Chairmen of Nominating and Corporate Governance Committee and Compensation Committee: $10,000 and 10,000 options as annual retainers;

(d) for Chairman of the Audit Committee: $15,000 and 15,000 options as annual retainers; and

(e) reimbursement for reasonable and necessary travel expenses incurred to attend our meetings.

Directors' Stock Compensation Plans. We maintain four compensation plans under which equity compensation awards may be made to directors: the Amended and Restated MDRNA, Inc. 2000 Nonqualified Stock Option Plan (the "2000 Plan"), the MDRNA, Inc. 2002 Stock Option Plan (the "2002 Plan"), the MDRNA, Inc. 2004 Stock Incentive Plan (the "2004 Plan") and the MDRNA, Inc. 2008 Stock Incentive Plan (the "2008 Plan"). References to the "Director Option Plans" herein refer to the 2000 Plan, the 2002 Plan, the 2004 Plan and the 2008 Plan, collectively. It is our current practice that, upon becoming a member of the Board of Directors, each non-employee director may receive a discretionary award of options to purchase Common Stock and/or restricted shares of Common Stock as is determined at such time by the Compensation Committee of the Board

of Directors. The discretionary stock option grants under the Director Option Plans are made at an exercise price per share of no less than the "fair market value" (as defined under the Director Option Plans) of a share of Common Stock on the date the option is granted, and both discretionary stock option and restricted stock grants are generally subject to a vesting period determined by the Compensation Committee in accordance with the applicable Director Option Plan (under most circumstances, a three-year vesting period). The Compensation Committee may make additional discretionary grants to eligible directors, consistent with the terms of the Director Option Plans. The Board of Directors may amend, suspend or terminate the Director Option Plans at any time, except that prior approval of our stockholders must be obtained pursuant to applicable NASDAQ rules for any amendments that would constitute a material revision to any of the Director Option Plans, and certain changes require the consent of the affected grantees. In 2008, 375,000 options were granted to the non-employee members of the Board of Directors pursuant to the Director Option Plans. The stock options were granted on June 10, 2008 when the fair market value of the common stock was $1.19.

Transactions with Related Persons, Promoters and Certain Control Persons

Our Code of Business Conduct and Ethics requires that all employees, including officers and directors, disclose to the CFO the nature of any company business that is conducted with any related party of such employee, officer or director. If the transaction involves an officer or director, the CFO must bring the transaction to the attention of the Audit Committee, which must review and approve the transaction in writing in advance.

REPORT OF THE COMPENSATION COMMITTEE OF THE BOARD OF DIRECTORS

The following report has been submitted by the Compensation Committee of the Board of Directors:

The Compensation Committee of the Board of Directors has reviewed and discussed our Compensation Discussion and Analysis with management. Based on this review and discussion, the Compensation Committee recommended to the Board of Directors that the Compensation Discussion and Analysis be included in our definitive proxy statement on Schedule 14A for our 2009 annual meeting, which is incorporated by reference in our Annual Report on Form 10-K for the fiscal year ended December 31, 2008, each as filed with the SEC.

The foregoing report was submitted by the Compensation Committee of the Board and shall not be deemed to be "soliciting material" or to be "filed" with the SEC or subject to Regulation 14A promulgated by the SEC or Section 18 of the Exchange Act.

Respectfully submitted,

John V. Pollock, Chairman
Bruce R. Thaw
Daniel Peters

EQUITY COMPENSATION PLAN INFORMATION

The following table provides aggregate information as of December 31, 2008 about Common Stock that may be issued upon the exercise of options under all of our equity compensation plans, including the 1990 Plan, the 2000 Plan, the 2002 Plan, the 2004 Plan, the 2008 Plan and the 2007 Employee Stock Purchase Plan (the "ESPP").

	(a)	(b)	(c)
	Number of Securities to be Issued Upon Exercise of Outstanding Options	Weighted-Average Exercise Price of Outstanding Options	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column(a)
Equity compensation plans approved by security holders	4,899,768(1)	$4.45	2,524,911
Equity compensation plans not approved by security holders	1,289,563(2)	$3.95	187,670
Total	6,189,331	$4.35	2,712,581

(1) Consists of 996,500 shares of Common Stock underlying awards made pursuant to the 2002 Plan, 355,247 shares of Common Stock underlying awards made pursuant to the 2004 Plan and 3,548,021 shares of Common Stock underlying awards made pursuant to the 2008 Plan. The Board of Directors has delegated authority to the Compensation Committee to serve as administrator of the 2002 Plan, the 2004 Plan, the 2008 Plan and the ESPP.

(2) Consists of 189,600 shares of Common Stock underlying awards made pursuant to the 2000 Plan and 1,099,963 shares of Common Stock underlying options awarded to J. Michael French, CEO and President, as an inducement to enter into his employment contract with us in June 2008. Under the 2000 Plan, we are authorized to grant non-qualified stock options to purchase a maximum of 1,000,000 shares of Common Stock (subject to adjustment in the event of stock splits, stock dividends, recapitalization and other capital adjustments) to our employees, officers, directors and consultants. The Board of Directors has delegated authority to the Compensation Committee to serve as administrator of the 2000 Plan. The Compensation Committee has discretion as to the persons to be granted options, the number of shares subject to the options and the vesting schedules of the options. The 2000 Plan also provides that options shall be exercisable during a period of no more than ten years from the date of grant, and that the option exercise price shall be at least equal to 100% of the fair market value of the Common Stock on the date of grant.

SUBMISSION OF STOCKHOLDER PROPOSALS

We intend to hold our 2010 annual meeting of stockholders in June 2010. To be considered for inclusion in our notice of annual meeting and proxy statement for, and for presentation at, the 2009 annual meeting of our stockholders, a stockholder proposal must be received by the Corporate Secretary, MDRNA, Inc., 3830 Monte Villa Parkway, Bothell, Washington 98021, no later than December 21, 2009, and must otherwise comply with applicable rules and regulations of the SEC, including Rule 14a-8 of Regulation 14A under the Exchange Act.

Our Bylaws require advance notice of any proposal by a stockholder intended to be presented at an annual meeting that is not included in our notice of annual meeting and proxy statement because it was not timely submitted under the preceding paragraph, or made by or at the direction of any member of the Board of Directors, including any proposal for the nomination for election as a director. To be considered for such presentation at the 2010 annual meeting of our stockholders, any such stockholder proposal must be received by the Corporate Secretary, MDRNA, Inc., no earlier than January 20, 2010 and no later than March 6, 2010, and discretionary authority may be used if untimely submitted.

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Securities Exchange Act of 1934, as amended, requires our executive officers and directors, and persons who own more than 10% of a registered class of our equity securities ("Reporting Persons"), to file reports of ownership and changes in ownership with the SEC and with NASDAQ. Such persons are required by the SEC to furnish us with copies of all Section 16(a) forms they file.

Based solely on our review of the reports filed by Reporting Persons, and written representations from certain Reporting Persons that no other reports were required for those persons, we believe that, during the year ended December 31, 2008, the Reporting Persons met all applicable Section 16(a) filing requirements.

OTHER MATTERS

We will furnish without charge to each person whose proxy is being solicited, upon the written request of any such person, a copy of our Annual Report on Form 10-K for the fiscal year ended December 31, 2008, as filed with the SEC, including the financial statements. Requests for copies of such Annual Report on Form 10-K should be directed to Bruce R. York, Secretary, MDRNA, Inc., 3830 Monte Villa Parkway, Bothell, Washington 98021.

Our Board of Directors does not know of any other matters that are to be presented for action at the Annual Meeting. If any other matters are properly brought before the Annual Meeting or any adjournments thereof, the persons named in the enclosed proxy will have the discretionary authority to vote all proxies received with respect to such matters in accordance with their best judgment.

It is important that the proxies be returned promptly and that your shares are represented at the Annual Meeting. Stockholders are urged to mark, date, execute and promptly return the accompanying proxy card in the enclosed envelope.

By order of the Board of Directors,

Bruce R. York
Secretary

April 20, 2009
Bothell, Washington

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

Form 10-K

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

For the fiscal year ended December 31, 2008

Commission File Number 000-13789

MDRNA, INC.

(Exact name of registrant as specified in its charter)

Delaware	**11-2658569**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*
3830 Monte Villa Parkway Bothell, Washington	**98021**
(Address of principal executive offices)	*(Zip Code)*

Registrant's telephone number, including area code:
(425) 908-3600

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

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, $0.006 par value	The Nasdaq Stock Market LLC
Preferred Stock Purchase Rights, $0.01 par value	The Nasdaq Stock Market LLC

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

Title of Each Class
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 Exchange 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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K 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, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer", "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check One):

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

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

The aggregate market value of the voting stock held by non-affiliates of the Registrant was approximately $35.4 million as of June 30, 2008 based upon the closing price of $1.22 per share on the Nasdaq Global Market reported on June 30, 2008.

As of March 31, 2009, there were 34,831,459 shares of the Registrant's $0.006 par value common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's definitive proxy statement for the Registrant's fiscal year ended December 31, 2008 to be issued in conjunction with the Registrant's annual meeting of stockholders expected to be held on May 20, 2009 are incorporated by reference in Part III of this Form 10-K. The definitive proxy statement will be filed by the Registrant with the SEC not later than 120 days from the end of the Registrant's fiscal year ended December 31, 2008.

MDRNA, INC.

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Form 10-K

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K and the documents incorporated herein by reference contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. These forward-looking statements reflect our current views with respect to future events or our financial performance, and involve certain known and unknown risks, uncertainties and other factors, including those identified below, which may cause our or our industry's actual or future results, levels of activity, performance or achievements to differ materially from those expressed or implied by any forward-looking statements or from historical results. We intend such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 27A of the Securities Act and Section 21E of the Exchange Act. Forward-looking statements include information concerning our possible or assumed future results of operations and statements preceded by, followed by, or that include the words "may," "will," "could," "would," "should," "believe," "expect," "plan," "anticipate," "intend," "estimate," "predict," "potential" or similar expressions.

Forward-looking statements are inherently subject to risks and uncertainties, many of which we cannot predict with accuracy and some of which we might not even anticipate. Although we believe that the expectations reflected in such forward-looking statements are based upon reasonable assumptions at the time made, we can give no assurance that such expectations will be achieved. Future events and actual results, financial and otherwise, may differ materially from the results discussed in the forward-looking statements. Readers are cautioned not to place undue reliance on these forward-looking statements. We have no duty to update or revise any forward-looking statements after the date of this Annual Report on Form 10-K and the documents incorporated herein by reference or to conform them to actual results, new information, future events or otherwise.

The following factors, among others, could cause our or our industry's future results to differ materially from historical results or those anticipated:

- our ability to obtain additional funding for our company;
- the success or failure of our research and development programs or the programs of our partners;
- our efforts to collaborate with pharmaceutical and biotechnology companies to develop products;
- our ability to obtain governmental approvals, including product and patent approvals;
- our ability to attract and retain our key officers and employees;
- costs associated with any product liability claims, patent prosecution, patent infringement lawsuits and other lawsuits;
- our ability to maintain our listing on The NASDAQ Stock Market; and
- our ability to develop and commercialize our products before our competitors.

These factors are the important factors of which we are currently aware that could cause actual results, performance or achievements to differ materially from those expressed in any of our forward-looking statements. We operate in a continually changing business environment, and new risk factors emerge from time to time. Other unknown or unpredictable factors also could have material adverse effects on our future results, performance or achievements. We cannot assure you that projected results or events will be achieved or will occur.

PART I

ITEM 1. *Business.*

OVERVIEW & BUSINESS STRATEGY

We are a biotechnology company focused on the discovery, development and commercialization of pharmaceuticals based on RNA interference ("RNAi"). Our goal is to be the leader in RNAi therapeutics and improve human health through the development of RNAi-based compounds that provide superior therapeutic options for patients. Our team, of approximately 30 scientists, brings expertise in the discovery, evaluation and optimization of small interfering RNAs ("siRNAs") as well as siRNA delivery. We have the requisite experience in the areas of RNAi, molecular and cellular biology, lipid, oligonucleotide and peptide chemistry, pharmacology and bioinformatics necessary to discover and develop tailored RNAi-based compounds designed to elicit specific therapeutic effects on a target-by-target basis. Our infrastructure provides for pre-clinical scale manufacturing of both siRNAs and delivery materials, the comprehensive analysis and optimization of these compounds both individually and as drug candidates, and the filing of Investigational New Drug Applications. In addition to our own, internally developed technologies, we strategically in-license and further develop RNAi- and delivery-related technologies, forming a single integrated drug discovery platform. In order to protect our innovations, which encompass a broad platform of both siRNA and delivery technologies, and the eventual drug products that emerge from that platform, we will aggressively continue to build upon our extensive and enabling intellectual property ("IP") estate.

We have recently completed a major restructuring of our business to enable us to implement our business strategy. Our business strategy is two-fold. First, we strive to establish collaborations and strategic partnerships with pharmaceutical and biotechnology companies in the area of RNAi-based therapeutics to: (1) generate revenue and non-dilutive financing; (2) gain access to technical resources; and (3) validate our drug discovery platform. Secondly, we expect to advance our own pipeline of RNAi-based therapeutics as a foundation upon which to improve all aspects of our drug discovery platform and eventually to have the opportunity to commercialize a drug therapy. With respect to collaborations and strategic partnerships, we are currently focused on our Meroduplex and UsiRNA constructs, as well as our DiLA^2 (Di-Alkylated Amino Acid) and peptide delivery technologies. Typically, we would expect to collaborate with partners who can take a drug candidate through to commercialization by utilizing their late stage clinical development, regulatory, marketing and sales capabilities. We expect to structure our collaborative arrangements in such a manner to receive upfront license fees, research and development ("R&D") funding, milestone payments and royalties on commercial sales of products.

We believe we have established ourselves as a leading RNAi-based therapeutics company by leveraging our broad and proven expertise in RNAi science and delivery into an industry leading RNAi drug discovery platform, which is protected by a strong IP position and validated through licensing agreements with two large international pharmaceutical companies.

RECENT DEVELOPMENTS

Restructuring

We have recently completed a nine-month effort to restructure our business from a clinical stage intranasal delivery company to a pre-clinical RNAi drug discovery company. Since July 2008, we have accomplished the following: (1) reduced our workforce from approximately 75 employees in July 2008 to approximately 44 employees as of the date of this filing; (2) suspended all further clinical development of our intranasal programs in August 2008; (3) renegotiated and significantly reduced our long-term legacy liabilities; and (4) sold our intranasal contract manufacturing operations, in New York, to Par Pharmaceutical, Inc. ("Par") in March 2009. Our business model is now centered on the development of strategic R&D partnerships with international pharmaceutical companies as well as the pre-clinical and early stage clinical development of our own pipeline of RNAi-based therapeutics. Over the near and mid-term, we will focus on: (1) expanding our delivery technologies; (2) maintaining and expanding our IP estate; (3) continuing our cost containment efforts; and

(4) raising sufficient capital necessary to support and execute our business model. There can be no assurance that our efforts will produce acceptable results. This business model or any other future changes to the business may not prove successful in the short or long term due to a variety of factors, including competition, success of our research efforts or our ability to establish pharmaceutical partnerships, and may have a material impact on our financial results including a decline in our stock price.

GE Capital Corporation

In January 2009, we entered into a Loan and Security Agreement (the "Loan Agreement") with General Electric Capital Corporation ("GECC") pursuant to which we borrowed funds from GECC to partially finance the purchase of certain equipment leased to us by GECC. We borrowed approximately $5.5 million from GECC evidenced by a promissory note issued to GECC. No additional advances are available under the Loan Agreement. The outstanding principal balance bears interest in arrears from the date of the Loan Agreement until the loan is fully repaid at a fixed rate of 12.29% per year. The loan was paid down to $1.8 million in March 2009 at which time the remaining loan balance was re-amortized to be paid off in 12 equal monthly payments of approximately $160,000 each. There are acceleration clauses, which include additional payments to the principal based on the proceeds of certain transactions, which could result in the loan being repaid prior to April 2010. In addition, the loan requires a fee of 3% of the original balance to be paid at the time the loan is paid in full, subject to certain early payoff reductions. Substantially all of our assets now owned, including our intellectual property, secure our obligations under the Loan Agreement. We are not precluded, however, from entering into strategic licensing or partnership transactions by the Loan Agreement as evident by the Roche, Novartis and Par transactions all completed after January 2009.

Amylin

In February 2009, we announced an amendment to our 2006 Development and License Agreement (the "License Agreement") with Amylin Pharmaceuticals, Inc. ("Amylin") for the development of intranasal exenatide. The License Agreement was amended in January 2009 so that we would receive an accelerated $1.0 million milestone payment in January 2009 and in exchange, we agreed to reduce the aggregate amount of milestone and royalty payments that could be due to us from $89 million to $80 million. Additionally, we will no longer be responsible for any further development of the nasal spray formulation of intranasal exenatide or its manufacture.

Roche

In February 2009, we entered into an agreement with F. Hoffmann-La Roche Inc., a New Jersey corporation, and F. Hoffmann-La Roche Ltd., a Swiss corporation (collectively, "Roche"), pursuant to which we granted to Roche a worldwide, non-exclusive license to a portion of our drug discovery platform in consideration of a one-time, non-refundable licensing fee.

Novartis

In March 2009, we entered into an agreement with Novartis Institutes for BioMedical Research, Inc. ("Novartis"), pursuant to which we granted to Novartis a worldwide, non-exclusive license to our liposomal DilA^2-based siRNA delivery in consideration of a one-time, non-refundable fee of $7.25 million. Additionally, we entered into a separate agreement with Novartis to provide them with an exclusive period in which to negotiate a potential research and development collaboration as well as possible broader licensing rights related to our RNAi drug delivery platform.

Par

In April 2009, we announced that we had entered into an Asset Purchase Agreement with Par under which Par acquired our manufacturing facilities in Hauppauge, New York as well as our Abbreviated New Drug Application

("ANDA") for generic calcitonin-salmon nasal spray. Under the terms of the Asset Purchase Agreement, we received upfront cash and will receive profit sharing for five years on commercial sales of calcitonin. In addition, Par will assume our current supply and manufacturing obligations with QOL Medical, LLC ("QOL") for Nascobal® nasal spray, as well as all operating costs and leases associated with the facilities, including employment of our Hauppauge employees.

Reduction of Certain Obligations

Beginning in January 2009, we engaged in negotiations to reduce certain current and future obligations, including: (1) professional service fees due to our vendors incurred in the normal course of our business; (2) rent on our 3450 Monte Villa Parkway facility ("3450 Monte Villa") in Bothell, Washington, which we ceased to use in 2008; and (3) severance obligations due to former employees of the company.

In February and March 2009, we issued to eight of our vendors an aggregate of 1,364,285 shares of our common stock to settle amounts due to these vendors of approximately $0.6 million in total.

In March 2009, we entered into an amendment of our lease for 3450 Monte Villa, which reduces our lease obligations by approximately $1.9 million until July 2010. Under the terms of the amendment, we released both a cash deposit of $0.3 million and restricted cash under a letter of credit for $1.0 million to BioMed Realty ("BioMed"), the landlord, to be used by them to cover rent payments or as incentives to attract new tenants. As inducement to enter into the amendment, we issued 1.5 million shares of our common stock (the "Shares") to BioMed, and granted BioMed certain piggyback registration rights with respect to the Shares until the Shares may be sold publicly without restriction under the Securities Act. Because of this amendment, we will have no further rent obligations under the 3450 Monte Villa lease for the period from January 2009 until July 2010.

In March 2009, we negotiated amendments to our agreements regarding severance obligations to both the former President and to the former Chief Scientific Officer of the Company to reduce our overall cash obligations through September 2009. In particular, we entered into an amendment of our agreement regarding severance obligations with our former Chief Scientific Officer, pursuant to which we agreed to pay to him a reduced sum of $0.9 million and to issue to him 731,275 unregistered shares of our common stock, in full satisfaction of $1.7 million in severance obligations. These obligations were included in accrued payroll and employee benefits at December 31, 2008. We anticipate making the cash payment to the former executive in June 2009. We have also agreed to file a registration statement with the Securities and Exchange Commission to register the shares to be issued to the former executive on or prior to September 30, 2009.

RESEARCH AND DEVELOPMENT

Our research and development personnel are organized into functional teams that include pharmacology, toxicology, chemistry, formulation, cell biology, bioinformatics, process development and project management. We conduct our research and development activities at our headquarters in Bothell, Washington. Although we will continue to invest in research and development, we anticipate that our research and development costs will decrease in 2009 compared to prior years due to our restructuring from being a clinical-stage intranasal drug delivery company to becoming a pre-clinical RNAi drug discovery company.

RNAi — BASED THERAPEUTICS

Overview

We are developing novel technologies and therapeutics based on the Nobel Prize-winning discovery of RNAi. The discovery of RNAi, in 1988, has led not only to its widespread use in the research of biological

mechanisms and target validation but also to its application in down regulating the expression of certain disease-causing proteins found in multiple diseases such as inflammation, cancer, and metabolic dysfunction. RNAi-based therapeutics work through a naturally occurring process within cells that has the effect of reducing levels of messenger RNA (mRNA) required for the production of proteins. RNAi enables the targeting of disease at a genetic level and thus is highly specific to particular disease-causing proteins. At this time, several RNAi-based therapeutics are being evaluated in human clinical trials.

We have created a drug discovery platform, which combines novel and proprietary siRNA constructs with novel and proprietary siRNA delivery technologies, to develop RNAi-based therapeutics for the treatment of human diseases. In 2008, we demonstrated pre-clinical efficacy using both systemic and local routes of administration in rodent models of cancer and metabolic dysfunction. At present, we have focused our resources on liver cancer (hepatocellular carcinoma — HCC) as our sole therapeutic indication. We intend to build on our pre-clinical successes in 2008 as we move our HCC program toward early clinical studies. In addition, we will continue to increase the breadth and capabilities of our drug discovery platform including advancing additional proprietary delivery technologies. Our business model anticipates that the advancement of a therapeutic pipeline, either through partnerships or on our own, will provide proof of concept for our drug discovery platform as well as value for shareholders.

RNAi Drug Discovery Platform

We are making advances in both areas crucial to the development of RNAi-based therapeutics: siRNA constructs and siRNA delivery. Although each are equally important to the development of an effective therapeutic, the scientific challenges of siRNA delivery appear to be one of the most significant obstacles to the broad use of RNAi-based therapeutics in the treatment of human diseases.

siRNA Constructs. Our siRNA constructs include novel substitution chemistry (Unlocked Nucleobase Analogs, or "UNAs"), and a novel three-stranded construct ("Meroduplex"). Data generated so far by our scientists have shown impressive efficacy in cellular and *in vivo* models, and these proprietary technologies represent significant promise for the field and for our business prospects.

Our UsiRNAs (siRNAs that incorporate UNAs) have shown important advantages when compared to standard siRNA molecules and modifications, in terms of efficacy and safety. When UNAs are used to replace RNA bases in a siRNA, they "protect" the siRNA from enzymes in the body that destroy small siRNAs inside cells and circulating in the blood. Our data indicate that the appropriate substitution of UNA in place of RNA maintains the potent activity of our siRNAs, and could ultimately lead to effective protein down regulation with lower total doses of siRNA. UNAs also appear to "shield" the siRNA from the host's immune defense system by altering the properties of that siRNA so they are not detected by such surveillance mechanisms. By avoiding the immune defense system, the UsiRNAs may have a more desirable safety profile by minimizing cytokine activation, which is typically seen in *in vivo* studies of RNAi-based therapeutics.

Meroduplex constructs contain a nick or gap in the passenger strand (the strand that is not targeting the mRNA of the disease causing protein) of the siRNA thus creating a three-stranded siRNA construct. Meroduplex constructs show improved safety properties over standard siRNA constructs (those with two contiguous strands) with minimal or no changes in potency.

Delivery. Our lead delivery platform utilizes liposomal delivery technology and incorporates a novel and proprietary molecule we call DiLA^2 (Di-Alkylated Amino Acid). Our scientists designed this molecule based on amino acid (e.g., peptide/protein-based) chemistry. A DiLA^2-containing liposome has several potential advantages over other liposomes, such as: (1) a structure that may enable safe and natural metabolism by the body; (2) the ability to adjust liposome size, shape, and circulation time, to influence bio-distribution; and (3) the ability to attach molecules that can influence other delivery-related attributes such as targeting and cellular uptake. Our siRNA formulations using different members of the DiLA^2 family have demonstrated safe and effective delivery in rodent models using both local and systemic routes of administration.

In addition, we are using peptides for both the formation of stable siRNA nanoparticles as well as targeting moieties for siRNA molecules. Ongoing developments include the use of peptide technology to "condense" siRNAs into compact and potent nanoparticles; screening of our proprietary phage display library for targeting and cellular uptake peptides; and internal discovery and development of peptides and other compounds recognized as having targeting or cellular uptake properties. Our goal, in the use of such technologies, is to minimize the amount of final drug required to produce a therapeutic response by increasing the potency of the siRNA as well as directing more of the final drug to the intended site of action.

Our R&D efforts to date have demonstrated the efficacy of RNAi-based therapeutics, in cellular and animal models, against multiple gene and viral targets. We have refocused our pipeline efforts to a single indication in order to best advance our science and quickly demonstrate the value of our drug discovery platform. Based on the properties we have established for our DiLA^2 delivery vehicle, we believe HCC provides us with the greatest opportunity for success in pre-clinical studies and early-stage human clinical trials. Data we generate in the coming months in animal models of liver cancer will be used to make key decisions as we advance our liver cancer program. Various studies are in progress and we expect to have data in the third quarter of 2009. We are currently evaluating a number of gene targets for this program and are considering a formulation that includes multiple siRNAs. This approach, if taken, represents a rational approach to effectively addressing the well-known heterogeneity issues of this disease

Market for HCC Therapeutics

Hepatocellular carcinoma ("HCC"), or liver cancer, is a leading cause of cancer-related death worldwide, and more than 500,000 new patients are diagnosed with the disease every year. HCC shows clear geographical distribution, with the highest incidence in Asia and Africa. In the United States, approximately 21,000 new cases and 18,000 deaths were projected in 2008 and the incidence in the U.S. is expected to increase. The one year survival rates for HCC patients are very poor, regardless of the geographical location.

Infection with Hepatitis B (Asia and Africa) or C (western countries and Japan) is a leading factor in the development of HCC; alcoholic liver cirrhosis and aflatoxin B are also contributing factors. Potentially curative therapy involves surgical resection of afflicted portion of the liver or transplantation; only about 40% or fewer of patients in the western countries are candidates for surgical intervention and far fewer are candidates in Asia. For those that undergo resection, 50% to 80% will have recurrent disease within five years, most of these within two years after resection.

RNAi Partnering and Licensing Agreements

Our business strategy is to enter into collaborations and strategic partnerships with pharmaceutical and biotechnology companies to: (1) generate revenue and non-dilutive financing; (2) gain access to technical resources; and (3) validate our drug discovery platform. In addition to the above relationships with industry, we are focused on keeping our drug discovery platform at the cutting-edge of RNAi-based therapeutics. To maintain our leadership in the field, we have entered into, and will continue to pursue, relationships with academia, research foundations and others to advance both our intellectual property estate and our drug discovery platform.

Roche. In February 2009, we entered into an agreement with Roche pursuant to which we granted to Roche a worldwide, non-exclusive license to a portion of our technology platform, for the development of RNAi-based therapeutics, in consideration of the payment of a one-time, non-refundable licensing fee. We believe this agreement represents strong third-party validation of the siRNA construct aspect of our RNAi drug discovery platform.

Novartis. In March 2009, we entered into an agreement with Novartis, pursuant to which we granted to Novartis a worldwide, non-exclusive license to our DiLA^2-based siRNA delivery platform in consideration of the payment of a one-time, non-refundable fee of $7.25 million. Additionally, we and Novartis entered into a separate

agreement pursuant to which we provided to Novartis an exclusive period in which to negotiate a potential research and development collaboration and as well as possible broader licensing rights related to our RNAi drug delivery platform. We believe this agreement represents strong third-party validation of the siRNA delivery aspect of our RNAi drug discovery platform.

University of Michigan. In May 2008, we entered into an exclusive license agreement to IP from the University of Michigan covering cationic peptides for enhanced delivery of nucleic acids. These peptides have unique characteristics that we believe play an important role in improving the efficacy of delivery of RNAi-based therapeutics. We are currently using these peptides to create siRNA nanoparticles to enhance gene expression knockdown. Together with the DiLA^2 platform, these delivery peptides may improve the therapeutic potential of our drug candidates. We sublicensed this IP to Novartis on a nonexclusive basis in March 2009.

University of Helsinki. In June 2008, we entered into a collaboration agreement with Dr. Pirjo Laakkonen and the Biomedicum Helsinki to screen our patented phage display library, the Trp Cage library. The goal of the work is to discover and evaluate peptides for their potential to target particular tissues or organs for a given disease. We expect to use the peptides to improve and increase the delivery options for siRNA, including nanoparticle technology and the combination of novel peptides with our DiLA^2 platform.

Ribotask ApS. In October 2008, we announced that we had acquired the intellectual property related to Unlocked Non-nucleotide Analogs from Ribotask ApS, a privately held Danish company specializing in the development and synthesis of novel RNA chemistries. We believe that the technology will permit us to stabilize and provide drug-like properties to siRNAs in a novel and proprietary manner. This includes protection from enzymatic destruction and reduction, or elimination, of a cytokine response, two primary limitations for therapeutic application of siRNA; yet the appropriate substitution of UNA preserves high efficacy. These attributes have the potential for effective protein down regulation with lower total doses of siRNA while improving the safety profile.

Galenea. In February 2006, in connection with our RNAi therapeutics program targeting influenza and other respiratory diseases, we acquired RNAi IP and other RNAi technologies from Galenea Corp. ("Galenea"). The IP acquired from Galenea includes patent applications licensed from MIT that have early priority dates in the antiviral RNAi field focused on viral respiratory infections, including influenza, rhinovirus and other respiratory diseases. We also acquired Galenea's research and IP relating to pulmonary drug delivery technologies for siRNA. Additionally, we have assumed Galenea's awarded and pending grant applications from the National Institute of Allergy and Infectious Diseases ("NIAID"), a division of the NIH, and the Department of Defense to support the development of RNAi-based antiviral drugs. In September 2006, the National Institutes of Health, or NIH, awarded us a $1.9 million grant over a five-year period to prevent and treat influenza. Revenue recognized under this grant totaled $0.4 million for the year ended December 31, 2007 and $0.3 million for the year ended December 31, 2008. We are unlikely to put significant effort into influenza and other respiratory diseases in the near term given our focus on HCC.

City of Hope. In November 2006, we entered into a license with the Beckman Research Institute/City of Hope for exclusive and non-exclusive licenses to the Dicer-substrate RNAi IP developed there. In the first quarter of 2009, we terminated our license agreement with the City of Hope for technology and intellectual property related to Dicer substrates to focus on the development of UsiRNA and meroduplex constructs.

PROPRIETARY RIGHTS AND INTELLECTUAL PROPERTY

We rely primarily on patents and contractual obligations with employees and third parties to protect our proprietary rights. We intend to seek appropriate patent protection for our proprietary technologies by filing patent applications in the U.S. and certain foreign countries. As of March 31, 2009, we owned or controlled 20 issued or allowed U.S. patents and 66 pending U.S. patent applications, including provisional patent applications (of which four issued U.S. patents and 48 pending U.S. patent applications are RNAi-related). When appropriate, we also seek foreign patent protection and as of March 31, 2009, we had ten issued or allowed foreign patents, 189 pending foreign patent applications and 86 PCT applications (of which 103 pending foreign patent applications and 85 PCT applications are RNAi-related).

Our patents and patent applications are directed to compositions of matter, formulations, methods of use and/or methods of manufacturing, as appropriate. Our financial success will depend in large part on our ability to:

- obtain patent and other proprietary protection for our intellectual property;
- enforce and defend patents once obtained;
- operate without infringing the patents and proprietary rights of third parties; and
- preserve our trade secrets.

EMPLOYEES

As of March 31, 2009, we had 44 full-time employees, of which approximately 30 are engaged in R&D, and the others are engaged in support functions including finance, administration, information technology, human resources, business development, corporate and investor relations and legal affairs. None of our employees is covered by a collective bargaining agreement.

COMPETITION

Competition in the drug industry is intense. Currently, the key biotechnology competitor in the RNAi field is Alnylam Pharmaceuticals, Inc. ("Alnylam"), with whom we compete directly in the area of proprietary siRNA constructs. Besides Alnylam, other smaller biotechnology companies in the space include Calando Pharmaceuticals, Inc., Dicerna Pharmaceuticals, Inc., Intradigm Corporation, Novosom AG, Quark Pharmaceuticals, Inc., RXi Pharmaceuticals Corporation, Santaris Pharma A/S, Silence Therapeutics plc, Tacere Therapeutics, Inc., and Tekmira Pharmaceutical Corp. Besides the biotechnology companies, there are multiple large international pharmaceutical companies with internal RNAi R&D programs including, but not limited to, AstraZeneca, GlaxoSmithKline plc, Merck & Co., Novartis, Pfizer, Inc. and Roche. We will continue to look for opportunities for strategic relationships with companies and institutions in various areas of the RNAi field.

Universities and public and private research institutions are also potential competitors. While these organizations primarily have educational objectives, they may develop proprietary technologies related to the drug delivery field or secure protection that we may need for development of our technologies and products. We may attempt to license one or more of these proprietary technologies, but these licenses may not be available to us on acceptable terms, if at all.

Some of our competitors have substantially greater resources, research and development resources and experience, manufacturing capabilities, regulatory expertise, sales and marketing resources, and established collaborative arrangements with pharmaceutical companies. Our competitors, either alone or with their collaboration partners, may succeed in developing product candidates that are similar or preferable in effectiveness, safety, cost and ease of commercialization, and our competitors may obtain IP protection or commercialize competitive products sooner than we do.

LEGACY INTRANASAL TECHNOLOGIES AND THERAPEUTICS

Our efforts to divest and monetize our legacy nasal drug delivery programs and capabilities have produced significant progress over the last several months, including the following:

Exenatide. In February 2009, we announced an amendment to our 2006 License Agreement Amylin for the development of intranasal exenatide. The License Agreement was amended in January 2009 so that we would receive an accelerated $1.0 million milestone payment in January 2009 and in exchange, we agreed to reduce the aggregate amount of milestone and royalty payments that could be due to us from $89 million to $80 million. Additionally, we will no longer be responsible for any further development of the nasal spray formulation of intranasal exenatide or its manufacture.

Calcitonin. In October 2004, we entered into a license and supply agreement with Par for the exclusive U.S. distribution and marketing rights to a generic calcitonin-salmon nasal spray for the treatment of osteoporosis, which received tentative FDA approval in December 2008. In April 2009, we announced that we had entered into an Asset Purchase Agreement with Par under which Par acquired our manufacturing facilities in Hauppauge, New York as well as our ANDA for generic calcitonin-salmon nasal spray. Under the terms of the Asset Purchase Agreement, we received upfront cash and will receive profit sharing for five years on commercial sales of calcitonin. In addition, Par will assume all of our current supply and manufacturing obligations with QOL for Nascobal® nasal spray, as well as all operating costs and leases associated with the facilities, including employment of our Hauppauge employees.

Other intranasal programs. We engaged Adjuvant Global Advisors, LLC to identify potential licensing opportunities, in Asia and Europe, for our intranasal delivery clinical programs including: a rapid-acting nasal insulin product that has completed a Phase 2 clinical trial in patients with diabetes; a product (PTH(1-34)) for the treatment of osteoporosis that has completed a Phase 2 clinical trial in patients with osteoporosis; and a product (carbetocin) for the treatment of autism that has completed a Phase 1 clinical trial.

Other Agreements

QOL Medical LLC. In October 2005, we entered into a supply agreement with QOL (the "QOL Agreement") under which, subject to certain limitations, we are obligated to manufacture and supply, and QOL is obligated to purchase from us, all of QOL's requirements for Nascobal® brand products for vitamin B12 (cyanocobalamin) deficiency in patients with pernicious anemia, Crohn's Disease, HIV/ AIDS and multiple sclerosis. Under the terms of the QOL Agreement we received a $2.0 million upfront fee which is being recognized ratably over the five-year life of the QOL Agreement. QOL purchased Nascobal® brand products from Questcor Pharmaceuticals ("Questcor") in October 2005 and also assumed Questcor's obligation to pay us $2.0 million on the issuance by the U.S. Patent and Trademark Office of a patent for Nascobal® nasal spray. This payment became due and was received and recognized as revenue in the second quarter of 2007. We recognized product revenue relating to the supply agreement of approximately $0.3 million and $1.0 million in the years ended December 31, 2007 and 2008, respectively. In April 2009, we announced that we had entered into an Asset Purchase Agreement with Par under which Par will acquire our manufacturing facilities in Hauppauge, New York. As part of that transaction, Par will assume all of our current supply and manufacturing obligations with QOL for Nascobal® nasal spray. We anticipate recognizing the remaining $0.6 million in deferred revenue related to the supply agreement in the first quarter of 2009.

MANUFACTURING

Until March 2009, we formulated, manufactured and packaged our intranasal products in commercial manufacturing facilities in Hauppauge, New York. In April 2009, we announced that we had entered into an Asset Purchase Agreement with Par under which Par acquired these manufacturing facilities as well as our ANDA for generic calcitonin-salmon nasal spray. Under the terms of the Asset Purchase Agreement, we received upfront cash and will receive profit sharing for five years on commercial sales of calcitonin. In addition, Par will assume all of our current supply and manufacturing obligations with QOL for Nascobal® spray, as well as all operating costs and leases associated with the facilities, including employment of our Hauppauge employees.

GOVERNMENT REGULATION

Government authorities in the U.S. and other countries extensively regulate the research, development, testing, manufacture, labeling, promotion, advertising, distribution and marketing, among other things, of drugs and biologic products. All of our product candidates are either drug or biologic products.

In the U.S., the FDA regulates drug and biologic products under the Federal Food, Drug and Cosmetic Act (the "FDCA"), and other laws, including, in the case of biologics, the Public Health Service Act. Failure to

comply with applicable U.S. requirements, both before and after approval, may subject us to administrative and judicial sanctions, such as a delay in approving or refusal by the FDA to approve pending applications, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, and/or criminal prosecutions.

Before our drug and biologic products are marketed in the U.S., the FDA must approve each drug or biologic. The steps required before a novel drug or a biologic product is approved by the FDA include: (1) pre-clinical laboratory, animal, and formulation tests; (2) submission to the FDA of an Investigational New Drug Application ("IND") for human clinical testing, which must become effective before human clinical trials may begin; (3) adequate and well-controlled clinical trials to establish the safety and effectiveness of the product for each indication for which approval is sought; (4) submission to the FDA of an New Drug Application ("NDA"), in the case of a drug product, or a Biologics License Application ("BLA"), in the case of a biologic product; (5) satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the drug or biologic product is produced to assess compliance with cGMP; and FDA review and finally (6) approval of an NDA or BLA.

Pre-clinical tests include laboratory evaluations of product chemistry, toxicity and formulation, as well as animal studies. The results of the pre-clinical tests, together with manufacturing information and analytical data, are submitted to the FDA as part of an IND, which must become effective before human clinical trials may begin. An IND will automatically become effective 30 days after receipt by the FDA, unless before that time the FDA raises concerns or questions, such as the conduct of the trials as outlined in the IND. In such a case, the IND sponsor and the FDA must resolve any outstanding FDA concerns or questions before clinical trials can proceed. There can be no assurance that submission of an IND will result in FDA authorization to commence clinical trials. Once an IND is in effect, each clinical trial to be conducted under the IND must be submitted to the FDA, which may or may not allow the trial to proceed.

Clinical trials involve the administration of the investigational drug to human subjects under the supervision of qualified physician-investigators and healthcare personnel. Clinical trials are typically conducted in three defined phases, but the phases may overlap or be combined. Phase 1 usually involves the initial administration of the investigational drug or biologic product to healthy individuals to evaluate its safety, dosage tolerance and pharmacodynamics. Phase 2 usually involves trials in a limited patient population, with the disease or condition for which the test material is being developed, to evaluate dosage tolerance and appropriate dosage; identify possible adverse side effects and safety risks; and preliminarily evaluate the effectiveness of the drug or biologic for specific indications. Phase 3 trials usually further evaluate effectiveness and test further for safety by administering the drug or biologic candidate in its final form in an expanded patient population. Our product development partners, the FDA, or we may suspend clinical trials at any time on various grounds, including any situation where we believe that patients are being exposed to an unacceptable health risk or are obtaining no medical benefit from the test material.

Assuming successful completion of the required clinical testing, the results of the pre-clinical trials and the clinical trials, together with other detailed information, including information on the manufacture and composition of the product, are submitted to the FDA in the form of an NDA or BLA requesting approval to market the product for one or more indications. Before approving an application, the FDA will usually inspect the facilities where the product is manufactured, and will not approve the product unless cGMP compliance is satisfactory. If the FDA determines the NDA or BLA is not acceptable, the FDA may outline the deficiencies in the NDA or BLA and often will request additional information. If the FDA approves the NDA or BLA, certain changes to the approved product, such as adding new indications, manufacturing changes or additional labeling claims are subject to further FDA review and approval. The testing and approval process requires substantial time, effort and financial resources, and we cannot be sure that any approval will be granted on a timely basis, if at all.

Some of our product candidates may be eligible for submission of applications for approval that require less information than the NDAs described above. The FDA may approve an ANDA if the product is the same in important respects as a listed drug, such as a drug with an effective FDA approval, or the FDA has declared it suitable for an ANDA submission. In these situations, applicants must submit studies showing that the product is bioequivalent to the listed drug, meaning that the rate and extent of absorption of the drug does not show a significant difference from the rate and extent of absorption of the listed drug. Conducting bioequivalence studies is generally less time-consuming and costly than conducting pre-clinical and clinical trials necessary to support an NDA.

The Food, Drug and Cosmetics Act ("FDCA") provides that the FDA can delay ANDA reviews and/or approvals in certain circumstances. For example, the holder of the NDA for the listed drug may be entitled to a period of market exclusivity, during which the FDA will not approve, and may not even review, the ANDA. The regulations governing marketing exclusivity and patent protection are complex, and until the FDA acts on one or more ANDA applications, we may not know the disposition of our ANDA submission.

In addition, regardless of the type of approval, we and our partners are required to comply with a number of FDA requirements both before and after approval. For example, we are required to report certain adverse reactions and production problems, if any, to the FDA, and to comply with certain requirements concerning advertising and promotion for our products. In addition, quality control and manufacturing procedures must continue to conform to cGMP after approval, and the FDA periodically inspects manufacturing facilities to assess compliance with cGMP. Accordingly, manufacturers must continue to expend time, money and effort in all areas of regulatory compliance, including production and quality control to comply with cGMP. In addition, discovery of problems, such as safety problems, may result in changes in labeling or restrictions on a product manufacturer or NDA/BLA holder, including removal of the product from the market.

PRODUCT LIABILITY

We currently have product liability insurance coverage for our legacy intranasal products in the amount of $10 million per occurrence and a $10 million aggregate limitation, subject to a deductible of $25,000 per occurrence. As per our agreement with Par, we are required to maintain such coverage at a $5 million level until February 2011. This coverage is in full compliance with current and/or legacy contracts and any future product liability limits will be addressed as needed. We also have purchased extended reporting period coverage, for which we have already paid in full, with respect to products tested, manufactured or marketed prior to December 1, 2008, and only for claims reported until March 1, 2010, in the amount of $20.0 million per occurrence and a $20.0 million aggregate limitation, subject to a deductible of $25,000 per occurrence.

AVAILABLE INFORMATION

We are a reporting company and file annual, quarterly and special reports, proxy statements and other information with the SEC. You may read and copy these reports, proxy statements and other information at the SEC's Public Reference Room at 100 F Street N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 or e-mail the SEC at publicinfo@sec.gov for more information on the operation of the public reference room. Our SEC filings are also available at the SEC's website at http://www.sec.gov. Our Internet address is http://www.mdrnainc.com. There we make available, free of charge, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and any amendments to those reports, as soon as reasonably practicable after we electronically file such material with, or furnish such material to, the SEC.

ITEM 1B. *Unresolved Staff Comments.*

None.

ITEM 2. ***Properties.***

The following is a summary of our properties and related lease obligations. We do not own any real property. We believe that these facilities are sufficient to support our research and development, operational, manufacturing and administrative needs under our current operating plan.

3830 Monte Villa Parkway, Bothell, Washington. We lease approximately 63,200 square feet of research and development and office space at our corporate headquarters in Bothell, Washington. This lease is scheduled to expire in February 2016 and has a five-year renewal option.

3450 Monte Villa Parkway, Bothell, Washington. We lease approximately 51,000 square feet of research and development, manufacturing and office space in a facility adjacent to our Bothell, Washington headquarters. This lease is scheduled to expire in January 2016. We ceased to use this facility in September 2008.

In March 2009, we entered into an amendment of our lease for 3450 Monte Villa, which will reduce our future cash expenditures related to this lease by releasing our cash deposit of $0.3 million and restricted cash under the letter of credit for $1.0 million. The landlord may draw upon the cash deposit or the letter of credit to cover payments of rent or as incentives to attract tenants without the need for notice. Under these terms, we have no obligation to pay rent until July 1, 2010, upon which date, and with accrual commencing as of such date, our obligation to pay rent and operating expenses will resume in accordance with the terms of the lease.

45 Davids Drive, and 80 Davids Drive, Hauppauge, New York. We formerly leased approximately 10,000 square feet of manufacturing space and approximately 4,000 square feet of warehouse space in Hauppauge, New York. These leases, which were scheduled to expire in June 2010, were assumed by Par as a part of the Asset Purchase Agreement announced on April 1, 2009.

ITEM 3. ***Legal Proceedings.***

We are subject to various legal proceedings and claims that arise in the ordinary course of business. Company management currently believes that resolution of such legal matters will not have a material adverse impact on our financial position, results of operations or cash flows.

ITEM 4. ***Submission of Matters to a Vote of Security Holders.***

None.

PART II

ITEM 5. ***Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.***

Market Information

Our common stock is listed on the Nasdaq Global Market under the symbol "MRNA." The following table sets forth, for each of the quarterly periods indicated, the range of high and low sales prices of our common stock, as reported on the Nasdaq Global Market. These prices do not include retail markups, markdowns or commissions.

Quarter	High	Low
2007:		
First Quarter	$15.39	$ 9.50
Second Quarter	14.29	10.66
Third Quarter	17.05	10.69
Fourth Quarter	16.07	3.34
2008:		
First Quarter	$ 3.94	$ 1.91
Second Quarter	2.85	1.11
Third Quarter	1.25	0.38
Fourth Quarter	0.85	0.14
2009:		
First Quarter	$ 0.65	$ 0.21
Second Quarter	$ 0.82	$ 0.64

On April 3, 2009, the closing price of our common stock reported on the Nasdaq Global Market was $0.72 per share.

Holders

As of March 27, 2009, there were approximately 13,000 beneficial holders of record of our common stock.

Dividends

Payment of dividends and the amount of dividends depend on matters deemed relevant by our Board, such as our results of operations, financial condition, cash requirements, future prospects and any limitations imposed by law, credit agreements and debt securities. To date, we have not paid any cash dividends or stock dividends on our common stock. In addition, we currently anticipate that we will not pay any cash dividends in the foreseeable future and intend to use retained earnings, if any, for working capital purposes. The Loan and Security Agreement that we entered into in January 2009 with GECC restricts us from declaring or paying any dividends without the prior written consent of GECC.

Unregistered Sales of Equity Securities

None.

ITEM 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations.*

Overview

Statements contained herein that are not historical fact may be forward-looking statements within the meaning of Section 27A of the Securities Act, and Section 21E of the Exchange Act, that are subject to a variety of risks and uncertainties. There are a number of important factors that could cause actual results to differ materially from those projected or suggested in any forward-looking statement made by us. These factors include, but are not limited to: (i) the ability of our company to obtain additional funding; (ii) the ability of our company to attract and/or maintain manufacturing, research, development and commercialization partners; (iii) the ability of our company and/or a partner to successfully complete product research and development, including pre-clinical and clinical studies and commercialization; (iv) the ability or our company and/or a partner to obtain required governmental approvals, including product and patent approvals; and (v) the ability of our company and/or a partner to develop and commercialize products that can compete favorably with those of competitors. In addition, significant fluctuations in annual or quarterly results may occur as a result of the timing of milestone payments, the recognition of revenue from milestone payments and other sources not related to product sales to third parties, and the timing of costs and expenses related to our research and development programs. Additional factors that would cause actual results to differ materially from those projected or suggested in any forward-looking statements are contained in our filings with the SEC, including those factors discussed under the caption "Forward-Looking Statements" in this Report, which we urge investors to consider. We undertake no obligation to publicly release revisions in such forward-looking statements that may be made to reflect events or circumstances after the date hereof or to reflect the occurrences of unanticipated events or circumstances, except as otherwise required by securities and other applicable laws.

The following management's discussion and analysis is intended to provide information necessary to understand our audited consolidated financial statements and highlight certain other information which, in the opinion of management, will enhance a reader's understanding of our financial condition, changes in financial condition and results of operations. In particular, the discussion is intended to provide an analysis of significant trends and material changes in our financial position and operating results of our business during the year ended December 31, 2008 as compared to the year ended December 31, 2007, and the year ended December 31, 2007 as compared to the year ended December 31, 2006. This Item is organized as follows:

- The section entitled "Background" describes our principal operational activities and summarizes significant trends and developments in our business and in our industry.
- "Critical Accounting Policies and Estimates" discusses our most critical accounting policies.
- "Recently Issued Accounting Standards" discusses new accounting standards.
- "Consolidated Results of Operations" discusses the primary factors that are likely to contribute to significant variability of our results of operations for the year ended December 31, 2008 as compared to the year ended December 31, 2007, and the year ended December 31, 2007 as compared to the year ended December 31, 2006.
- "Liquidity, Capital Resources and Going Concern" discusses our cash requirements, sources and uses of cash and liquidity, including going concern qualifications.
- "Off-Balance Sheet Arrangements" indicates that we did not have any off-balance sheet arrangements as of December 31, 2008.

In addition, Item 9A "Controls and Procedures" contains management's assessment of our internal controls over financial reporting as of December 31, 2008.

Background

We are a biotechnology company focused on the discovery, development and commercialization of pharmaceuticals based on RNA interference ("RNAi"). Our goal is to be the leader in RNAi therapeutics and

improve human health through the development of RNAi-based compounds that provide superior therapeutic options for patients. Our team, of approximately 30 scientists, brings expertise in the discovery, evaluation and optimization of small interfering RNAs ("siRNAs") as well as siRNA delivery. We have the requisite experience in the areas of RNAi, molecular and cellular biology, lipid, oligonucleotide and peptide chemistry, pharmacology and bioinformatics necessary to discover and develop tailored RNAi-based compounds designed to elicit specific therapeutic effects on a target-by-target basis. Our infrastructure provides for pre-clinical scale manufacturing of both siRNAs and delivery materials, the comprehensive analysis and optimization of these compounds both individually and as drug candidates, and the filing of Investigational New Drug Applications. In addition to our own, internally developed technologies, we strategically in-license and further develop RNAi- and delivery-related technologies, forming a single integrated drug discovery platform. In order to protect our innovations, which encompass a broad platform of both siRNA and delivery technologies, and the eventual drug products that emerge from that platform, we will aggressively continue to build upon our extensive and enabling intellectual property ("IP") estate.

We believe we have established ourselves as a leading RNAi-based thereapeutics company by leveraging our broad and proven expertise in RNAi science and delivery into an industry leading RNAi drug discovery platform, which is protected by a strong IP position and validated through licensing agreements with two large international pharmaceutical companies.

We have recently completed a nine-month effort to restructure our business from a clinical stage intranasal delivery company to a pre-clinical RNAi drug discovery company. Since July 2008, we have accomplished the following: (1) reduced our workforce from approximately 75 employees in July 2008 to approximately 44 employees as of the date of this filing; (2) suspended all further clinical development of our intranasal programs in August 2008; (3) renegotiated and significantly reduced our long-term legacy liabilities; and (4) sold our intranasal contract manufacturing operations, in New York, to Par Pharmaceutical, Inc. ("Par") in March 2009. Our business model is now centered on the development of strategic R&D partnerships with international pharmaceutical companies as well as the pre-clinical and early stage clinical development of our own pipeline of RNAi-based therapeutics. Over the near and mid-term, we will focus on: (1) expanding our delivery technologies; (2) maintaining and expanding our IP estate; (3) continuing our cost containment efforts; and (4) raising sufficient capital necessary to support and execute our business model. There can be no assurance that our efforts will produce acceptable results. This business model or any other future changes to the business may not prove successful in the short or long term due to a variety of factors, including competition, success of our research efforts or our ability to establish pharmaceutical partnerships, and may have a material impact on our financial results including a decline in our stock price.

We are developing novel technologies and therapeutics based on the Nobel Prize-winning discovery of RNAi. The discovery of RNAi, in 1988, has led not only to its widespread use in the research of biological mechanisms and target validation but also to its application in down regulating the expression of certain disease-causing proteins found in multiple diseases such as inflammation, cancer, and metabolic dysfunction. RNAi-based therapeutics work through a naturally occurring process within cells that has the effect of reducing levels of messenger RNA (mRNA) required for the production of proteins. RNAi enables the targeting of disease at a genetic level and thus is highly specific to particular disease-causing proteins. At this time, several RNAi-based therapeutics are being evaluated in human clinical trials.

We have created a drug discovery platform, which combines novel and proprietary siRNA constructs with novel and proprietary siRNA delivery technologies, to develop RNAi-based therapeutics for the treatment of human diseases. In 2008, we demonstrated pre-clinical efficacy using both systemic and local routes of administration in rodent models of cancer and metabolic dysfunction. At present, we have focused our resources on liver cancer (hepatocellular carcinoma — HCC) as our sole therapeutic indication. We intend to build on our pre-clinical successes in 2008 as we move our HCC program toward early clinical studies. In addition, we will continue to increase the breadth and capabilities of our drug discovery platform including advancing additional proprietary delivery technologies. Our business model anticipates that the advancement of a therapeutic pipeline,

either through partnerships or on our own, will provide proof of concept for our drug discovery platform as well as value for shareholders.

We will continue to focus our R&D efforts on RNAi-based therapeutics, and continue to develop and expand our RNAi technologies and IP estate. As of March 31, 2009, we owned or controlled 4 issued or allowed U.S. patents and 48 pending U.S. patent applications, including provisional patent applications, to protect our RNAi proprietary technologies.

As of December 31, 2008, we had an accumulated deficit of $254.1 million, and we expect additional losses in the future as we continue our research and development activities. Our collaboration efforts are expected to generate license fees, non refundable upfront payments, R&D funding, milestone payments, patent- and product-based royalties and profit sharing. Because of our collaborations and other agreements, we recognized revenue of approximately $18.1 million in 2007 and $2.6 million in 2008. In 2007, this revenue related primarily to recognition of license and research fees related to P&G, recognition of deferred revenue related to the $2.0 million payment received in 2005 from QOL and revenue from other collaboration or feasibility partners. In 2008, this revenue was primarily from product sales, recognition of deferred revenue related to the $2.0 million payment received in 2005 from QOL and revenue from other collaboration or feasibility partners. We have received an opinion from our independent registered public accounting firm indicating the substantial doubt about our ability to continue as a going concern due to our significant recurring operating losses and negative cash flows.

Critical Accounting Policies and Estimates

We prepare our consolidated financial statements in conformity with accounting principles generally accepted in the U.S. As such, we are required to make certain estimates, judgments and assumptions that we believe are reasonable based upon the information available. These estimates and assumptions affect the reported amounts of assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenue and expenses during the periods presented. Actual results could differ significantly from those estimates under different assumptions and conditions. We believe that the following discussion addresses our most critical accounting estimates, which are those that we believe are most important to the portrayal of our financial condition and results of operations and which require our most difficult and subjective judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. Other key estimates and assumptions that affect reported amounts and disclosures include depreciation and amortization, inventory reserves, asset impairments, restructuring accruals, requirements for and computation of allowances for doubtful accounts, allowances for product returns and expense accruals. We also have other policies that we consider key accounting policies; however, these policies do not meet the definition of critical accounting estimates because they do not generally require us to make estimates or judgments that are difficult or subjective.

Revenue Recognition

Our revenue recognition policies are based on the requirements of SEC Staff Accounting Bulletin (SAB) No. 104 "Revenue Recognition," the provisions of Emerging Issues Task Force ("EITF") Issue No. 00-21, "Revenue Arrangements with Multiple Deliverables," ("EITF 00-21") and the guidance set forth in EITF Issue No. 01-14, "Income Statement Characterization of Reimbursements Received for "Out-of-Pocket" Expenses Incurred" ("EITF 01-14"). Revenue is recognized when there is persuasive evidence that an arrangement exists, delivery has occurred, collectability is reasonably assured, and fees are fixed or determinable. Deferred revenue expected to be realized within the next 12 months is classified as current.

Substantially all of our revenues are generated from research and development collaborations and licensing arrangements with partners that may involve multiple deliverables. For multiple-deliverable arrangements, judgment is required to evaluate, using the framework outlined in EITF 00-21, whether (a) an arrangement involving multiple deliverables contains more than one unit of accounting, and (b) how the arrangement consideration should be measured and allocated to the separate units of accounting in the arrangement. Our research and development collaborations may include upfront non-refundable payments, development milestone

payments, R&D Funding, patent-based or product sale royalties, and product sales. In addition, we may receive revenues from licensing arrangements and, to a lesser extent, from government grants. For each separate unit of accounting, we have determined that the delivered item has value to the customer on a stand-alone basis, we have objective and reliable evidence of fair value using available internal evidence for the undelivered item(s) and our arrangements generally do not contain a general right of return relative to the delivered item. In accordance with the guidance in EITF 00-21, we use the residual method to allocate the arrangement consideration when we do not have an objective fair value for a delivered item. Under the residual method, the amount of consideration allocated to the delivered item equals the total arrangement consideration less the aggregate fair value of the undelivered items.

Revenue from research and development collaborations is recorded when earned based on the specific terms of the contracts. Upfront nonrefundable payments, where we are providing continuing services related to a research and development effort, are deferred and recognized as revenue over the collaboration period. Upfront non-refundable payments, where we are not providing any continuing services as in the case of a license to our IP, are recognized when delivery of the license has occurred. The ability to estimate the total research and development effort and costs can vary significantly for each contract due to the inherent complexities and uncertainties of drug research and development. The estimated period of time over which we recognize certain revenues is based upon structured detailed project plans completed by our project managers, who meet with scientists and collaborative counterparts on a regular basis and schedule the key project activities and resources including headcount, facilities and equipment and budgets. These periods generally end on projected milestone dates typically associated with the clinical stage of drug development, i.e. filing of an IND, initiation of a Phase 1 human clinical trial or filing of an NDA. As drug candidates and drug compounds move through the research and development process, it is necessary to revise these estimates to consider changes to the project plan, portions of which may be outside of our control. The impact on revenue of changes in our estimates and the timing thereof is recognized prospectively over the remaining estimated development period.

We typically do not disclose the specific project planning details of a research and development collaboration for competitive reasons and due to confidentiality clauses in our contracts. Therefore, the extension of or decrease in a particular project time-line will affect our estimates of revenue recognition. As an illustrative example only, a one-year increase in a three-year estimated research and development collaboration to four years, occurring at the end of year one, for a $10.0 million non-refundable upfront payment would reduce the annual revenue recognized from approximately $3.3 million in the first year to approximately $2.2 million in each of the remaining three years. Other factors we consider that could impact the estimated time period include FDA actions, clinical trial delays due to difficulties in patient enrollment, delays in the availability of supplies, personnel or facility constraints or changes in direction from our collaborative partners. It is difficult to predict future changes in these elements.

Milestone payments typically represent nonrefundable payments to be received in conjunction with the achievement of a specific event identified in the contract, such as initiation or completion of specified clinical development activities or specific regulatory actions such as the filing of an IND. We believe a milestone payment represents the culmination of a distinct earnings process when it is not associated with ongoing research, development or other performance on our part and it is substantive in nature. We recognize such milestone payments as revenue when they become due and collection is reasonably assured. When a milestone payment does not represent the culmination of a distinct earnings process, revenue is recognized when the earnings process is deemed to be complete or in a manner similar to that of an upfront non-refundable payment where we are providing continuing services.

Revenue from R&D funding is generally received for services performed under research and development collaboration agreements and is recognized as services are performed. Payments received in excess of amounts earned are recorded as deferred revenue. Under the guidance of EITF 01-14, reimbursements received for direct out-of-pocket expenses related to contract R&D costs are recorded as revenue in the consolidated statements of operations rather than as a reduction in expenses. Reimbursements received for direct out-of-pocket expenses related to contract R&D for the years ended December 31, 2007 and 2008 were not material.

Royalty revenue is generally recognized at the time of product sale by the licensee.

Government grant revenue is recognized during the period qualifying expenses are incurred for the research that is performed as set forth under the terms of the grant award agreements, and when there is reasonable assurance that we will comply with the terms of the grant and that the grant will be received.

Product revenue is recognized when the manufactured goods are shipped to the purchaser and title has transferred under our contracts where there is no right of return. Provision for potential product returns has been made on a historical trends basis. To date, we have not experienced any significant returns from our customers.

Research and Development Costs

All R&D costs are charged to operations as incurred. Our R&D expenses consist of costs incurred for internal and external R&D and include direct and research-related overhead expenses. We have recognized clinical trial expenses, which have been included in R&D expenses, based on a variety of factors, including actual and estimated labor hours, clinical site initiation activities, patient enrollment rates, estimates of external costs and other activity-based factors. We believe this method best approximates the efforts we have expended on a clinical trial with the expenses recorded. We have adjusted our rate of clinical expense recognition if actual results differ from our estimates.

The ability to estimate total development effort and costs can vary significantly for each compound due to the inherent complexities and uncertainties of drug development.

When we acquire intellectual properties from others, the purchase price is allocated, as applicable, between in-process research and development ("IPR&D"), other identifiable intangible assets and net tangible assets. Our policy defines IPR&D as the value assigned to those projects for which the related products have not yet reached technological feasibility and have no alternative future use. Determining the portion of the purchase price allocated to IPR&D requires us to make significant estimates. The amount of the purchase price allocated to IPR&D is determined by estimating the future cash flows of each project of technology and discounting the net cash flows back to their present values. The discount rate used is determined at the acquisition date, in accordance with accepted valuation methods, and includes consideration of the assessed risk of the project not being developed to a stage of commercial feasibility. Amounts recorded as IPR&D are charged to R&D expense upon acquisition.

Stock-Based Compensation

We use the Black-Scholes option pricing model as our method of valuation for stock-based awards. Stock-based compensation expense is based on the value of the portion of the stock-based award that will vest during the period, adjusted for expected forfeitures. Our determination of the fair value of stock-based awards on the date of grant using an option pricing model is affected by our stock price as well as assumptions regarding a number of highly complex and subjective variables. These variables include, but are not limited to, the expected life of the award, expected stock price volatility over the term of the award and historical and projected exercise behaviors. The estimation of stock-based awards that will ultimately vest requires judgment, and to the extent actual or updated results differ from our current estimates, such amounts will be recorded in the period estimates are revised. Although the fair value of stock-based awards is determined in accordance with SFAS No. 123, (revised 2004) "Share Based Payment ("SFAS 123R"), and Staff Accounting Bulletin No. 107, "Share Based Payment" ("SAB 107"), the Black-Scholes option pricing model requires the input of highly subjective assumptions, and other reasonable assumptions could provide differing results.

For example, during 2008, approximately 6.3 million options were granted at a weighted average exercise price of $2.32 and weighted average fair value of $0.80 as determined by the Black-Scholes option pricing model. The shares underlying these options represent a total fair market value of approximately $2.1 million based upon the December 31, 2008 fair market value of $0.34. The following table illustrates the effect of

changing significant variables on the estimated fair value using the Black-Scholes option pricing model of our options granted during 2008. In each analysis, the remaining variables are held constant:

	- One Year	Current Estimate of Expected Term	+ One Year
Effect of a one year change in estimated expected term:			
Variable changed			
Estimated option life	6.1 years	7.1 years	8.1 years
Variables held constant			
Exercise price	$ 2.32	$ 2.32	$ 2.32
Expected dividend yield	0%	0%	0%
Risk free rate	3.5%	3.5%	3.5%
Expected stock volatility	71%	71%	71%
Estimated fair value	$ 0.72	$ 0.80	$ 0.84

	- 10%	Current Estimate of Volatility	+ 10%
Effect of a 10% change in estimated volatility:			
Variable changed			
Expected stock volatility	61%	71%	81%
Variables held constant			
Exercise price	$ 2.32	$ 2.32	$ 2.32
Expected dividend yield	0%	0%	0%
Risk free rate	3.5%	3.5%	3.5%
Estimated option life	7.1 years	7.1 years	7.1 years
Estimated fair value	$ 0.67	$ 0.80	$ 0.88

Our reported net loss was $59.2 million for the year ended December 31, 2008. If the expected term for the options granted during the year ended December 31, 2008 increased by one year (all other variables held constant), the impact on our reported net loss would be an increase in net loss of approximately $0.2 million. If the expected term for the options granted during the year ended December 31, 2008 decreased by one year (all other variables held constant), the impact on our reported net loss would be a decrease in net loss of approximately $0.2 million.

Non-cash compensation expense is recognized on a straight-line basis over the applicable vesting periods of one to five years, based on the fair value of such stock-based awards on the grant date. We anticipate the expected term and estimated volatility will remain within the ranges listed above in the near term, however, unanticipated business or other conditions may change, which could result in differing future results.

Impairment of Long-Lived Assets, Assets Held for Sale and Inventory Reserve

Long-lived assets, such as property, equipment and inventory, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable, in accordance with Statement of Financial Accounting Standards ("SFAS") No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets" ("SFAS 144"). Conditions that would necessitate an impairment include a significant decline in the observable market value of an asset, a significant change in the extent or manner in which an asset is used, or any other significant adverse change that would indicate that the carrying amount of an asset or group of assets is not recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized in the amount by which the carrying amount of the asset exceeds the fair value of the asset. Long-lived assets are considered held for sale when certain criteria are met, including whether management has committed to a plan to sell the asset, whether the asset is available for sale in its immediate condition, and whether the sale is probable within one year of the reporting date.

Accrued Restructuring Charges

We follow the provisions of SFAS No. 146, "Accounting for Costs Associated with Exit or Disposal Activities" ("SFAS 146"), as it relates to our facility at 3450 Monte Villa Parkway, Bothell, Washington ("3450 Monte Villa"), which we have ceased to use as of September 30, 2008. We have recorded an accrued restructuring liability, representing remaining lease payments due under the lease and other costs, reduced by sublease rental income that could be reasonably obtained from the property, and discounted using a credit-adjusted risk-free interest rate. We used a credit-adjusted risk-free interest rate of 15%, and we based our sublease expectations on current rental rates available in the Bothell real estate market, our evaluation of our ability to sublease our facility in light of tightening credit markets and deteriorating conditions in the local real estate markets. Payment of rent related to this facility is reflected as a reduction in the amount of the accrued restructuring liability. We will recognize accretion expense due to the passage of time as an additional restructuring charge. Accrued restructuring, and in particular those charges associated with exiting a facility, are subject to management's assumptions and estimates. In addition to the interest rate used, the assumptions as to estimated sublease rental income, the period of time to execute a sublease and the costs and concessions necessary to enter into a sublease significantly impact the accrual and actual results may differ from our estimates.

In March 2009, we entered into an amendment of our lease for 3450 Monte Villa, which reduces our lease obligations by approximately $1.9 million until July 2010. Under the terms of the amendment, we released both a cash deposit of $0.3 million and restricted cash under a letter of credit for $1.0 million to BioMed Realty ("BioMed"), the landlord, to be used by them to cover rent payments or as incentives to attract new tenants. As inducement to enter into the amendment, we issued 1.5 million shares of our common stock (the "Shares") to BioMed, and granted BioMed certain piggyback registration rights with respect to the Shares until the Shares may be sold publicly without restriction under the Securities Act. Because of this amendment, we will have no further rent obligations under the 3450 Monte Villa lease for the period from January 2009 until July 2010. We incorporated our assumptions regarding remaining lease payments and other costs, as well as our ability to sublease our facility, into our accrued restructuring liability in 2008.

Income Taxes

Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and tax credit carry-forwards. A portion of these carryforwards will expire in 2008 and will continue to expire through 2027 if not otherwise utilized. Our ability to use such net operating losses and tax credit carryforwards is subject to an annual limitation due to change of control provisions under Sections 382 and 383 of the Internal Revenue Code. These limitations have been considered in determining the deferred tax asset associated with net operating loss carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. We continue to record a valuation allowance for the full amount of deferred tax assets since realization of such tax benefits is not considered to be more likely than not.

We adopted FASB Interpretation No. 48, "Accounting for Uncertainty in Income Taxes-an interpretation of FASB Statement No. 109" ("FIN 48") on January 1, 2007. We have identified our federal tax return and our state tax return in New York as "major" tax jurisdictions, as defined. The periods subject to examination for our federal and New York state income tax returns are the tax years ended in 1993 and thereafter, since we have net operating loss carryforwards for tax years starting in 1993. We believe our income tax filing positions and deductions will be sustained on audit and we do not anticipate any adjustments that would result in a material change to our financial position. Therefore, no reserves for uncertain income tax positions have been recorded pursuant to FIN 48, nor did we record a cumulative effect adjustment related to the adoption of FIN 48. Our policy for recording interest and penalties associated with audits is to record such items as a component of income (loss) before taxes.

Recently Issued Accounting Standards

In December 2007, the FASB issued SFAS No. 141(Revised 2007), "Business Combinations" ("SFAS 141R"), which replaces SFAS 141, while retaining the fundamental requirements in SFAS 141 that the acquisition method of accounting be used for all business combinations and that an acquirer be identified for each business combination. SFAS 141R changes how business acquisitions are accounted for and establishes principles and requirements for how an acquirer recognizes and measures in its financial statements the identifiable assets acquired, the liabilities assumed, any non-controlling interest in the acquiree and the goodwill acquired both on the acquisition date and in subsequent periods, and also establishes disclosure requirements which will enable users to evaluate the nature and financial effects of the business combination. SFAS 141R is effective for fiscal years beginning after December 15, 2008. Early adoption is not permitted. The adoption of SFAS 141R will have an impact on future business combinations.

In December 2007, the FASB issued SFAS No. 160, "Noncontrolling Interests in Consolidated Financial Statements — an amendment of Accounting Research Bulletin No. 51" ("SFAS 160"). SFAS 160 amends Accounting Research Bulletin No. 51 to establish accounting and reporting standards for the non-controlling ownership interests in a subsidiary and for the deconsolidation of a subsidiary, and changes the way the consolidated statement of operations is presented by requiring consolidated net income (loss) to be reported at amounts that include the amounts attributable to both the parent and the non-controlling interest, as well as disclosure, on the face of the statement of operations of those amounts. SFAS 160 also establishes a single method of accounting for changes in a parent's ownership interest in a subsidiary that do not result in deconsolidation, and requires gain recognition in income when a subsidiary is deconsolidated. SFAS 160 also requires expanded disclosures that clearly identify and distinguish between the interests of the parent and the interests of the non-controlling owners. SFAS 160 is effective for fiscal years beginning after December 15, 2008. In the absence of possible future investments, the adoption of SFAS 160 will have no effect on our consolidated financial statements.

In December 2007, the FASB ratified the consensuses reached in EITF Issue No. 07-1, "Collaborative Arrangements" ("EITF 07-1"). EITF 07-1 defines collaborative arrangements and establishes reporting requirements for transactions between participants in a collaborative arrangement and between participants in the arrangements and third parties. Under EITF 07-1, payments between participants pursuant to a collaborative arrangement that are within the scope of other authoritative accounting literature on income statement classification should be accounted for using the relevant provisions of that literature. If the payments are not within the scope of other authoritative accounting literature, the income statement classification for the payments should be based on an analogy to authoritative accounting literature or if there is no appropriate analogy, a reasonable, rational, and consistently applied accounting policy election. EITF 07-1 also provides disclosure requirements and is effective for fiscal years beginning after December 15, 2008, and interim periods within those fiscal years. The effect of applying EITF 07-1 will be reported as a change in accounting principle through retrospective applications to all prior periods presented for all collaborative arrangements existing as of the effective date, unless it is impracticable. We must adopt EITF 07-1 no later than our first quarter of fiscal 2009. EITF 07-1 will not have an effect on our assets, liabilities, stockholders' equity, cash flows or net results of operations.

In June 2008, the FASB issued SFAS No. 162, "The Hierarchy of Generally Accepted Accounting Principles" ("SFAS 162"). SFAS 162 identifies the sources of generally accepted accounting principles and provides a framework, or hierarchy, for selecting the principles to be used in preparing U.S. GAAP financial statements for nongovernmental entities, and makes the GAAP hierarchy explicitly and directly applicable to preparers of financial statements. The hierarchy of authoritative accounting guidance is not expected to change current practice but is expected to facilitate the FASB's plan to designate as authoritative its forthcoming codification of accounting standards. This statement is effective 60 days following the SEC's approval of the PCAOB's related amendments to remove the GAAP hierarchy from its auditing standards.

In June 2008, the Emerging Issues Task Force of the FASB issued EITF Issue No. 07-5, "Determining Whether an Instrument (or Embedded Feature) Is Indexed to an Entity's Own Stock" ("EITF 07-5"), which is effective for fiscal years ending after December 15, 2008, with earlier application not permitted by entities that have previously adopted an alternative accounting policy. The adoption of EITF 07-5's requirements will affect accounting for convertible instruments and warrants with provisions that protect holders from declines in the stock price ("down-round" provisions). Warrants with such provisions will no longer be recorded in equity. EITF 07-5 guidance is to be applied to outstanding instruments as of the beginning of the fiscal year in which the EITF 07-5 is applied. The cumulative effect of the change in accounting principle shall be recognized as an adjustment to the opening balance of retained earnings (or other appropriate components of equity) for that fiscal year, presented separately. The cumulative-effect adjustment is the difference between the amounts recognized in the statement of financial position before initial application of EITF 07-5 and the amounts recognized in the statement of financial position its initial application. The amounts recognized in the statement of financial position as a result of the initial application are determined based on the amounts that would have been recognized if the guidance in EITF 07-5 had been applied from the issuance date of the instrument. In connection with warrants issued in April 2008, the financial reporting (non-cash) effect of initial adoption of this accounting requirement for future financial statements is expected to result in an initial estimated fair value liability of approximately $0.9 million, which will be recorded as an increase in liabilities and increase in stockholders' deficit on January 1, 2009 and adjusted quarterly thereafter during the period the warrants remain outstanding.

Consolidated Results of Operations

Comparison of Annual Results of Operations

Percentage comparisons have been omitted within the following table where they are not considered meaningful. All amounts, except amounts expressed as a percentage, are presented in thousands in the following table.

	Years Ended December 31,		Change		Years Ended December 31,		Change	
	2007	2008	$	%	2006	2007	$	%
Revenue								
License and research fees	$ 17,349	$ 1,360	$(15,989)	(92)%	$ 27,265	$ 17,349	$ (9,916)	(36)%
Government grants	433	277	(156)	(36)%	488	433	(55)	(11)%
Product revenue	355	972	617	174%	737	355	(382)	(52)%
Total revenue	18,137	2,609	(15,528)	(86)%	28,490	18,137	(10,353)	(36)%
Operating expenses								
Cost of product revenue	100	2,906	2,806		355	100	(255)	(72)%
Research and development	52,254	36,771	(15,483)	(30)%	43,244	52,254	9,010	21%
Sales and marketing	2,392	1,590	(802)	(34)%	1,927	2,392	465	24%
General and administrative	17,922	12,027	(5,895)	(33)%	12,281	17,922	5,641	46%
Restructuring	—	8,257	8,257		—	—	—	
Total operating expenses	72,668	61,551	(11,117)	(15)%	57,807	72,668	14,861	26%
Interest income	3,308	519	(2,789)	(84)%	2,789	3,308	519	19%
Interest and other expense	(1,149)	(797)	352	(31)%	(640)	(1,149)	(509)	80%
Loss before cumulative effect of change in accounting principle	(52,372)	(59,220)	(6,848)	13%	(27,168)	(52,372)	(25,204)	93%
Cumulative effect of change in accounting principle	—	—	—		291	—	(291)	(100)%
Net loss	$(52,372)	$(59,220)	$ (6,848)	13%	$(26,877)	$(52,372)	$(25,495)	95%

Comparison of Year Ended December 31, 2008 to the Year Ended December 31, 2007

Revenue. Our agreement with P&G was terminated in November 2007, and in January 2008 Novo Nordisk completed their feasibility study agreement with us and decided not to further advance the work. We had revenue from certain customers, as a percentage of total revenue, as follows:

	Years Ended December 31,	
	2007	2008
P&G	62%	0%
QOL	15%	56%
Novo Nordisk	18%	0%
Undisclosed partner — undisclosed compounds	0%	21%
Undisclosed partner — Factor IX	0%	11%
Total	95%	88%

License and research fees revenue. Revenue from license and research fees decreased in 2008 compared to 2007.

In 2007, license and research fee revenue was primarily composed of the recognition of research and development fees related to our collaboration with P&G, including approximately $5.5 million in previously deferred license fees as a result of the termination of our collaboration with P&G, as well as recognition of revenue from other collaboration agreements. In addition, in June 2007, we received a $2.0 million milestone payment from QOL in connection with the issuance of a U.S. patent for our Nascobal® nasal spray. The $2.0 million was recognized in full as revenue in 2007.

In 2008, license and research fee revenue was primarily related to product sales and recognition of deferred revenue related to the $2.0 million payment received in 2005 from QOL and revenue from other collaboration or feasibility partners.

Government grants revenue. The NIH awarded us a grant in September 2006 for $1.9 million over a five year period to prevent and treat influenza. Revenue recognized under this grant totaled $0.4 million and $0.3 million for the years ended December 31, 2007 and 2008, respectively.

Product Revenue and cost of product revenue. During 2007 and 2008, product revenue consisted primarily of contract manufacturing revenue from Nascobal® brand products. Product revenue increased to $1.0 million for the year ended December 31, 2008 compared to $0.4 million in the year ended December 31, 2007 due to increased product demand.

Cost of product revenue consists of raw materials, labor and overhead expenses. At December 31, 2008, the original cost basis of our inventory was approximately $2.7 million, composed of $0.1 million of Nascobal API and materials, and $2.6 million of calcitonin-salmon API and materials for our nasal calcitonin-salmon product. Another pharmaceutical company, Apotex, filed a generic application for its nasal calcitonin-salmon product with a filing date that has priority over our ANDA for our generic nasal calcitonin-salmon product. Novartis filed a patent infringement suit against Apotex with respect to Apotex's ANDA. In May 2008, a federal district court dismissed the lawsuit between Novartis and Apotex, due to the parties reaching a settlement in their long-standing litigation. The terms of this settlement were not made public. This, among other things, created uncertainty over our ability to launch our nasal calcitonin-salmon product and caused us to reassess the value of our inventory. In the second quarter of 2008, we recorded a non-cash impairment charge of approximately $2.6 million to cost of goods sold related to the write-down of inventory because we considered the carrying amount of this inventory to likely not be recoverable. In December 2008, the FDA granted tentative approval of our ANDA for our generic calcitonin-salmon nasal spray. We anticipate that full FDA approval will follow the completion of Apotex's 180-day exclusivity period, or June 2009. Since we could not launch the product in 2008, we did not write-up the value of the inventory as of December 31, 2008.

On April 1, 2009, we announced that we had entered into an Asset Purchase Agreement with Par under which Par acquired our manufacturing facilities in Hauppauge, New York as well as our ANDA for our generic calcitonin-salmon nasal spray. Under the terms of the Asset Purchase Agreement, we received upfront cash and will receive profit sharing for five years on commercial sales of calcitonin. In addition, Par will assume our current supply and manufacturing obligations with QOL Medical, LLC ("QOL") for Nascobal® spray, as well as all operating costs and leases associated with the facilities, including employment of our Hauppauge employees.

We produced six production lots of Nascobal nasal spray under the supply agreement with QOL in 2008, compared to five production lots of Nascobal nasal spray in 2007, two of which were shipped in early 2008. In addition, we produced one production lot of scopolamine in 2007.

Research and Development. R&D expense consists primarily of salaries and other personnel-related expenses, costs of clinical trials, consulting and other outside services, laboratory supplies, facilities costs, and other costs. We expense all R&D costs as incurred. R&D expense for the year ended December 31, 2008 decreased as compared to the 2007 period, due to the following:

- Personnel-related expenses decreased by approximately 45% to $11.2 million in 2008 compared to $20.5 million in 2007 due to a decrease in headcount as a result of our restructuring.
- Stock-based compensation included in R&D expense increased to $6.2 million in 2008 from $3.0 million in 2007 primarily related to acceleration of vesting of stock options and restricted stock upon termination of our Chief Scientific Officer in accordance with his employment agreement.
- Facilities and equipment costs decreased by approximately 20% to $7.8 million in 2008 from $9.8 million in 2007 due to a decrease in rent and related expenses allocated on a headcount basis and a decrease in depreciation of equipment and related maintenance and calibration costs. Depreciation expense included in R&D in 2008 was $3.0 million compared to $3.3 million in 2007.
- In 2007, we initiated additional Phase 2 clinical trials to evaluate our PYY(3-36) nasal spray in obese patients, PTH(1-34) nasal spray for the treatment of osteoporosis, our rapid-acting insulin nasal spray in patients with type 2 diabetes and a Phase 1 clinical trial for our carbetocin nasal spray for patients with autism spectrum disorders ("ASDs"), causing a related increase in R&D expenses. As a result, costs of clinical trials, consulting, outside services and laboratory supplies decreased by approximately 48% to $9.2 million in 2008 compared to $17.6 million in 2007.

R&D expense by project, as a percentage of total R&D project expense, was as follows:

	Years Ended December 31,	
	2007	2008
Inflammation	17%	34%
ApoB and metabolic	0%	4%
Oncology	0%	1%
Virology/Influenza	6%	3%
RNAi Subtotal	23%	42%
PTH(1-34)	11%	7%
PYY(3-36)	23%	36%
Insulin	11%	5%
Carbetocin	8%	0%
Calcitonin	3%	1%
Other R&D projects(1)	21%	9%
Total	100%	100%

(1) Other R&D projects include our tight junction projects, excipient projects, feasibility projects and other projects.

We expect our R&D expenses to decrease in 2009 due to the restructuring of our business from a clinical stage intranasal delivery company to a pre-clinical RNAi drug discovery company. Our current strategy is focused on entering into collaborations with third parties to participate in the development and, ultimately the commercialization of our RNAi technology. In the event that the collaboration partner has control over the development process for a product, the estimated completion date would largely be under control of such partner.

Sales and marketing. Sales and marketing expense consists primarily of salaries and other personnel-related expenses, consulting, trade shows and advertising. The 34% decrease in sales and marketing expense in 2008 compared to 2007 resulted primarily from headcount reduction in connection with our restructuring and our cost containment efforts. We expect sales and marketing costs, which primarily represents business development staff and activities, to decrease in 2009 due to continued cost containment efforts and the restructuring of our business from a clinical stage intranasal delivery company to a pre-clinical RNAi drug discovery company.

General and administrative. General and administrative expense consists primarily of salaries and other personnel-related expenses to support our R&D activities, non-cash stock-based compensation for general and administrative personnel and non-employee members of our Board, professional fees, such as accounting and legal, corporate insurance and facilities costs. The 33% decrease in general and administrative expenses in 2008 compared to 2007 resulted primarily from the following:

- Costs of legal and accounting fees, corporate insurance and other administrative costs decreased by 32% to approximately $6.2 million in 2008 compared to $9.1 million in 2007. Included in the $9.1 million in 2007 were $4.9 million in legal expenses, compared to $3.4 million in the current year and $1.3 million in consulting fees, compared to $0.3 million in the current year.
- Stock-based compensation expense included in general and administrative expense decreased to approximately $2.0 million in 2008 from approximately $2.8 million in 2007.
- Personnel-related expenses decreased by 38% to $2.9 million in 2008 compared to $4.7 million in 2007 due primarily to decreased headcount related to administrative activities.

We expect general and administrative expenses to decrease in 2009 due to continued cost containment efforts.

Interest Income. The following table sets forth information on interest income, average funds invested and average interest rate earned:

	Years Ended December 31,	
	2007	2008
	(Dollars in thousands)	
Interest income	$ 3,308	$ 519
Average funds available for investment	64,300	19,200
Average interest rate	5.1%	2.7%

The 84% decrease in interest income in 2008 compared to 2007 was primarily due to lower average balances available for investment as well as lower market interest rates earned on our invested funds.

Interest and Other Expense. We incurred interest expense on our capital leases. The following table sets forth information on interest expense, average borrowings and average interest rate paid:

	Years Ended December 31,	
	2007	2008
	(Dollars in thousands)	
Interest and other expense	$ 1,149	$ 797
Average borrowings under capital leases	11,500	8,000
Average interest rate	10.0%	10.0%

The 31% decrease in interest expense in 2008 compared to 2007 was due to a decrease in the average borrowings. During 2008 and 2007, borrowing rates ranged from 9.1% to 10.6% and 8.3% to 10.6%, respectively. We expect interest expense to decline in 2009 as a result of the lower loan balances and conversion of capital leases into the Loan Agreement with GECC.

Comparison of Year Ended December 31, 2007 to Year Ended December 31, 2006

Revenue. During the year ended December 31, 2006, P&G accounted for approximately 77% of total revenue and Merck accounted for approximately 13% of total revenue. Our agreement with Merck was terminated in March 2006. During the year ended December 31, 2007, P&G accounted for approximately 62% of total revenue, Novo Nordisk accounted for approximately 18% of total revenue and QOL accounted for approximately 15% of total revenue. Our agreement with P&G was terminated in November 2007 and in January 2008 Novo Nordisk completed their feasibility study agreement with us and decided not to further advance the work.

License and research fees. Revenue from license and research fees increased in 2007 compared to 2006. In 2007, license and research fee revenue was primarily composed of the recognition of research and development fees related to our collaboration with P&G, including approximately $5.5 million in previously deferred license fees as a result of the termination of our collaboration with P&G, as well as recognition of revenue from other collaboration agreements. In addition, in June 2007 we received a $2.0 million milestone payment from QOL in connection with the issuance of a U.S. patent for our Nascobal nasal spray. The $2.0 million was recognized in full as revenue in 2007.

Under our collaborative arrangement with P&G, we received an initial cash payment of $10.0 million in February 2006, which had been recorded as deferred revenue and was being amortized into revenue over the estimated development period. A $7.0 million milestone payment received from P&G in the second quarter of 2006 was recognized in full as revenue in 2006. In addition, license and research fee revenue recognized in 2006 also included approximately $3.7 million in previously deferred license fees as a result of the termination of our collaboration with Merck and recognition of fees received from other collaboration partners over the estimated remaining development periods.

Government grants revenue. In 2006, the NIH awarded us two grants to prevent and treat influenza. The first award was made in August 2006 for $0.4 million. The second award was made in September 2006 for $1.9 million over a five-year period. Revenue recognized under these grants during 2006 totaled $0.5 million and during 2007 totaled $0.4 million.

Product revenue and cost of product revenue. Cost of product revenue decreased to $0.1 million in 2007 compared to $0.4 million in 2006 due primarily to decreased orders and, accordingly, shipments of Nascobal products. In 2007, we produced five production lots of Nascobal nasal spray, two of which had not been shipped at year end, and one production lot of scopolamine, compared to eight production lots of Nascobal nasal products in 2006.

Research and Development. R&D expense for the year ended December 31, 2007 continued to increase as compared to the 2006 period, due to the following:

- Personnel-related expenses increased by approximately 21% to $20.5 million in 2007 compared to $17.0 million in 2006 due to an increase in headcount in support of our R&D programs.
- Non-cash stock-based compensation included in R&D expense increased to $3.0 million in 2007 from $2.1 million in 2006.
- Facilities and equipment costs increased by approximately 32% to $9.8 million in 2007 compared to $7.4 million in 2006 due to rent and related expenses and an increase in depreciation of equipment resulting from capital expenditures to acquire needed technical capabilities. Depreciation expense included in R&D in 2007 was $3.3 million, compared with $2.3 million in 2006.
- In 2007, we initiated additional Phase 2 clinical trials to evaluate our PYY(3-36) nasal spray in obese patients, PTH(1-34) nasal spray for the treatment of osteoporosis, our rapid-acting insulin nasal spray in patients with type 2 diabetes and a Phase 1 clinical trial for our carbetocin nasal spray for patients with ASDs, causing a related increase in R&D expenses. Costs of clinical trials, consulting, outside services and laboratory supplies increased by approximately 57% to $17.6 million in 2007 compared to $11.2 million in 2006 due primarily to our increased efforts related to PYY, insulin, carbetocin and RNAi.

The increases in R&D expenses discussed above were partially offset by the decrease related to purchased in-process R&D (IPR&D). In February 2006, we acquired RNAi IP and other RNAi technologies from Galenea, including patent applications licensed from the Massachusetts Institute of Technology that have early priority dates in the antiviral RNAi field focused on viral respiratory infections, including influenza, rhinovirus and other respiratory diseases. We also acquired Galenea's research and IP relating to pulmonary drug delivery technologies for RNAi. In connection with this transaction, in 2006, we recorded a charge of approximately $4.1 million for acquired research associated with products in development for which, at the acquisition date, technological feasibility had not been established and there was no alternative future use. We did not incur any purchased IPR&D during 2007.

Sales and Marketing. The 24% increase in sales and marketing expense in 2007 compared to 2006 resulted primarily due to a market study performed in the fourth quarter of 2007 in support of our corporate activities. As a percent of revenue, sales and marketing expense increased from 7% in 2006 to 13% in 2007 primarily due to lower license and research fee revenue in 2007.

General and Administrative. The 46% increase in general and administrative expenses in 2007 compared to 2006 resulted primarily from the following:

- Costs of legal and accounting fees, corporate insurance and other administrative costs increased by 69% to approximately $9.1 million in 2007 compared to approximately $5.4 million in 2006. Included in the $9.1 million in 2007 were $4.9 million in legal expenses, compared to $2.4 million in the prior year, $1.3 million in consulting fees, compared to $0.3 million in the prior year, and $0.7 million in accounting fees, compared to $0.5 million in the prior year.
- Non-cash stock-based compensation expense included in general and administrative expense increased to approximately $2.8 million in 2007 from approximately $2.6 million in 2006.
- Personnel-related expenses increased by 31% to $4.7 million in 2007 compared to $3.6 million in 2006 due primarily to increased headcount related to administrative activities.

Interest Income. The 19% increase in interest income in 2007 compared to 2006 was primarily due to higher average balances available for investment as well as higher market interest rates earned on our invested funds.

Interest and Other Expense. The increase in interest expense in 2007 compared to 2006 was due to an increase in the average borrowings as well as slightly higher average interest rates. During both 2006 and 2007, borrowing rates ranged from 8.3% to 10.6%.

Liquidity, Going Concern and Capital Resources

We have prepared our consolidated financial statements assuming that we will continue as a going concern, which contemplates realization of assets and the satisfaction of liabilities in the normal course of business. As of December 31, 2008, we had an accumulated deficit of approximately $254.1 million, negative cash flows and expect to incur additional losses in the future as we continue our R&D activities. We have funded our losses primarily through the sale of common stock and warrants in the public markets and private placements, revenue provided by our collaboration partners and, to a lesser extent, equipment financing facilities. The further development of our RNAi programs will require capital. At December 31, 2008, we had a working capital deficit (current assets less current liabilities) of $7.6 million and approximately $3.4 million in cash and cash equivalents, including $2.3 million in restricted cash. Our operating expenses, primarily R&D, will consume a material amount of our cash resources.

Discussion of cash flows

We used cash of approximately $40.5 million in our operating activities in 2008, compared to $46.5 million in 2007. Cash used in operating activities relates primarily to funding net losses and changes in deferred revenue, accounts and other receivables, accounts payable and accrued expenses and other liabilities, partially offset by non-cash restructuring charges, depreciation and amortization and non-cash compensation related to restricted stock, stock options and our employee stock purchase plan. We expect to use cash for operating activities in the foreseeable future as we continue our R&D activities.

Our investing activities provided cash of approximately $12.1 million in 2008, compared to $4.7 million in 2007. Changes in cash from investing activities are due primarily to changes in restricted cash, maturities of short-term investments net of purchases and purchases of property and equipment. In 2008 and 2007, we pledged some of our cash as collateral for letters of credit and we report changes in our restricted cash as investing activities in the consolidated statements of cash flows.

Our financing activities provided cash of approximately $1.8 million in 2008 compared to approximately $41.0 million in 2007. Changes in cash from financing activities are primarily due to issuance of common stock and warrants, proceeds and repayment of equipment financing facilities and proceeds from exercises of stock options and warrants. We raised net proceeds of approximately $7.3 million in 2008 and $40.9 million in 2007 through public and private placements of shares of common stock and warrants to purchase shares of common stock.

Recent Financing Activities

On January 22, 2008, we filed a universal shelf registration statement with the Securities and Exchange Commission ("SEC") pursuant to which we can issue up to $50.0 million of our common stock, preferred stock, debt securities, warrants to purchase any of the foregoing securities and units comprised of any of the foregoing securities. The universal shelf registration statement was declared effective by the SEC on February 4, 2008. However, our ability to raise capital using our effective shelf registration statements may be limited for so long as the public float of our common stock remains below $75 million.

On April 25, 2008, we raised net proceeds of approximately $7.3 million in a registered direct offering of 4,590,277 shares of common stock along with warrants to purchase up to 5,967,361 shares of common stock at a negotiated purchase price of $1.728 per share. Warrants to purchase up to 4,590,277 shares of common stock are exercisable during the seven-year period beginning October 25, 2008 at a price of $2.376 per share. Additional

warrants to purchase up to 1,377,084 shares of common stock at a price of $2.17 per share were exercisable during the 90-day period beginning October 25, 2008 and subsequently expired in January 2009. In addition, warrants to purchase up to 229,514 shares of common stock, which are exercisable during the five-year period beginning October 25, 2008 at a price of $2.376 per share, were issued to the placement agent in connection with the transaction.

NASDAQ Deficiency Notice

On September 19, 2008, we received a letter from the Listing Qualifications Department of the NASDAQ Stock Market notifying us that we were not in compliance with the minimum $1.00 per share minimum bid price requirement for continued inclusion on the NASDAQ Global Market set forth in NASDAQ Marketplace Rule 4450(a)(5), as a result of the bid price of our common stock having closed below $1.00 for the 30 consecutive business days prior to the date of the letter. NASDAQ's letter advised us that, in accordance with the NASDAQ Marketplace Rule 4450(e)(2), we will be provided 180 calendar days, or until March 18, 2009, to regain compliance. The letter further advised that such compliance can be achieved if, at any time before March 18, 2009, the bid price of our common stock closes at $1.00 or more per share for a minimum of 10 consecutive business days. NASDAQ has suspended enforcement of the minimum bid price requirement for all issuers until July 20, 2009, and, accordingly, our date to regain compliance with the minimum bid price requirement has been extended to December 21, 2009. There can be no assurance that we will be able to regain compliance with the continued listing requirement of NASDAQ Marketplace Rule 4450(a)(5).

Separately, on November 18, 2008, we received a staff deficiency letter from NASDAQ notifying us that, based on our stockholders' equity as reported in our Quarterly Report on Form 10-Q for the period ended September 30, 2008, we do not comply with the minimum stockholders' equity requirement of $10 million for continued listing on The NASDAQ Global Market as set forth in NASDAQ Marketplace Rule 4450(a)(3). On December 3, 2008, we submitted to NASDAQ a specific plan to achieve and sustain compliance with all NASDAQ Global Market listing requirements, and on December 22, 2008, we received notice from NASDAQ granting us an extension until March 3, 2009 to regain compliance.

We did not regain compliance on or prior to March 3, 2009 and, accordingly, on March 4, 2009, we received written notification (the "Staff Determination") from NASDAQ stating that our common stock would be subject to delisting from The NASDAQ Global Market because of the deficiency. On March 5, 2009, we requested a hearing before the NASDAQ Listing Qualifications Panel to review the Staff Determination, which will stay any action with respect to the Staff Determination until NASDAQ renders a decision subsequent to the hearing. At the hearing, currently scheduled for April 23, 3009, we intend to present a plan to regain compliance. There can be no assurance that the Panel will grant our request for continued listing.

Debt restructuring and reduction of other liabilities

In January 2009, we entered into a Loan and Security Agreement (the "Loan Agreement") with General Electric Capital Corporation ("GECC") pursuant to which we borrowed funds from GECC to partially finance the purchase of certain equipment leased to us by GECC. We borrowed approximately $5.5 million from GECC evidenced by a promissory note issued to GECC. No additional advances are available under the Loan Agreement. The outstanding principal balance bears interest in arrears from the date of the Loan Agreement until the loan is fully repaid at a fixed rate of 12.29% per year. The loan was paid down to $1.8 million in March 2009 at which time the remaining loan balance was re-amortized to be paid off in 12 equal monthly payments of approximately $160,000 each. There are acceleration clauses which include additional payments to the principal based on the proceeds of certain transactions, which could result in the loan being repaid prior to April 2010. In addition, the Loan requires a fee of 3% of the original balance to be paid at the time the Loan is paid in full, subject to certain early payoff reductions. Substantially all of our assets now owned, including our intellectual property, secure our obligations under the Loan Agreement. The Loan Agreement contains customary representations, warranties, covenants, agreements and indemnities. Under the Loan Agreement, we are subject

to certain affirmative covenants, and certain negative covenants, including among others that we may not incur additional indebtedness, dispose of any property, enter into certain change of control events, declare or pay dividends or prepay other indebtedness, make investments or acquisitions, enter into transactions with affiliates, or amend existing material agreements, in each case subject to certain customary exceptions. We are not precluded, however, from entering into strategic licensing or partnership transactions by the Loan Agreement as evident by the Roche, Novartis and Par transactions all completed after January 2009.

Beginning in January 2009, we engaged in negotiations to reduce certain current and future obligations, including professional service fees due to our vendors incurred in the normal course of our business, rent on our 3450 Monte Villa Parkway facility ("3450 Monte Villa") in Bothell, Washington, which we had ceased to use in 2008, and severance obligations due to former employees of our company. In February and March 2009, we issued to eight of our vendors an aggregate of 1,364,285 shares of our common stock to settle amounts due to these vendors of approximately $0.6 million in total.

In March 2009, we negotiated amendments to our agreements regarding severance obligations to both the former President and to the former Chief Scientific Officer of the Company to reduce our overall cash obligations through September 2009. In particular, we entered into an amendment of our agreement regarding severance obligations with our former Chief Scientific Officer, pursuant to which we agreed to pay to him a reduced sum of $0.9 million and to issue to him 731,275 unregistered shares of our common stock, in full satisfaction of $1.7 million in severance obligations. These obligations were included in accrued payroll and employee benefits at December 31, 2008. We anticipate making the cash payment to the former executive in June 2009. We have also agreed to file a registration statement with the Securities and Exchange Commission to register the shares to be issued to the former executive on or prior to September 30, 2009.

Corporate restructuring

We have recently completed a nine-month effort to restructure our business from a clinical stage intranasal delivery company to a pre-clinical RNAi drug discovery company. Since July 2008, we have accomplished the following: (1) reduced our workforce from approximately 75 employees in July 2008 to approximately 44 employees as of the date of this filing; (2) suspended all further clinical development of our intranasal programs in August 2008; (3) renegotiated and significantly reduced our long-term legacy liabilities; and (4) sold our intranasal contract manufacturing operations, in New York, to Par Pharmaceutical, Inc. ("Par") in March 2009. We have recorded restructuring charges related to employee termination costs, our facility consolidation and impairment of assets in accordance with our long-lived assets policy. In addition, we also incurred approximately $0.3 million related to our decision in 2008 to place our Phase 2 PTH(1-34) clinical trial on hold until further funding has been obtained. We continue to work to identify a partner or partners to further develop and commercialize our remaining legacy intranasal programs through either a sale or licensing transaction; however, there can be no assurance that we will be able to identify suitable partners for our intranasal programs or a sale or licensing transaction on terms acceptable to us or at all. In March 2009, we engaged a consulting firm with expertise in international markets to assist in the sale or licensing of these remaining programs.

We have streamlined operations and reduced expenses which has included reductions in our workforce. We continue to focus on maximizing the performance of our business and controlling costs to respond to the economic environment and will continue to evaluate our underlying cost structure to improve our operating results and better position ourselves for growth. We have in the past and may in the future find it advisable to restructure operations and reduce expenses, including, without limitation, such measures as reductions in the workforce, discretionary spending, and/or capital expenditures, as well as other steps to reduce expenses. As such, we may incur further restructuring charges, including severance, benefits and related costs due to a reduction in workforce and/or charges for facilities consolidation or for assets disposed of or removed from operations as a direct result of a reduction of workforce. By the end of the second quarter of 2009, we anticipate that our costs and operating expenses will track to a level that is consistent with our expected revenue and allow us to continue to invest in accordance with our strategic priorities. However, we may be unable to achieve these

expense levels without adversely affecting our business and results of operations. We may continue to experience losses and negative cash flows in the near term, even if revenue related to collaborative partnerships grows.

In addition, restructuring places significant strains on our employees, operational, financial and other resources. Furthermore, restructurings take time to fully implement and involve certain additional costs, including severance payments to terminated employees, and we may incur liabilities from early termination or assignment of contracts, potential litigation or other effects from such restructuring. Effects from a restructuring program could have a material adverse affect on our ability to execute on our business plan.

Summary

We believe that our current resources are sufficient to fund our planned operations into the third quarter of 2009. We based our estimate on our ability to perform planned R&D activities, the receipt of planned funding and proceeds from assets held for sale. Our recent decline in market valuation and volatility in our stock price, as well as global market conditions, could make it difficult for us to raise capital on favorable terms, or at all. Any financing we obtain may further dilute or otherwise impair the ownership interest of our current stockholders. If we fail to generate positive cash flows or fail to obtain additional capital when required, we could modify, delay or abandon some or all of our programs. These factors, among others, raise substantial doubt about our ability to continue as a going concern.

Off-Balance Sheet Arrangements

As of December 31, 2008, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of SEC Regulation S-K.

ITEM 8. ***Financial Statements and Supplementary Data.***

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Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
MDRNA, Inc.

We have audited the accompanying consolidated balance sheets of MDRNA, Inc. and subsidiaries (the "Company") as of December 31, 2007 and 2008, and the related consolidated statements of operations, stockholders' equity (deficit) and comprehensive loss, and cash flows for each of the years in the two-year period ended December 31, 2008. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of MDRNA, Inc. and subsidiaries as of December 31, 2007 and 2008, and the results of their operations and their cash flows for each of the years in the two-year period ended December 31, 2008, in conformity with U.S. generally accepted accounting principles.

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the Company has suffered recurring losses, has had recurring negative cash flows from operations, and has an accumulated deficit that raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The consolidated financial statements do not include any adjustments that might result from this uncertainty.

/s/ KPMG LLP

Seattle, WA
April 8, 2009

MDRNA, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

	December 31, 2007	December 31, 2008
	(In thousands, except share and per share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 27,704	$ 1,084
Restricted cash	2,155	2,268
Short-term investments	11,714	—
Accounts receivable	324	32
Inventories	1,084	98
Prepaid expenses and other current assets	1,698	935
Assets held for sale	—	541
Total current assets	44,679	4,958
Inventories, non-current	1,605	—
Property and equipment, net	15,004	7,844
Other assets	328	335
Total assets	$ 61,616	$ 13,137
LIABILITIES AND STOCKHOLDERS' EQUITY (DEFICIT)		
Current liabilities:		
Accounts payable	$ 4,216	$ 2,039
Accrued payroll and employee benefits	2,227	2,410
Accrued expenses	1,331	1,472
Accrued restructuring — current portion	151	2,091
Capital lease obligations — current portion	4,968	4,112
Deferred revenue — current portion	675	400
Total current liabilities	13,568	12,524
Accrued restructuring, net of current portion	—	609
Capital lease obligations, net of current portion	5,757	1,017
Deferred revenue, net of current portion	718	318
Deferred rent and other liabilities	2,353	1,928
Total liabilities	22,396	16,396
Commitments and contingencies		
Stockholders' equity (deficit):		
Preferred stock, $.01 par value; 100,000 shares authorized: no shares issued and outstanding	—	—
Common stock and additional paid-in capital, $0.006 par value; 90,000,000 shares authorized, 26,753,430 shares issued and outstanding as of December 31, 2007 and 31,244,018 shares issued and outstanding as of December 31, 2008	234,065	250,826
Accumulated deficit	(194,865)	(254,085)
Accumulated other comprehensive income	20	—
Total stockholders' equity (deficit)	39,220	(3,259)
Total liabilities and stockholders' equity (deficit)	$ 61,616	$ 13,137

See notes to consolidated financial statements

MDRNA, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,	
	2007	2008
	(In thousands, except per share data)	
Revenue:		
License and research fees	$ 17,349	$ 1,360
Government grants	433	277
Product revenue	355	972
Total revenue	18,137	2,609
Operating expenses:		
Cost of product revenue	100	2,906
Research and development	52,254	36,771
Sales and marketing	2,392	1,590
General and administrative	17,922	12,027
Restructuring	—	8,257
Total operating expenses	72,668	61,551
Loss from operations	(54,531)	(58,942)
Other income (expense):		
Interest income	3,308	519
Interest and other expense	(1,149)	(797)
Total other income (expense)	2,159	(278)
Net loss	$(52,372)	$(59,220)
Net loss per common share — basic and diluted	$ (2.10)	$ (2.01)
Shares used in computing net loss per share — basic and diluted	24,995	29,529

See notes to consolidated financial statements

MDRNA, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT) AND COMPREHENSIVE LOSS

	Common Stock and Additional Paid-In Capital		Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity (Deficit)
	Shares	Amount			
	(In thousands, except share data)				
Balance December 31, 2006	22,117,124	$185,849	$(142,493)	$(20)	$ 43,336
Proceeds from the issuance of common shares, net	3,250,000	40,923	—	—	40,923
Proceeds from the exercise of options and warrants	1,114,288	1,046	—	—	1,046
Compensation related to restricted stock	272,018	3,520	—	—	3,520
Compensation related to stock options and employee stock purchase plan	—	2,727	—	—	2,727
Net loss	—	—	(52,372)	—	(52,372)
Unrealized gain on securities available for sale	—	—	—	40	40
Comprehensive loss	—	—	—	—	(52,332)
Balance December 31, 2007	26,753,430	234,065	(194,865)	20	39,220
Proceeds from the issuance of common shares, net	4,664,868	7,349	—	—	7,349
Compensation related to restricted stock	(174,280)	2,910	—	—	2,910
Compensation related to stock options and employee stock purchase plan	—	6,502	—	—	6,502
Net loss	—	—	(59,220)	—	(59,220)
Unrealized loss on securities available for sale	—	—	—	(20)	(20)
Comprehensive loss	—	—	—	—	(59,240)
Balance December 31, 2008	31,244,018	$250,826	$(254,085)	$ —	$ (3,259)

See notes to consolidated financial statements

MDRNA, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,	
	2007	2008
	(In thousands)	
Operating activities:		
Net loss	$(52,372)	$(59,220)
Adjustments to reconcile net loss to net cash used in operating activities:		
Non-cash compensation related to stock options and employee stock purchase plan	2,727	6,108
Non-cash compensation related to restricted stock	3,520	2,437
Depreciation and amortization	4,392	4,114
Loss on disposition of property and equipment	56	23
Write-down of inventory and prepaid supplies	—	2,681
Non-cash restructuring charges	—	4,410
Changes in assets and liabilities:		
Accounts receivable	2,474	292
Inventories	29	12
Prepaid expenses and other assets	(147)	654
Accounts payable	(221)	(2,177)
Deferred revenue	(7,273)	(675)
Accrued expenses and deferred rent and other liabilities	352	867
Net cash used in operating activities	(46,463)	(40,474)
Investing activities:		
Change in restricted cash	—	(113)
Purchases of investments	(33,773)	(1,024)
Sales and maturities of investments	42,456	12,718
Proceeds from sales of property and equipment	—	643
Purchases of property and equipment	(4,008)	(123)
Net cash provided by investing activities	4,675	12,101
Financing activities:		
Proceeds from sales of common shares and warrants, net	40,923	7,349
Borrowings under capital lease obligations	3,802	—
Payments on capital lease obligations	(4,760)	(5,596)
Proceeds from exercise of stock options and warrants	1,046	—
Net cash provided by financing activities	41,011	1,753
Net decrease in cash and cash equivalents	(777)	(26,620)
Cash and cash equivalents — beginning of year	28,481	27,704
Cash and cash equivalents — end of year	$ 27,704	$ 1,084
Supplemental disclosure:		
Cash paid for interest	$ 1,145	$ 857

See notes to consolidated financial statements

Note 1 — Business, Going Concern and Summary of Significant Accounting Policies

Business

We are a biotechnology company focused on the discovery, development and commercialization of pharmaceuticals based on RNA interference ("RNAi"). Our goal is to be the leader in RNAi therapeutics and improve human health through the development of RNAi-based compounds that provide superior therapeutic options for patients. Our team, of approximately 30 scientists, brings expertise in the discovery, evaluation and optimization of small interfering RNAs ("siRNAs") as well as siRNA delivery. We have the requisite experience in the areas of RNAi, molecular and cellular biology, lipid, oligonucleotide and peptide chemistry, pharmacology and bioinformatics necessary to discover and develop tailored RNAi-based compounds designed to elicit specific therapeutic effects on a target-by-target basis. Our infrastructure provides for pre-clinical scale manufacturing of both siRNAs and delivery materials, the comprehensive analysis and optimization of these compounds both individually and as drug candidates, and the filing of Investigational New Drug Applications. In addition to our own, internally developed technologies, we strategically in-license and further develop RNAi- and delivery-related technologies, forming a single integrated drug discovery platform. In order to protect our innovations, which encompass a broad platform of both siRNA and delivery technologies, and the eventual drug products that emerge from that platform, we will aggressively continue to build upon our extensive and enabling intellectual property ("IP") estate.

We have recently completed a major restructuring of our business. Our business strategy is two-fold. First, we strive to establish collaborations and strategic partnerships with pharmaceutical and biotechnology companies in the area of RNAi-based therapeutics to: (1) generate revenue and non-dilutive financing; (2) gain access to technical resources; and (3) validate our drug discovery platform. Secondly, we expect to advance our own pipeline of RNAi-based therapeutics as a foundation upon which to improve all aspects of our drug discovery platform and eventually to have the opportunity to commercialize a drug therapy. With respect to collaborations and strategic partnerships, we are currently focused on our Meroduplex and UsiRNA constructs, as well as our DiLA^2 and peptide delivery technologies. Typically, we would expect to collaborate with partners who can take a drug candidate through to commercialization by utilizing their late stage clinical development, regulatory, marketing and sales capabilities. We expect to structure our collaborative arrangements in such a manner to receive upfront non-refundable payments, research and development funding, milestone payments and royalties on commercial sales of products.

We believe we have established ourselves as a leading RNAi-based therapeutics company by leveraging our broad and proven expertise in RNAi science and delivery into an industry leading RNAi drug discovery platform, which is protected by a strong IP position and validated through licensing agreements with two large international pharmaceutical companies.

Going Concern

The accompanying consolidated financial statements have been prepared assuming that we will continue as a going concern, which contemplates realization of assets and the satisfaction of liabilities in the normal course of business for the twelve-month period following the date of these financial statements. As of December 31, 2008, we had an accumulated deficit of approximately $254.1 million, negative cash flows and expect to incur losses in the future as we continue our research and development ("R&D") activities. We have funded our losses primarily through the sale of common stock and warrants in the public markets and private placements, revenue provided by our collaboration partners and, to a lesser extent, equipment financing facilities. The further development of our RNAi programs will require capital. At December 31, 2008, we had a working capital deficit

(current assets less current liabilities) of $7.6 million and approximately $3.4 million in cash and cash equivalents, including $2.3 million in restricted cash. While we continue to implement cost containment efforts, our operating expenses, primarily R&D, will consume a material amount of our cash resources.

We believe that our current resources are sufficient to fund our planned operations into the third quarter of 2009. We based our estimate on our ability to perform planned R&D activities, the receipt of planned funding and proceeds from assets held for sale. Our decline in market valuation and volatility in our stock price, as well as global market conditions, could make it difficult for us to raise capital on favorable terms, or at all. Any financing we obtain may further dilute the ownership interest of our current stockholders. If we fail to generate positive cash flows or fail to obtain additional capital when required, we could modify, delay or abandon some or all of our programs. These factors, among others, raise substantial doubt about our ability to continue as a going concern. The accompanying consolidated financial statements do not include any adjustments that may result from the outcome of this uncertainty.

We plan to continue to work with large pharmaceutical companies to conclude research and development collaboration agreements or investments, and to pursue public and private sources of equity financing to raise operating cash. However, there can be no assurance that we will be successful in such endeavors.

Summary of Significant Accounting Policies

Principles of Consolidation — The financial statements include the accounts of MDRNA, Inc. and our wholly-owned subsidiaries, Atossa HealthCare, Inc. ("Atossa"), Nastech Holdings I, LLC, Nastech Holdings II, LLC and MDRNA Research, Inc. (formerly MDRNA, Inc.). All inter-company balances and transactions have been eliminated in consolidation.

Use of Estimates — The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires our 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 reported amounts of revenues and expenses during the reporting periods. Estimates having relatively higher significance include revenue recognition, research and development costs, stock-based compensation, inventory reserves, impairment of long-lived assets, estimated accrued restructuring charges and income taxes. Actual results could differ from those estimates.

Cash Equivalents — Cash equivalents consist of cash, money market funds and investments in U.S. Government and Agency Securities and highly-rated investment grade commercial paper with maturities of three months or less at date of purchase. We maintain cash and cash equivalent balances with financial institutions that exceed federally-insured limits. We have not experienced any losses related to these balances, and believe our credit risk is minimal.

Restricted Cash — Amounts pledged as collateral for facility lease deposits are classified as restricted cash. Changes in restricted cash have been presented as investing activities in the consolidated statements of cash flows, unless borrowed funds are pledged, then such changes are presented as financing activities in the consolidated statements of cash flows.

Short-term Investments — Investments in marketable securities consist of debt instruments of U.S. government agencies and high quality corporate issuers (Standard & Poor's double "AA" rating and higher), have been categorized as available-for-sale and are stated at fair value. Unrealized holding gains and losses on

available-for-sale securities are excluded from earnings and are reported as a separate component of other comprehensive income until realized. Realized gains and losses from the sale of available-for-sale securities are determined on a specific-identification basis.

Inventories — Inventories, substantially all of which are raw materials, are stated at the lower of cost or market (first-in, first-out basis). For a further discussion of our inventories, see Note 2: Inventories.

Property and Equipment — Property and equipment is stated at cost and depreciated using the straight-line method over estimated useful lives ranging from three to five years. Leasehold improvements are stated at cost and amortized using the straight-line method over the lesser of the estimated useful life or the remaining lease term. When assets are sold or retired, the cost and related accumulated depreciation are removed from the accounts and any resulting gain or loss is recognized. Expenditures for maintenance and repairs are charged to expense as incurred.

Impairment of Long-Lived Assets, Assets Held for Sale and Inventory Reserve — Long-lived assets, such as property, equipment and inventory, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable, in accordance with Statement of Financial Accounting Standards ("SFAS") No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets" ("SFAS 144"). Conditions that would necessitate an impairment include a significant decline in the observable market value of an asset, a significant change in the extent or manner in which an asset is used, or any other significant adverse change that would indicate that the carrying amount of an asset or group of assets is not recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized in the amount by which the carrying amount of the asset exceeds the fair value of the asset. Long-lived assets are considered held for sale when certain criteria are met, including whether management has committed to a plan to sell the asset, whether the asset is available for sale in its immediate condition, and whether the sale is probable within one year of the reporting date.

Accrued Restructuring — We follow the provisions of SFAS No. 146, "Accounting for Costs Associated with Exit or Disposal Activities" ("SFAS 146"), as it relates to our facility at 3450 Monte Villa Parkway, Bothell, Washington ("3450 Monte Villa"), which we ceased to use in 2008. Under SFAS 146, an accrued liability for remaining lease termination costs is initially measured at fair value, based on the remaining payments due under the lease and other costs, reduced by sublease rental income that could be reasonably obtained from the property, and discounted using a credit-adjusted risk-free interest rate. We use a credit-adjusted risk-free interest rate of 15%, and we based our sublease expectations on current rental rates available in the Bothell real estate market, our evaluation of our ability to sublease our facility in light of tightening credit markets, deteriorating conditions in the Bothell real estate market and increased vacancy rates in the competing downtown real estate markets. Accrued restructuring, and in particular those charges associated with exiting a facility, are subject to management's assumptions and estimates. In addition to the interest rate used, the assumptions as to estimated sublease rental income, the period of time to execute a sublease and the costs and concessions necessary to enter into a sublease significantly impact the accrual and actual results may differ from our estimates. We review these estimates quarterly and adjust our accrual if necessary. For a further discussion of our restructuring charges, see Note 4 — Asset Restructuring and Assets Held for Sale.

Fair Value of Financial Instruments — We consider the fair value of cash and cash equivalents, restricted cash, short-term investments, accounts receivable, accounts payable and accrued liabilities to not be materially different from their carrying value. These financial instruments have short-term maturities. The carrying value of capital lease obligations approximates fair value as interest rates represent current market rates.

Effective January 1, 2008, we adopted SFAS No. 157, "Fair Value Measurements" ("SFAS 157"), for financial assets and liabilities. This standard defines fair value, provides guidance for measuring fair value and requires certain disclosures. This standard does not require any new fair value measurements, but rather applies to all other accounting pronouncements that require or permit fair value measurements and does not apply measurements related to share-based payments. SFAS 157 discusses valuation techniques, such as the market approach (comparable market prices), the income approach (present value of future income or cash flow), and the cost approach (cost to replace the service capacity of an asset or replacement cost). The statement utilizes a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three broad levels. The following is a brief description of those three levels:

Level 1: Observable inputs such as quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2: Inputs other than quoted prices that are observable for the asset or liability, either directly or indirectly. These include quoted prices for similar assets or liabilities in active markets and quoted prices for identical or similar assets or liabilities in markets that are not active.

Level 3: Unobservable inputs that reflect the reporting entity's own assumptions.

All of our financial assets subject to fair value measurements are level 1. At December 31, 2008, we have no financial liabilities subject to fair value measurement.

Concentration of Credit Risk and Significant Customers — We operate in an industry that is highly regulated, competitive and rapidly changing and involves numerous risks and uncertainties. Significant technological and/or regulatory changes, the emergence of competitive products and other factors could negatively impact our consolidated financial position or results of operations.

We have been dependent on our collaborative agreements with a limited number of third parties for a substantial portion of our revenue, and our development and commercialization activities may be delayed or reduced if we do not maintain collaborative arrangements. Our agreement with P&G was terminated in November 2007 and in January 2008 Novo Nordisk completed their feasibility study agreement with us and decided not to further advance the work. In addition, as of the second quarter of 2008, our two feasibility studies with undisclosed partners were completed. We had revenue from certain customers, as a percentage of total revenue, as follows:

	Years Ended December 31,	
	2007	2008
P&G	62%	0%
QOL Medical, LLC ("QOL")	15%	56%
Novo Nordisk	18%	0%
Undisclosed partner — undisclosed compounds	0%	21%
Undisclosed partner — Factor IX	0%	11%
Total	95%	88%

We determine the amount and necessity of recording an allowance for doubtful accounts on an individual account basis based on, among other things, historical experience, creditworthiness of significant customers based upon ongoing credit evaluations and recent economic trends that might impact the level of future credit losses. At December 31, 2007 and 2008, the allowance for doubtful accounts was zero.

Revenue Recognition — Our revenue recognition policies are based on the requirements of SEC Staff Accounting Bulletin (SAB) No. 104 "Revenue Recognition," the provisions of Emerging Issues Task Force ("EITF") Issue No. 00-21, "Revenue Arrangements with Multiple Deliverables," ("EITF 00-21") and the guidance set forth in EITF Issue No. 01-14, "Income Statement Characterization of Reimbursements Received for "Out-of-Pocket" Expenses Incurred" ("EITF 01-14"). Revenue is recognized when there is persuasive evidence that an arrangement exists, delivery has occurred, collectability is reasonably assured, and fees are fixed or determinable. Deferred revenue expected to be realized within the next 12 months is classified as current.

Substantially all of our revenues are generated from research and development collaborations and licensing arrangements with partners that may involve multiple deliverables. For multiple-deliverable arrangements, judgment is required to evaluate, using the framework outlined in EITF 00-21, whether (a) an arrangement involving multiple deliverables contains more than one unit of accounting, and (b) how the arrangement consideration should be measured and allocated to the separate units of accounting in the arrangement. Our research and development collaborations may include upfront non-refundable payments, development milestone payments, R&D Funding, patent-based or product sale royalties, and product sales. In addition, we may receive revenues from licensing arrangements and, to a lesser extent, from government grants. For each separate unit of accounting, we have determined that the delivered item has value to the customer on a stand-alone basis, we have objective and reliable evidence of fair value using available internal evidence for the undelivered item(s) and our arrangements generally do not contain a general right of return relative to the delivered item. In accordance with the guidance in EITF 00-21, we use the residual method to allocate the arrangement consideration when we do not have an objective fair value for a delivered item. Under the residual method, the amount of consideration allocated to the delivered item equals the total arrangement consideration less the aggregate fair value of the undelivered items.

Revenue from research and development collaborations is recorded when earned based on the specific terms of the contracts. Upfront nonrefundable payments, where we are providing continuing services related to a research and development effort, are deferred and recognized as revenue over the collaboration period. Upfront non-refundable payments, where we are not providing any continuing services as in the case of a license to our IP, are recognized when delivery of the license has occurred. The ability to estimate the total research and development effort and costs can vary significantly for each contract due to the inherent complexities and uncertainties of drug research and development. The estimated period of time over which we recognize certain revenues is based upon structured detailed project plans completed by our project managers, who meet with scientists and collaborative counterparts on a regular basis and schedule the key project activities and resources including headcount, facilities and equipment and budgets. These periods generally end on projected milestone dates typically associated with the clinical stage of drug development, i.e. filing of an IND, initiation of a Phase 1 human clinical trial or filing of an NDA. As drug candidates and drug compounds move through the research and development process, it is necessary to revise these estimates to consider changes to the project plan, portions of which may be outside of our control. The impact on revenue of changes in our estimates and the timing thereof is recognized prospectively over the remaining estimated development period.

We typically do not disclose the specific project planning details of a research and development collaboration for competitive reasons and due to confidentiality clauses in our contracts. Therefore, the extension of or decrease in a particular project time-line will affect our estimates of revenue recognition. As an illustrative example only, a one-year increase in a three-year estimated research and development collaboration to four years, occurring at the end of year one, for a $10.0 million non-refundable upfront payment would reduce the annual revenue recognized from approximately $3.3 million in the first year to approximately $2.2 million in each of the remaining three years. Other factors we consider that could impact the estimated time period include FDA actions, clinical trial delays due to difficulties in patient enrollment, delays in the availability of supplies,

personnel or facility constraints or changes in direction from our collaborative partners. It is difficult to predict future changes in these elements.

Milestone payments typically represent nonrefundable payments to be received in conjunction with the achievement of a specific event identified in the contract, such as initiation or completion of specified clinical development activities or specific regulatory actions such as the filing of an IND. We believe a milestone payment represents the culmination of a distinct earnings process when it is not associated with ongoing research, development or other performance on our part and it is substantive in nature. We recognize such milestone payments as revenue when they become due and collection is reasonably assured. When a milestone payment does not represent the culmination of a distinct earnings process, revenue is recognized when the earnings process is deemed to be complete or in a manner similar to that of an upfront non-refundable payment where we are providing continuing services.

Revenue from R&D funding is generally received for services performed under research and development collaboration agreements and is recognized as services are performed. Payments received in excess of amounts earned are recorded as deferred revenue. Under the guidance of EITF 01-14, reimbursements received for direct out-of-pocket expenses related to contract R&D costs are recorded as revenue in the consolidated statements of operations rather than as a reduction in expenses. Reimbursements received for direct out-of-pocket expenses related to contract R&D for the years ended December 31, 2007 and 2008 were not material.

Royalty revenue is generally recognized at the time of product sale by the licensee.

Government grant revenue is recognized during the period qualifying expenses are incurred for the research that is performed as set forth under the terms of the grant award agreements, and when there is reasonable assurance that we will comply with the terms of the grant and that the grant will be received.

Product revenue is recognized when the manufactured goods are shipped to the purchaser and title has transferred under our contracts where there is no right of return. Provision for potential product returns has been made on a historical trends basis. To date, we have not experienced any significant returns from our customers.

Shipping and Handling Costs — Costs of shipping and handling for delivery of our products that are reimbursed by our customers are recorded as revenue in the statement of operations. Shipping and handling costs are charged to cost of goods sold as incurred.

Research and Development Costs — All research and development ("R&D") costs are charged to operations as incurred. Our R&D expenses consist of costs incurred for internal and external R&D. These costs include direct and research-related overhead expenses. We recognize clinical trial expenses, which are included in research and development expenses, based on a variety of factors, including actual and estimated labor hours, clinical site initiation activities, patient enrollment rates, estimates of external costs and other activity-based factors. We believe that this method best approximates the efforts expended on a clinical trial with the expenses recorded. We adjust our rate of clinical expense recognition if actual results differ from our estimates. As product candidates move through the development process, it is necessary to revise these estimates to consider changes to the product development cycle, such as changes in the clinical development plan, regulatory requirements, or various other factors, many of which may be outside of our control. The impact on revenue and research and development expenses of changes in our estimates and the timing thereof, is recognized prospectively over the remaining estimated product development period. The ability to estimate total development effort and costs can vary significantly for each product candidate due to the inherent complexities and uncertainties of drug development.

Stock-Based Compensation — We use the Black-Scholes option pricing model as our method of valuation for stock-based awards. Stock-based compensation expense is based on the value of the portion of the stock-based award that will vest during the period, adjusted for expected forfeitures. The estimation of stock-based awards that will ultimately vest requires judgment, and to the extent actual or updated results differ from our current estimates, such amounts will be recorded in the period the estimates are revised. Although the fair value of stock-based awards is determined in accordance with SFAS No. 123, (revised 2004) "Share Based Payment" ("SFAS 123R"), and Staff Accounting Bulletin No. 107, "Share Based Payment") ("SAB 107"), the Black-Scholes option pricing model requires the input of highly subjective assumptions, and other reasonable assumptions could provide differing results. Our determination of the fair value of stock-based awards on the date of grant using an option pricing model is affected by our stock price as well as assumptions regarding a number of highly complex and subjective variables. These variables include, but are not limited to, the expected life of the award and expected stock price volatility over the term of the award.

Expected Life. The expected life of awards granted represents the period of time that they are expected to be outstanding. SAB 107 provided for a simplified method for estimating expected term for "plain-vanilla" options. The mid-point between the vesting date and the expiration date is used as the expected term under this method. In December 2007, SAB No. 110, "Year-End Help for Expensing Employee Stock Options" ("SAB 110") was released, which extended the use of the simplified method if a company met certain criteria. We have concluded that we meet the criteria to continue to use the simplified method as we have had significant structural changes in our business such that our historical exercise data may no longer provide a reasonable basis upon which to estimate expected term. We have elected to follow the guidance of SAB 107 and SAB 110 and have continued to use the simplified method in determining expected term for all of our stock option awards to employees and directors, with the exception of stock options granted in June 2008 to our Chief Scientific Officer. We used a 10-year expected term as these options contractually allow an exercise period up to the full 10-year term of the options. Options vesting over multiple years vest proportionately on each annual anniversary date.

Expected Volatility. The volatility factor used in the Black-Scholes option valuation model is estimated based solely on our historical stock prices over the most recent period commensurate with the estimated expected life of the award.

Risk-Free Interest Rate. We base the risk-free interest rate used in the Black-Scholes option valuation model on the implied yield currently available on U.S. Treasury zero-coupon issues with an equivalent remaining term equal to the estimated expected life of the award.

Expected Dividend Yield. We have never paid any cash dividends on our common stock and do not anticipate paying any cash dividends in the foreseeable future. Consequently, we use an expected dividend yield of zero in the Black-Scholes option valuation model.

Non-cash compensation expense is recognized on a straight-line basis over the applicable vesting periods of one to five years based on the fair value of such stock-based awards on the grant date.

Net Loss per Common Share — Basic and diluted net loss per common share is computed by dividing the net loss by the weighted average number of common shares outstanding during the period. Diluted loss per share excludes the effect of common stock equivalents (stock options, unvested restricted stock and warrants) since such inclusion in the computation would be anti-dilutive. The following numbers of shares have been excluded:

	Years Ended December 31,	
	2007	2008
Stock options outstanding under our various stock option plans	2,412,318	6,189,331
Unvested restricted stock	610,092	106,763
Warrants	144,430	6,196,875
Total	3,166,840	12,492,969

Operating leases — We lease our facilities under operating leases. Our lease agreements may contain tenant improvement allowances, rent holidays, lease premiums, and lease escalation clauses. For purposes of recognizing incentives, premiums and minimum rental expenses on a straight-line basis over the terms of the leases, we use the date of initial possession to begin amortization, which is generally when we enter the space and begin to make improvements in preparation of intended use. For tenant improvement allowances and rent holidays, we record a deferred rent liability on the consolidated balance sheets and amortize the deferred rent over the terms of the leases as reductions to rent expense on the consolidated statements of operations. For scheduled rent escalation clauses over the course of the lease term or for rental payments commencing at a date other than the date of initial occupancy, we record minimum rental expense on a straight-line basis over the terms of the leases in the consolidated statements of operations.

In March 2009, we entered into an amendment of our lease for 3450 Monte Villa, which reduces our lease obligations by approximately $1.9 million until July 2010. Under the terms of the amendment, we released both a cash deposit of $0.3 million and restricted cash under a letter of credit for $1.0 million to BioMed Realty ("BioMed"), the landlord, to be used by them to cover rent payments or as incentives to attract new tenants. Because of this amendment, we will have no further rent obligations under the 3450 Monte Villa lease for the period from January 2009 until July 2010.

Income Taxes — Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of assets and liabilities and their respective tax bases and operating loss and tax credit carry-forwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

We adopted FASB Interpretation No. 48, "Accounting for Uncertainty in Income Taxes-an interpretation of FASB Statement No. 109" ("FIN 48") on January 1, 2007. We have identified our federal tax return and our state tax return in New York as "major" tax jurisdictions, as defined. The periods subject to examination for our federal and New York state income tax returns are the tax years ended in 1993 and thereafter, since we have net operating loss carryforwards for tax years starting in 1993. We believe our income tax filing positions and deductions will be sustained on audit and we do not anticipate any adjustments that would result in a material change to our financial position. Therefore, no reserves for uncertain income tax positions have been recorded pursuant to FIN 48, nor did we record a cumulative effect adjustment related to the adoption of FIN 48. Our policy for recording interest and penalties associated with audits is to record such items as a component of income (loss) before taxes.

Comprehensive Income (Loss) — Comprehensive income (loss) is comprised of net loss and net unrealized gains or losses on available-for-sale securities and is presented in the accompanying consolidated statement of stockholders' equity (deficit).

Reclassifications — Certain reclassifications have been made to prior years' financial statements to conform with current year presentations. Such reclassifications had no effect on stockholders' equity, net loss, or net decrease in cash and cash equivalents.

Recent Accounting Pronouncements — In December 2007, the FASB issued SFAS No. 141(Revised 2007), "Business Combinations" ("SFAS 141R"), which replaces SFAS 141, while retaining the fundamental requirements in SFAS 141 that the acquisition method of accounting be used for all business combinations and that an acquirer be identified for each business combination. SFAS 141R changes how business acquisitions are accounted for and establishes principles and requirements for how an acquirer recognizes and measures in its financial statements the identifiable assets acquired, the liabilities assumed, any non-controlling interest in the acquiree and the goodwill acquired both on the acquisition date and in subsequent periods, and also establishes disclosure requirements which will enable users to evaluate the nature and financial effects of the business combination. SFAS 141R is effective for fiscal years beginning after December 15, 2008. Early adoption is not permitted. The adoption of SFAS 141R will have an impact on future business combinations.

In December 2007, the FASB issued SFAS No. 160, "Noncontrolling Interests in Consolidated Financial Statements — an amendment of Accounting Research Bulletin No. 51" ("SFAS 160"). SFAS 160 amends Accounting Research Bulletin No. 51 to establish accounting and reporting standards for the non-controlling ownership interests in a subsidiary and for the deconsolidation of a subsidiary, and changes the way the consolidated statement of operations is presented by requiring consolidated net income (loss) to be reported at amounts that include the amounts attributable to both the parent and the non-controlling interest, as well as disclosure, on the face of the statement of operations of those amounts. SFAS 160 also establishes a single method of accounting for changes in a parent's ownership interest in a subsidiary that do not result in deconsolidation, and requires gain recognition in income when a subsidiary is deconsolidated. SFAS 160 also requires expanded disclosures that clearly identify and distinguish between the interests of the parent and the interests of the non-controlling owners. SFAS 160 is effective for fiscal years beginning after December 15, 2008. In the absence of possible future investments, the adoption of SFAS 160 will have no effect on our consolidated financial statements.

In December 2007, the FASB ratified the consensuses reached in EITF Issue No. 07-1, "Collaborative Arrangements" ("EITF 07-1"). EITF 07-1 defines collaborative arrangements and establishes reporting requirements for transactions between participants in a collaborative arrangement and between participants in the arrangements and third parties. Under EITF 07-1, payments between participants pursuant to a collaborative arrangement that are within the scope of other authoritative accounting literature on income statement classification should be accounted for using the relevant provisions of that literature. If the payments are not within the scope of other authoritative accounting literature, the income statement classification for the payments should be based on an analogy to authoritative accounting literature or if there is no appropriate analogy, a reasonable, rational, and consistently applied accounting policy election. EITF 07-1 also provides disclosure requirements and is effective for fiscal years beginning after December 15, 2008, and interim periods within those fiscal years. The effect of applying EITF 07-1 will be reported as a change in accounting principle through retrospective applications to all prior periods presented for all collaborative arrangements existing as of the effective date, unless it is impracticable. We must adopt EITF 07-1 no later than our first quarter of fiscal 2009. EITF 07-1 will not have an effect on our assets, liabilities, stockholders' equity, cash flows or net results of operations.

In June 2008, the FASB issued SFAS No. 162, "The Hierarchy of Generally Accepted Accounting Principles" ("SFAS 162"). SFAS 162 identifies the sources of generally accepted accounting principles and provides a framework, or hierarchy, for selecting the principles to be used in preparing U.S. GAAP financial statements for nongovernmental entities, and makes the GAAP hierarchy explicitly and directly applicable to preparers of financial statements. The hierarchy of authoritative accounting guidance is not expected to change current practice but is expected to facilitate the FASB's plan to designate as authoritative its forthcoming codification of accounting standards. This statement is effective 60 days following the SEC's approval of the PCAOB's related amendments to remove the GAAP hierarchy from its auditing standards.

In June 2008, the Emerging Issues Task Force of the FASB issued EITF Issue No. 07-5, "Determining Whether an Instrument (or Embedded Feature) Is Indexed to an Entity's Own Stock" ("EITF 07-5"), which is effective for fiscal years ending after December 15, 2008, with earlier application not permitted by entities that have previously adopted an alternative accounting policy. The adoption of EITF 07-5's requirements will affect accounting for convertible instruments and warrants with provisions that protect holders from declines in the stock price ("down-round" provisions). Warrants with such provisions will no longer be recorded in equity. EITF 07-5 guidance is to be applied to outstanding instruments as of the beginning of the fiscal year in which the EITF 07-5 is applied. The cumulative effect of the change in accounting principle shall be recognized as an adjustment to the opening balance of retained earnings (or other appropriate components of equity) for that fiscal year, presented separately. The cumulative-effect adjustment is the difference between the amounts recognized in the statement of financial position before initial application of EITF 07-5 and the amounts recognized in the statement of financial position its initial application. The amounts recognized in the statement of financial position as a result of the initial application are determined based on the amounts that would have been recognized if the guidance in EITF 07-5 had been applied from the issuance date of the instrument. In connection with warrants issued in April 2008, the financial reporting (non-cash) effect of initial adoption of this accounting requirement for future financial statements is expected to result in an initial estimated fair value liability of approximately $0.9 million, which will be recorded as an increase in liabilities and increase in stockholders' deficit on January 1, 2009 and adjusted quarterly thereafter during the period the warrants remain outstanding.

Note 2 — Inventories

At December 31, 2008, the original cost basis of our inventory was approximately $2.7 million, composed of $0.1 million of Nascobal® active pharmaceutical ingredient ("API") and materials, and $2.6 million of calcitonin-salmon API and materials for our generic nasal calcitonin-salmon product for which we filed an abbreviated new drug application ("ANDA") with the U.S. Food and Drug Administration ("FDA") in December 2004. Another pharmaceutical company, Apotex, filed a generic application for its nasal calcitonin-salmon product with a filing date that has priority over our ANDA for our generic nasal calcitonin-salmon product. Novartis filed a patent infringement suit against Apotex with respect to Apotex's ANDA. In May 2008, a federal district court dismissed the lawsuit between Novartis and Apotex, due to the parties reaching a settlement in their long-standing litigation. The terms of this settlement were not made public. This, among other things, created uncertainty over our ability to launch our nasal calcitonin-salmon product and caused us to reassess the value of our inventory. In the second quarter of 2008, we recorded a non-cash impairment charge of approximately $2.6 million to cost of goods sold related to the write-down of inventory because we considered the carrying amount of this inventory to likely not be recoverable. In December 2008, the FDA granted tentative approval of our ANDA for our generic calcitonin-salmon nasal spray. We anticipate that full FDA approval will follow the completion of Apotex's 180-day exclusivity period, or June 2009. Since we could not launch the product in 2008, we did not write-up the value of the inventory as of December 31, 2008.

On April 1, 2009, we announced that we had entered into an Asset Purchase Agreement with Par Pharmaceutical Companies, Inc. ("Par") under which Par will acquire our manufacturing facilities in Hauppauge,

New York as well as our Abbreviated New Drug Application (ANDA) for generic calcitonin-salmon nasal spray. Under the terms of the Asset Purchase Agreement, we will receive upfront cash and will receive profit sharing for five years on commercial sales of calcitonin. In addition, Par Pharmaceutical will assume all of our current supply and manufacturing obligations with QOL for Nascobal® products, as well as all operating costs and leases associated with the facilities, including employment of our Hauppauge employees. For additional discussion of the status of our collaboration with Par, see Note 10: Intellectual Property and Contractual Agreements — Par Pharmaceutical.

Note 3 — Property and Equipment

Property and equipment at December 31, 2007 and 2008 are comprised of the following (in thousands):

	2007	2008
Furniture and fixtures	$ 1,804	$ 997
Machinery and equipment	12,371	6,623
Computer equipment and software	5,191	3,824
Leasehold improvements	7,726	4,810
	27,092	16,254
Less accumulated depreciation and amortization	12,088	8,410
Net property and equipment	$15,004	$ 7,844

Assets under capital leases, primarily equipment, totaled approximately $17.4 million and $13.2 million at December 31, 2007 and 2008, respectively, and accumulated amortization of assets under capital leases totaled approximately $5.4 million and $6.3 million at December 31, 2007 and 2008, respectively.

Note 4 — Accrued Restructuring and Assets Held For Sale

Since late 2007, we have restructured our operations to focus on our RNAi programs. As part of the restructuring, we have reduced our workforce from approximately 235 employees in late 2007 to approximately 49 full-time employees at December 31, 2008. We have also closed certain of our facilities and have taken other steps to reduce our cash expenditures. We have recorded restructuring charges related to employee termination costs, our facility consolidation and impairment of assets in accordance with our long-lived assets policy (see Note 2). In addition, we also incurred approximately $0.3 million related to our decision in 2008 to place our Phase 2 PTH(1-34) clinical trial on hold until further funding has been obtained. We continue to work to identify a partner or partners to further develop and commercialize our legacy intranasal programs through either a sale or licensing transaction; however, there can be no assurance that we will be able to identify suitable partners for our intranasal programs or a sale or licensing transaction on terms acceptable to us or at all.

Our workforce reduction included three executives from our intranasal programs and, in accordance with the terms of their employment agreements, the vesting of their outstanding unvested options and restricted stock was accelerated. The related non-cash stock-based compensation expense of approximately $0.9 million was included in restructuring expense in 2008.

During 2008, we closed our facility at 3450 Monte Villa and recorded a restructuring liability of approximately $2.4 million, representing remaining lease payments due under the lease and other costs, reduced by sublease rental income that could be reasonably obtained from the property, and discounted using a credit-adjusted risk-free interest rate. In March 2009, we entered into an amendment of our lease for this facility, which reduces our lease obligations by approximately $1.9 million until July 2010. Under the terms of the amendment,

we released both a cash deposit of $0.3 million and restricted cash under a letter of credit for $1.0 million to the landlord, to be used by them to cover rent payments or as incentives to attract new tenants. As inducement to enter into the amendment, we issued 1.5 million shares of our common stock to the sole member of the landlord. Because of this amendment, we will have no further rent obligations under the 3450 Monte Villa lease for the period from January 2009 until July 2010. We use a credit-adjusted risk-free interest rate of 15%, and we based our sublease expectations on current rental rates available in the Bothell real estate market, our evaluation of the likelihood of subleasing our facility in light of tightening credit markets, deteriorating conditions in the Bothell real estate market and increased vacancy rates in the competing downtown real estate markets. The previously recorded related deferred rent liability of approximately $1.0 million was reclassified to the accrued restructuring liability in 2008. During the year ended December 31, 2008, we recorded approximately $37,000 in accretion expense. We expect to incur approximately $0.2 million in accretion expense through the expiration of this lease in January 2016.

Given the triggering event as a result of the employee terminations and facility consolidation, we have evaluated our long-lived assets for possible impairment under the guidance in SFAS 144. In 2008, leasehold improvements having a net book value of approximately $1.5 million and fixed assets having a net book value of approximately $0.4 million were considered impaired by management as they related to our facility which we had ceased to use. A related charge was included in restructuring expense in 2008. During 2008, we had sales of property and equipment totaling $0.7 million in net realizable value, less costs to sell, and the net loss on sale of approximately $63,000 was included in restructuring expense. At December 31, 2008, property and equipment having a net realizable value of approximately $0.5 million, net of estimated costs to sell, was held for sale.

Accrued restructuring, and in particular those charges associated with exiting a facility, are subject to management's assumptions and estimates. In addition to the interest rate used, the assumptions as to estimated sublease rental income, the period of time to execute a sublease and the costs and concessions necessary to enter into a sublease significantly impact the accrual and actual results may differ from our estimates.

The components of restructuring are summarized as follows (in thousands):

	Year ended December 31, 2008
Employee severance and termination benefits (including stock compensation charges)	$3,986
Property and equipment impairment	1,962
Facility related charges	2,015
Other restructuring charges	294
Total restructuring	$8,257

The following table reflects the activity in accrued restructuring for the year ended December 31, 2008 (in thousands):

	Employee Severance and Termination Benefits	Facility Related Charges	Other	Total
Balance, December 31, 2007	$ 151	$ —	$ —	$ 151
Additional accruals	3,119	2,946	294	6,359
Payments	(2,921)	(632)	(294)	(3,847)
Accretion	—	37	—	37
Balance, December 31, 2008	$ 349	$2,351	$ —	$ 2,700

Note 5 — Employee Benefit Plan

We have a 401(k) plan for employees meeting eligibility requirements. Eligible employees may contribute up to 100% of their eligible compensation, subject to IRS limitations. Our contributions to the plans are discretionary as determined by our board of directors. Effective January 1, 2004, we implemented a matching program to match employee contributions of up to 6% of compensation at 25 cents for each dollar contributed by the employee. Employer contributions were $0.2 million and $0.1 million in the years ended December 31, 2007 and 2008, respectively.

Note 6 — Letter of Credit

At December 31, 2007 and 2008, we had a letter of credit with our bank, pursuant to which a standby letter of credit in the amount of approximately $2.2 million had been issued to the landlords of our Bothell, Washington facilities.

In March 2009, we entered into an amendment of our lease for 3450 Monte Villa Parkway, Bothell, WA, which among other things, released to the landlord our cash deposit of approximately $0.3 million and restricted cash under the letter of credit in the amount of approximately $1.0 million. The landlord may draw upon the cash deposit or the letter of credit at any time and is expected to do so in 2009.

Note 7 — Stockholders' Equity

Preferred Stock — Our board of directors has the authority, without action by the stockholders, to designate and issue up to 100,000 shares of preferred stock in one or more series and to designate the rights, preferences and privileges of each series, any or all of which may be greater than the rights of our common stock. We have designated 90,000 shares as Series A Junior Participating Preferred, of which no shares are outstanding. See *Stockholder Rights Plan* in this Note 7 below.

In January 2009, we entered into a Loan and Security Agreement ("Loan Agreement") with GECC, pursuant to which we borrowed approximately $5.5 million from GECC to partially finance the purchase of certain equipment. The Loan Agreement, which is described further in Note 9: Commitments and Contingencies, contains certain customary representations, warranties, covenants, agreements and indemnities. We are subject to certain negative covenants, among others, including that we may not declare or pay dividends, subject to certain customary exceptions.

Common Stock — Holders of our common stock are entitled to one vote for each share held of record on all matters submitted to a vote of the holders of our common stock. Subject to the rights of the holders of any class of our capital stock having any preference or priority over our common stock, the holders of shares of our common stock are entitled to receive dividends that are declared by our board of directors out of legally available funds. In the event of our liquidation, dissolution or winding-up, the holders of common stock are entitled to share ratably in our net assets remaining after payment of liabilities, subject to prior rights of preferred stock, if any, then outstanding. Our common stock has no preemptive rights, conversion rights, redemption rights or sinking fund provisions, and there are no dividends in arrears or default. All shares of our common stock have equal distribution, liquidation and voting rights, and have no preferences or exchange rights.

At our annual meeting of stockholders in June 2008, the stockholders approved an increase in the authorized number of shares of our common stock from 50,000,000 to 90,000,000. There were no changes to the rights, preferences or privileges of our common stock.

Common Stock Issuances — In January 2007, we completed a public offering of 3,250,000 shares of our common stock at a public offering price of $13.00 per share under our $125.0 million shelf registration statement. The offering resulted in gross proceeds of approximately $42.2 million, prior to the deduction of fees and commissions of approximately $1.3 million.

In January 2008, we filed a universal shelf registration statement with the SEC pursuant to which we can issue up to $50.0 million of our common stock, preferred stock, debt securities, warrants to purchase any of the foregoing securities and units comprised of any of the foregoing securities. The universal shelf registration statement was declared effective by the SEC on February 4, 2008. As of December 31, 2008, we had approximately $110.4 million remaining on our effective shelf registration statements.

In April 2008, we raised net proceeds of approximately $7.3 million in a registered direct offering of 4,590,277 shares of common stock along with warrants to purchase up to 5,967,361 shares of common stock at a negotiated purchase price of $1.728 per share. Warrants to purchase up to 4,590,277 shares of common stock are exercisable during the seven-year period beginning October 25, 2008 at a price of $2.376 per share. Additional warrants to purchase up to 1,377,084 shares of common stock at a price of $2.17 per share were exercisable for a 90-day period beginning October 25, 2008 and subsequently expired in January 2009. In addition, warrants to purchase up to 229,514 shares of common stock, which are exercisable during the five-year period beginning October 25, 2008 at a price of $2.376 per share, were issued to the placement agent in connection with the transaction.

In February and March 2009, we issued to eight of our vendors an aggregate of 1,364,285 shares of our common stock having an estimated market value of approximately $0.4 million on the issue dates to settle amounts due to these vendors of approximately $0.6 million in total.

In March 2009, we entered into an amendment of our lease for 3450 Monte Villa Parkway which will reduce our future cash expenditures related to this lease. As inducement to enter into the amendment, we issued 1.5 million shares of our common stock (the "Shares") to the landlord pursuant to the Stock Purchase Agreement, which among other things provides the holder of the Shares with certain piggyback registration rights with respect to the Shares, which rights continue until such time as the Shares may be sold publicly without restriction under the Securities Act. The value of the shares issued was approximately $0.4 million on the date of issuance. In March 2009, we entered into an amendment of our agreement regarding severance obligations with our former Chief Scientific Officer, pursuant to which we agreed to pay the former executive a reduced sum of $0.9 million and to issue the former executive 731,275 unregistered shares of our common stock having an estimated market value of approximately $0.2 million as of the agreement date, in full satisfaction of $1.7 million in severance obligations which was included in accrued employee compensation and employee benefits at December 31, 2008.

Stockholder Rights Plan — In February 2000, our board of directors adopted a stockholder rights plan and declared a dividend of one preferred stock purchase right for each outstanding share of common stock. Each right entitles the holder, once the right becomes exercisable, to purchase from us 1/1000th of a share of our Series A Junior Participating Preferred Stock, par value $.01 per share. We issued these rights in March 2000 to each stockholder of record on such date, and these rights attach to shares of common stock subsequently issued. The rights will cause substantial dilution to a person or group that attempts to acquire us on terms not approved by our board of directors and could, therefore, have the effect of delaying or preventing someone from taking control of us, even if a change of control were in the best interest of our stockholders.

Holders of our preferred share purchase rights are generally entitled to purchase from us one one-thousandth of a share of Series A preferred stock at a price of $50.00, subject to adjustment as provided in the Stockholder Rights Agreement. These preferred share purchase rights will generally be exercisable only if a person or group becomes the beneficial owner of 15 percent or more of our outstanding common stock or announces a tender offer for 15 percent or more of our outstanding common stock. Each holder of a preferred share purchase right, excluding an acquiring entity or any of its affiliates, will have the right to receive, upon exercise, shares of our common stock, or shares of stock of the acquiring entity, having a market value equal to two times the purchase price paid for 1/1000th of a share of Series A preferred stock. The preferred share purchase rights expire on March 17, 2010, unless we extend the expiration date or in certain limited circumstances, we redeem or exchange such rights prior to such date. Initially, 10,000 Series A Junior Participating Preferred shares were authorized. In January 2007 this was increased to 50,000 shares, and in June 2008 this was further increased to 90,000 shares, so that a sufficient number of Series A Junior Participating Preferred shares would be available to the holders of shares of common stock for issuance in satisfaction of such rights, given increases in the number of shares of common stock outstanding.

Stock Incentive Plans — In June 2008, our 2008 Stock Incentive Plan was approved by our stockholders under which an aggregate of 4,500,000 shares of common stock are available for grant. In addition, in June 2008, we granted 1,099,963 options to our Chief Executive Officer, outside of our stock-based incentive plans as an employment inducement grant. We also maintain a 2000 Nonqualified Stock Option Plan, a 2002 Stock Option Plan and a 2004 Stock Incentive Plan. Under our stock compensation plans, we are authorized to grant options to purchase shares of common stock to our employees, officers and directors and other persons who provide us services. The options to be granted are designated as either incentive stock options or non-incentive stock options by our board of directors, which also has discretion as to the person to be granted options, the number of shares subject to the options and the terms of the option agreements. Only employees, including officers and part-time employees, may be granted incentive stock options. Under our 2004 and 2008 plans, we are authorized to grant awards of restricted stock, stock appreciation rights and performance shares, in addition to stock options. As of December 31, 2008, no stock appreciation rights or performance shares have been granted. Options granted under the plans generally have terms of ten years from the date of grant, and generally vest over three to five years. We generally issue new shares for option exercises unless treasury shares are available for issuance. We had no treasury shares as of December 31, 2008 and have no plans to purchase any in the next year, however, we may accept the surrender of vested restricted shares from employees to cover tax requirements at our discretion.

At December 31, 2008, options to purchase up to 6,189,331 shares of our common stock were outstanding, unvested restricted stock awards for an aggregate of 106,763 shares of our common stock were outstanding under our 2004 Plan and 2,487,172 shares were reserved for future grants or awards under our various stock incentive plans.

Stock-based Compensation — The following table summarizes stock-based compensation expense (in thousands):

	Years Ended December 31,	
	2007	2008
Research and development	$2,993	$6,203
Sales and marketing	413	390
General and administrative	2,841	1,952
Restructuring	—	867
Total	$6,247	$9,412

Non-cash compensation expense is recognized on a straight-line basis over the applicable vesting periods of one to five years based on the fair value on the grant date. Certain option and share awards provide for accelerated vesting if there is a change in control (as defined in the applicable plan and certain employment agreements we have with key officers).

Stock Options — Option activity under the plans was as follows:

	Years Ended December 31,			
	2007		2008	
	Shares	Weighted Average Exercise Price	Shares	Weighted Average Exercise Price
Outstanding at beginning of period	2,412,412	$13.18	2,412,318	$13.26
Granted	228,773	11.40	6,271,944	$ 2.32
Exercised	(134,167)	9.59	—	—
Expired	(90,867)	11.76	(468,444)	9.52
Forfeited	(3,833)	13.26	(1,326,487)	2.88
Canceled	—	—	(700,000)	16.19
Outstanding at end of period	2,412,318	$13.26	6,189,331	$ 4.35
Exercisable at end of period	1,849,957	$13.23	3,349,831	$ 6.26

The following table summarizes additional information on our stock options outstanding at December 31, 2008:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	Number Outstanding	Weighted-Average Remaining Contractual Life (Years)	Weighted-Average Exercise Price	Number Exercisable	Weighted-Average Exercisable Price
$0.48 - $ 1.27	1,934,650	7.5	$ 1.21	837,484	$ 1.19
$2.14 - $ 2.27	1,445,673	9.3	2.21	420,000	2.19
$3.19 - $ 3.27	1,136,661	9.4	3.22	420,000	3.19
$4.19 - $ 5.19	440,000	9.4	4.69	440,000	4.69
$8.83 - $15.43	1,232,347	3.2	12.70	1,232,347	12.70
Totals	6,189,331	7.6	$ 4.35	3,349,831	$ 6.26
Exercisable at Dec. 31, 2008	3,349,831	6.2			

We currently use the Black-Scholes option pricing model to determine the fair value of our stock-based awards. The determination of the fair value of stock-based awards on the date of grant using an option-pricing model is affected by our stock price as well as by assumptions regarding a number of complex and subjective variables. These variables include our expected stock price volatility over the term of the awards, actual and projected employee stock option exercise behaviors, risk-free interest rate and expected dividends. Staff Accounting Bulletin ("SAB") No. 107, "Share Based Payment" ("SAB 107") provided for a simplified method for estimating expected term for "plain-vanilla" options. The mid-point between the vesting date and the expiration date is used as the expected term under this method. In December 2007, SAB No. 110, "Year-End Help for Expensing Employee Stock Options" ("SAB 110") was released, which extended the use of the simplified method if a company met certain criteria. We have concluded that we meet the criteria to continue to use the simplified method as we have had significant structural changes in our business such that our historical exercise data may no longer provide a reasonable basis upon which to estimate expected term. We have elected to follow the guidance of SAB 107 and SAB 110 and have continued to use the simplified method in determining expected term for all of our stock option awards to employees and directors, with the exception of stock options granted in June 2008 to our Chief Scientific Officer. We used a 10-year expected term as these options contractually allow an exercise period up to the full 10-year term of the options.

We estimate volatility of our common stock by using our stock price history to forecast stock price volatility. The risk-free interest rates used in the valuation model were based on U.S. Treasury issues with remaining terms similar to the expected term on the options. We do not anticipate paying any dividends in the foreseeable future and, therefore, use an expected dividend yield of zero. Forfeitures are estimated based on historical experience. The fair value of stock-based awards was estimated at the date of grant using the Black-Scholes option valuation model with the following weighted average assumptions for the periods presented as follows:

	2007	2008
Expected dividend yield	0%	0%
Risk free interest rate	4.5%	3.5%
Expected stock volatility	63%	71%
Expected option life	5.8 years	7.1 years
Weighted average fair value granted	$ 6.97	$ 0.80

As of December 31, 2008, we had approximately $1.4 million of total unrecognized compensation cost related to unvested stock options. Total unrecognized compensation cost will be adjusted for future changes in estimated forfeitures. We expect to recognize this cost over a weighted average period of approximately 1.2 years.

At December 31, 2008, both the aggregate intrinsic value of options outstanding and the aggregate intrinsic value of options exercisable were nil, since all of the options outstanding as of that date had an exercise price greater than the closing market price of $0.34. The intrinsic value of stock options is based on the closing market price of our common stock and is calculated by aggregating the difference between the closing market price and the exercise price of the options. The total intrinsic value of options exercised during 2007 was approximately $0.6 million determined as of the date of exercise. No options were exercised during 2008. The total fair value of options that vested during 2007 and 2008 was approximately $2.9 million and $6.0 million, respectively.

In June 2008, in connection with our annual shareholders meeting, five members of our board of directors retired. Our board of directors approved a resolution to extend the amount of time the retiring directors have to exercise their vested options from 90 days to two years and to accelerate the vesting of approximately 21,320

restricted shares which would have vested for the retiring directors over the remaining one or two years. Additional compensation expense recognized as a result of these modifications was not material.

Our workforce reduction included three executives from our intranasal programs. In accordance with the terms of their employment agreements, the vesting of their outstanding unvested options and restricted stock awards was accelerated as of September 30, 2008. The related non-cash stock-based compensation expense of $0.9 million was included in restructuring expense in 2008.

In October 2008, we announced the termination of employment of our Chief Scientific Officer, effective November 30, 2008. In connection with the termination, as of November 30, 2008, 42,000 remaining unvested restricted shares became fully vested and unvested options to purchase 1,700,000 shares of common stock at a weighted average exercise price of approximately $2.84 per share that had been previously granted pursuant to his employment agreement became fully vested and exercisable. Additional unvested options to purchase 2,831 shares of common stock at an exercise price of $13.16 per share also became fully vested and exercisable in accordance with the terms of his employment agreement. The former executive also surrendered, without consideration, for cancellation, options to purchase 600,000 shares of common stock at an exercise price of $14.72 per share and options to purchase 100,000 shares of common stock at an exercise price of $25.00 per share. In connection with the termination, we recognized approximately $2.5 million in non-cash stock compensation, which was recorded in research and development expense during the fourth quarter of 2008.

During 2007 and 2008, we recorded stock-based compensation expense related to stock options of approximately $2.7 million and $6.4 million, respectively.

Non-Employee Option Grants — In June 2008 we granted stock options to four non-employee members of our Scientific Advisory Board. For stock options granted as consideration for services rendered by non-employees, we recognize compensation expense in accordance with the requirements of SFAS 123(R), EITF Issue No. 96-18, "Accounting for Equity Instruments that are Issued to Other Than Employees for Acquiring, or in Conjunction with Selling, Goods or Services" and EITF Issue No. 00-18 "Accounting Recognition for Certain Transactions involving Equity Instruments Granted to Other Than Employees," as amended. Non-employee option grants are recorded as an expense over the vesting period of the underlying stock options. At the end of each financial reporting period prior to vesting, the value of these options, as calculated using the Black-Scholes option pricing model, is re-measured using the fair value of our common stock and the non-cash compensation recognized during the period is adjusted accordingly. Since the fair value of options granted to non-employees is subject to change in the future, the amount of future compensation expense includes fair value re-measurements until the stock options are fully vested. The Scientific Advisory Board was terminated effective December 31, 2008 at which time one-third of the options were vested immediately and the remaining two-thirds were cancelled. During the year ended December 31, 2008, we recognized expense of approximately $0.1 million relating to options granted to non-employee members of our Scientific Advisory Board.

Restricted Stock Awards — Pursuant to restricted stock awards granted under our 2004 Plan, we have issued shares of restricted stock to certain employees and members of our board of directors. As of December 31, 2008 no restricted stock awards have been granted under our 2008 Plan. Non-cash compensation expense is being recognized on a straight-line basis over the applicable vesting periods of one to four years of the restricted shares based on the fair value of such restricted stock on the grant date. Additional information on restricted shares is as follows:

	Years Ended December 31,	
	2007	2008
Unvested restricted shares outstanding, beginning of period	544,480	610,092
Restricted shares issued	366,705	66,429
Restricted shares forfeited	(88,698)	(240,271)
Restricted shares vested	(212,395)	(329,487)
Unvested restricted shares outstanding, end of period	610,092	106,763
Weighted average grant date fair value per share	$ 12.89	$ 8.79

Our total unrecognized compensation cost related to unvested restricted stock awards granted under our 2004 Stock Incentive Plan was approximately $2.1 million at December 31, 2008. Total unrecognized compensation cost will be adjusted for future changes in estimated forfeitures. We expect to recognize this cost over a weighted average period of approximately 1.5 years.

In 2007 and 2008, we recorded stock-based compensation expense related to the amortization of restricted stock grants of approximately $3.5 million and $2.9 million. The fair value of restricted stock vested in 2007 and 2008 was approximately $2.9 million and $4.2 million.

Employee Stock Purchase Plan — In June 2007, our shareholders approved the adoption of our 2007 Employee Stock Purchase Plan ("ESPP"). A total of 300,000 shares of common stock were reserved for issuance under our ESPP. Under the terms of our ESPP, a participant may purchase shares of our common stock at a price equal to the lesser of 85% of the fair market value on the date of offering or on the date of purchase. An aggregate of 74,591 shares were issued under the ESPP during 2008. The amounts expensed related to our ESPP in the years ended December 31, 2007 and 2008 were $41,000 and $107,000, based on employee contributions and on the following weighted average variables:

	Year Ended December 31,	
	2007	2008
Expected dividend yield	0%	0%
Risk free interest rate	4.8%	3.2%
Expected volatility	52.7%	90.9%
Expected term	0.5 years	0.5 years
Fair value	$ 4.18	$ 2.62

Warrants — In connection with offerings of our common stock, we have issued warrants to purchase shares of our common stock. At December 31, 2007, there were warrants outstanding for the purchase of 144,430 shares of our common stock with an exercise price of $11.09, which expired in September 2008. In April 2008, we raised net proceeds of approximately $7.3 million in a registered direct offering of 4,590,277 shares of common stock along with warrants to purchase up to 5,967,361 shares of common stock at a negotiated purchase price of $1.728 per share. Warrants to purchase up to 4,590,277 shares of common stock are exercisable during the seven-year period beginning October 25, 2008 at a price of $2.376 per share, and warrants to purchase up to 1,377,084

shares of common stock are exercisable during the 90-day period beginning October 25, 2008 at a price of $2.17 per share. These 1,377,084 warrants expired on January 25, 2009. In addition, warrants to purchase up to 229,514 shares of common stock, which are exercisable during the five-year period beginning October 25, 2008 at a price of $2.376 per share, were issued to the placement agent in connection with the transaction. The warrants were evaluated under the guidance set forth in EITF Issue No. 00-19, "Accounting for Derivative Financial Instruments Indexed to, and Potentially Settled in, a Company's Own Stock" ("EITF 00-19"). We considered the provisions of EITF 00-19 with respect to the warrants and concluded that the warrants may be physically or net-share settled at the investor's option and do not contain any net-cash settlement provisions or any provisions deemed under EITF 00-19 to be equivalent to net-cash settlement provisions and are appropriately classified as equity. The following summarizes warrant activity during the year ended December 31, 2008 (in thousands).

Warrants outstanding, December 31, 2007	144
Warrants issued	6,197
Warrants exercised	—
Warrants expired	(144)
Warrants outstanding, December 31, 2008	6,197
Weighted average exercise price, December 31, 2008	$ 2.33

Note 8 — Income Taxes

Our net deferred tax assets as of December 31, 2007 and 2008 are as follows (in thousands):

	Years Ended December 31,	
	2007	2008
Deferred tax assets:		
Net operating loss carryforwards	$ 63,320	$ 79,184
Tax credit carryforwards	7,649	8,876
Depreciation & amortization	3,523	4,507
Accrued liabilities	1,053	2,329
Other	2,019	4,385
Total deferred tax assets	77,564	99,281
Valuation allowance	(77,564)	(99,281)
Net deferred taxes	$ —	$ —

We continue to record a valuation allowance in the full amount of deferred tax assets since realization of such tax benefits has not been determined by our management to be more likely than not. The valuation allowance increased $19.5 million and $21.7 million during 2007 and 2008, respectively. As a result of the valuation allowance, there were no tax benefits or expenses recorded in the accompanying consolidated statements of operations for the years ended December 31, 2007 or 2008.

At December 31, 2008, we had available net operating loss carryforwards for federal and state income tax reporting purposes of approximately $219.0 million and $49.6 million, respectively, and had available tax credits of approximately $8.9 million, which are available to offset future taxable income. A portion of these carryforwards will expire in 2009 and will continue to expire through 2027 if not otherwise utilized. Our ability to use such net operating losses and tax credit carryforwards is subject to an annual limitation due to change of control provisions under Sections 382 and 383 of the Internal Revenue Code. An additional change of control as defined by such provisions may have resulted from our registered direct offering dated April 25, 2008, and, if so, the limitation on the usage of our net operating losses and tax credit carryforwards in the future would be

significant. These limitations have been considered in determining the deferred tax asset associated with net operating loss carryforwards.

During 2007, employee stock options were exercised that resulted in income tax deductions in the amount of approximately $0.6 million. There were no employee stock options exercised during 2008. The cumulative total of such deductions at December 31, 2008 is approximately $12.2 million. During 2007 and 2008, we reported income tax deductions of approximately $2.6 million and $0.4 million related to restricted stock. Tax benefits in excess of stock-based compensation expense recorded for financial reporting purposes relating to such stock options and restricted stock will be credited to additional paid-in capital in the period the related tax deductions are realized.

The difference between the expected benefit computed using the statutory tax rate and the recorded benefit of zero is primarily due to the change in the valuation allowance.

Note 9 — Commitments and Contingencies

Leases — We lease space for our manufacturing, research and development and corporate offices in Bothell, Washington under operating leases expiring in 2016. In connection with the terms of our lease of our Bothell, Washington facilities, we provide our landlords with stand-by letters of credit that total approximately $2.2 million.

Until March 2009, we had facilities for manufacturing, warehousing and research and development activities in Hauppauge, New York under operating leases expiring in June 2010. On April 1, 2009 we announced that we had entered into an Asset Purchase Agreement with Par under which Par will assume operating costs and leases associated with the facilities.

In March 2009, we entered into an amendment of our lease for 3450 Monte Villa, which reduces our lease obligations by approximately $1.9 million until July 2010. Under the terms of the amendment, we released both a cash deposit of $0.3 million and restricted cash under a letter of credit for $1.0 million to BioMed Realty ("BioMed"), the landlord, to be used by them to cover rent payments or as incentives to attract new tenants. As inducement to enter into the amendment, we issued 1.5 million shares of our common stock (the "Shares") to BioMed, and granted BioMed certain piggyback registration rights with respect to the Shares until the Shares may be sold publicly without restriction under the Securities Act. The value of the shares issued was approximately $0.4 million on the date of issuance. Because of this amendment, we will have no further rent obligations under the 3450 Monte Villa lease for the period from January 2009 until July 2010.

Rent expense approximated $3.5 million in 2007 and $2.5 million in 2008. An additional $0.5 million in rental payments were recorded to the restructuring liability during 2008.

We have entered into a capital lease agreement with General Electric Capital Corporation ("GECC"), which allowed us to finance certain property and equipment purchases over three-or four-year terms depending on the type of equipment. Under this agreement, we purchase assets approved by GECC, at which date GECC assumes ownership of the assets and we are reimbursed. The equipment was then leased to us. Interest rates on capital lease borrowings averaged approximately 10.0% during 2007 and 2008. Assets leased are pledged as collateral for capital lease borrowings. The lease agreement was cancelled in January 2009 pursuant to the Loan Agreement further described below.

The following is a schedule of future annual minimum lease payments under facility operating leases and capital leases as of December 31, 2008 (in thousands):

	3450 Monte Villa	Occupied Facilities	Capital Leases	Total
2009	$ 1,782	$ 1,329	$4,297	$ 7,408
2010	1,826	1,338	1,141	4,305
2011	1,872	1,325	111	3,308
2012	1,919	1,384	—	3,303
2013	1,967	1,442	—	3,409
Thereafter	4,258	3,353	—	7,611
Less amount representing interest	—	—	(420)	(420)
Total	$13,624	$10,171	$5,129	$28,924

In January 2009, we entered into a Loan and Security Agreement (the "Loan Agreement") with General Electric Capital Corporation ("GECC") pursuant to which we borrowed funds from GECC to partially finance the purchase of certain equipment leased to us by GECC. We borrowed approximately $5.5 million from GECC evidenced by a promissory note issued to GECC. No additional advances are available under the Loan Agreement. The outstanding principal balance bears interest in arrears from the date of the Loan Agreement until the loan is fully repaid at a fixed rate of 12.29% per year. The loan was paid down to $1.8 million in March 2009 at which time the remaining loan balance was re-amortized to be paid off in 12 equal monthly payments of approximately $160,000 each. There are acceleration clauses which include additional payments to the principal based on the proceeds of certain transactions which could result in the loan being repaid prior to April 2010. In addition, the Loan requires a fee of 3% of the original balance to be paid at the time the Loan is paid in full, subject to certain early payoff reductions. Substantially all of our assets now owned, including our intellectual property, secure our obligations under the Loan Agreement. The Loan Agreement contains customary representations, warranties, covenants, agreements and indemnities. Under the Loan Agreement, we are subject to certain affirmative covenants, and certain negative covenants, including among others that we may not incur additional indebtedness, dispose of any property, enter into certain change of control events, declare or pay dividends or prepay other indebtedness, make investments or acquisitions, enter into transactions with affiliates, or amend existing material agreements, in each case subject to certain customary exceptions. We are not precluded, however, from entering into strategic licensing or partnership transactions by the Loan Agreement as evident by the Roche, Novartis and Par transactions all completed after January 2009.

NASDAQ Deficiency Notice — On September 19, 2008, we received a letter from the Listing Qualifications Department of the NASDAQ Stock Market notifying us that we were not in compliance with the minimum $1.00 per share minimum bid price requirement for continued inclusion on the NASDAQ Global Market set forth in NASDAQ Marketplace Rule 4450(a)(5), as a result of the bid price of our common stock having closed below $1.00 for the 30 consecutive business days prior to the date of the letter. NASDAQ's letter advised us that, in accordance with the NASDAQ Marketplace Rule 4450(e)(2), we will be provided 180 calendar days, or until March 18, 2009, to regain compliance. The letter further advised that such compliance can be achieved if, at any time before March 18, 2009, the bid price of our common stock closes at $1.00 or more per share for a minimum of 10 consecutive business days. NASDAQ has suspended enforcement of the minimum bid price requirement for all issuers until July 20, 2009, and, accordingly, our date to regain compliance with the minimum bid price requirement has been extended to December 21, 2009. There can be no assurance that we will be able to regain compliance with the continued listing requirement of NASDAQ Marketplace Rule 4450(a)(5).

Separately, on November 18, 2008, we received a staff deficiency letter from NASDAQ notifying us that, based on our stockholders' equity as reported in our Quarterly Report on Form 10-Q for the period ended September 30, 2008, we do not comply with the minimum stockholders' equity requirement of $10 million for

continued listing on The NASDAQ Global Market as set forth in NASDAQ Marketplace Rule 4450(a)(3). On December 3, 2008, we submitted to NASDAQ a specific plan to achieve and sustain compliance with all NASDAQ Global Market listing requirements, and on December 22, 2008, we received notice from NASDAQ granting us an extension until March 3, 2009 to regain compliance.

We did not regain compliance on or prior to March 3, 2009 and, accordingly, on March 4, 2009, we received written notification (the "Staff Determination") from NASDAQ stating that our common stock would be subject to delisting from The NASDAQ Global Market as a result of the deficiency. On March 5, 2009, we requested a hearing before the NASDAQ Listing Qualifications Panel to review the Staff Determination, which will stay any action with respect to the Staff Determination until NASDAQ renders a decision subsequent to the hearing. At the hearing, currently scheduled for April 23, 3009, we intend to present a plan to regain compliance. There can be no assurance that the Panel will grant our request for continued listing.

Contingencies — We are subject to various legal proceedings and claims that arise in the ordinary course of business. Our management currently believes that resolution of such legal matters will not have a material adverse impact on our consolidated financial position, results of operations or cash flows.

Note 10 — Intellectual Property and Contractual Agreements

RNAi-related

Roche — In February 2009, we entered into an agreement with Hoffman-La Roche Inc., a New Jersey corporation, and F. Hoffmann-La Roche Ltd., a Swiss corporation (collectively, "Roche"), pursuant to which we granted to Roche a worldwide, non-exclusive license to a portion of our technology platform, for the development of RNAi-based therapeutics, in consideration of a one-time non-refundable licensing fee.

Novartis — In March 2009, we entered into an agreement Novartis Institutes for BioMedical Research, Inc. ("Novartis"), pursuant to which we granted to Novartis a worldwide, non-exclusive license to our DiLA^2-based siRNA delivery platform in consideration of a one-time, non-refundable fee of $7.25 million. Additionally, we entered into a separate agreement with Novartis to provide them with an exclusive period in which to negotiate a potential research and development collaboration as well as possible broader licensing rights related to our RNAi drug delivery platform.

University of Michigan — In May 2008, we entered into an exclusive license agreement to IP from the University of Michigan covering cationic peptides for enhanced delivery of nucleic acids. These peptides have unique characteristics that we believe play an important role in improving the efficacy of delivery of RNAi-based therapeutics. We are currently using these peptides to create siRNA nanoparticles to enhance gene expression knockdown. Together with the DiLA^2 Platform of novel delivery liposomes, these delivery peptides may improve the therapeutic potential of our drug candidates. We sublicensed this IP to Novartis on a nonexclusive basis in March 2009.

University of Helsinki — In June 2008, we entered into a collaboration with Dr. Pirjo Laakkonen and the Biomedicum Helsinki to screen our patented phage display library, the Trp Cage library. The goal of the work is to discover and evaluate peptides for their potential to target particular tissues or organs for a given disease. We expect to use the peptides to improve and increase the delivery options for siRNA, including nanoparticle technology and the combination of novel peptides with our DiLA^2 Platform.

Ribotask ApS. In October 2008, we announced that we had acquired the intellectual property related to Unlocked Non-nucleotide Analogs from Ribotask ApS, a privately held Danish company specializing in the

development and synthesis of novel RNA chemistries. We believe that the technology will permit us to stabilize and provide drug-like properties to siRNAs in a novel and proprietary manner. This includes protection from enzymatic destruction and reduction, or elimination, of a cytokine response, two primary limitations for therapeutic application of siRNA; yet the appropriate substitution of UNA preserves high efficacy. These attributes have the potential for effective protein down regulation with lower total doses of siRNA while improving the safety profile.

Galenea — In February 2006, in connection with our RNAi therapeutics program targeting influenza and other respiratory diseases, we acquired RNAi IP and other RNAi technologies from Galenea Corporation ("Galenea"). The IP acquired from Galenea includes patent applications licensed from the Massachusetts Institute of Technology that have early priority dates in the antiviral RNAi field focused on viral respiratory infections, including influenza, rhinovirus, and other respiratory diseases. We also acquired Galenea's research and IP relating to pulmonary drug delivery technologies for siRNA. Additionally, we assumed Galenea's awarded and pending grant applications from the National Institute of Allergy and Infectious Diseases, a division of the National Institutes of Health ("NIH"), and the Department of Defense to support the development of RNAi-based antiviral drugs. Consideration for the acquisition consisted of an upfront payment and may include contingent payments based upon certain regulatory filings and approvals, and the sale of products.

Government Grants — In September 2006, the NIH awarded us a $1.9 million grant over a five year period to prevent and treat influenza. Revenue recognized under this grant totaled $0.4 million for the year ended December 31, 2007 and $0.3 million for the year ended December 31, 2008.

City of Hope — In November 2006, we entered into a license with the Beckman Research Institute/City of Hope for exclusive and non-exclusive licenses to the Dicer-substrate RNAi IP developed there. In the first quarter of 2009, we terminated our license agreement with the City of Hope for technology and intellectual property related to Dicer substrates to focus on the development of UsiRNA and meroduplex constructs.

Intranasal related

Procter & Gamble ("P&G") — In January 2006, we entered into a Product Development and License Agreement with P&G to develop and commercialize our PTH(1-34) nasal spray for the treatment of osteoporosis and in December 2006, we entered into the First Amendment to the License Agreement. Under our agreements with P&G we received an initial $10.0 million cash payment, which was recorded as deferred revenue and was being amortized into revenue over the estimated development period, a $7.0 million milestone payment received and recognized in full as revenue in 2006, and $4.3 million in research and development reimbursements was recognized as revenue in 2007. Our agreements with P&G were terminated in November 2007, at which time we reacquired all rights and data associated with the PTH(1-34) program. The unamortized balance of P&G's $10.0 million initial payment, approximately $5.5 million, was recognized as revenue in 2007.

Amylin Pharmaceuticals, Inc. — On February 3, 2009, we announced that we had received a milestone payment, in the amount of $1.0 million, from Amylin Pharmaceuticals, Inc. ("Amylin") under our 2006 Development and License Agreement, as amended, for the development of intranasal exenatide (the "License Agreement"). The License Agreement was amended in January 2009 to provide for an accelerated $1.0 million milestone payment, reduce the aggregate amount of milestone and royalty payments that could be due to us under the License Agreement from $89 million to $80 million, and establish a flat royalty rate for sales of products under the License Agreement. We will no longer be responsible for any further development of the nasal spray formulation of intranasal exenatide or its manufacture.

Par Pharmaceutical — In October 2004, we entered into a license and supply agreement with Par for the exclusive U.S. distribution and marketing rights to a generic calcitonin-salmon nasal spray for the treatment of osteoporosis, which has received tentative FDA approval. Under the terms of the agreement, we agreed to manufacture and supply finished calcitonin-salmon nasal spray product to Par, while Par agreed to distribute the product in the U.S. The financial terms of the agreement included milestone payments, product transfer payments for manufactured product and a profit sharing following commercialization. In December 2008, the FDA granted tentative approval of our ANDA for our generic calcitonin-salmon nasal spray. We anticipate that full FDA approval will follow the completion of Apotex's 180-day exclusivity period, or June 2009.

On April 1, 2009 we announced that we entered into an Asset Purchase Agreement with Par pursuant to which, among other things, Par will acquire certain assets pertaining to Nascobal and Calcitonin, including tooling and equipment, inventories and the related technology, trade secrets, know-how, proprietary information and other intellectual property rights, and assumed certain contracts, including our two facility leases related to our operations in Hauppauge, New York. We received $0.8 million in cash and will receive profit sharing for five years on commercial sales of calcitonin. In connection with this agreement, our License and Supply Agreement with Par, and our Supply Agreement with QOL, have been terminated.

Thiakis Limited ("Thiakis") — In September 2004, we acquired exclusive worldwide rights to the Imperial College Innovations and Oregon Health & Science University PYY patent applications in the field of nasal delivery of PYY and the use of glucagon-like peptide-1 (GLP-1) used in conjunction with PYY for the treatment of obesity, diabetes and other metabolic conditions. On November 5, 2008, we gave notice to terminate our agreement with Thiakis. We recorded $1.2 million in research and development expense in the fourth quarter of 2008 related to the estimated obligations under this license agreement at December 31, 2008.

Other

QOL Medical LLC — In October 2005, we entered into a supply agreement with QOL (the "QOL Agreement") under which, subject to certain limitations, we are obligated to manufacture and supply, and QOL is obligated to purchase from us, all of QOL's requirements for Nascobal® brand products for vitamin B12 (cyanocobalamin) deficiency in patients with pernicious anemia, Crohn's Disease, HIV/ AIDS and multiple sclerosis. Under the terms of the QOL Agreement we received a $2.0 million upfront fee which is being recognized ratably over the five-year life of the QOL Agreement. QOL purchased Nascobal® brand products from Questcor Pharmaceuticals ("Questcor") in October 2005 and also assumed Questcor's obligation to pay us $2.0 million on the issuance by the U.S. Patent and Trademark Office of a patent for Nascobal® nasal spray. This payment became due and was received and recognized as revenue in the second quarter of 2007. We recognized product revenue relating to the supply agreement of approximately $0.3 million and $1.0 million in the years ended December 31, 2007 and 2008, respectively.

In connection with the Asset Purchase Agreement with Par Pharmaceutical announced on April 1, 2009, the QOL Agreement was terminated. We anticipate recognizing the remaining $0.6 million in deferred revenue related to the Supply Agreement in the first quarter of 2009.

Feasibility Agreements — We have entered into various feasibility agreements, which are generally for terms of one year or less, including Novo Nordisk and other undisclosed partners. In January 2008, Novo Nordisk completed their feasibility study agreement with us and decided not to further advance the work. As of the second quarter of 2008, our two feasibility studies with undisclosed partners had been completed.

Note 11 — Subsequent Events through April 1, 2009

As further described in Note 9, in January 2009 we entered into a Loan and Security Agreement, which in summary, refinanced equipment that was previously recorded as a capital lease to be recorded as notes payable in the amount of approximately $5.5 million. Pursuant to terms of accelerated payment provisions of the Loan, in March 2009, we repaid $2.5 million in connection with funds received from Novartis for a new license agreement as described elsewhere, and we repaid $0.4 million in connection with funds received from Par related to the Asset Purchase Agreement as described elsewhere.

As further described in Note 10, in January 2009, we amended our license agreement with Amylin pursuant to which, among other things, we received a $1.0 million accelerated milestone payment and reduced the aggregate amount of future milestone payments under the license agreement.

As further described in Note 7, in February and March 2009, we issued 1,364,285 shares of our common stock to certain vendors in consideration for amounts due of approximately $0.6 million.

As further described in Note 10, in February 2009, we entered into a license agreement with Roche, pursuant to which, among other things, we granted to Roche a worldwide, non-exclusive license to a portion of our technology platform for the development of RNAi-based therapeutics in consideration of the payment by Roche of a one-time, $5 million non-refundable licensing fee.

As further described in Note 7, in March 2009, we entered into an amendment to our lease agreement for our closed and unoccupied Bothell facility, which reduces our lease obligations by approximately $1.9 million until July 2010. Under the terms of the agreement, we issued to the landlord 1.5 million shares of our common stock and we released to the landlord our cash deposit and restricted cash totaling approximately $1.3 million. The landlord may draw upon the cash deposit or the letter of credit at any time and is expected to do so in 2009.

As further described in Note 7, in March 2009, we entered into an amendment of our agreement regarding severance obligations for a former executive, pursuant to which, among other things, we agreed to issue 731,275 shares of our common stock in March 2009 and agreed to pay the former executive approximately $0.9 million in June 2009 in full satisfaction of $1.7 million of severance obligations, which was recorded as a current liability at December 31, 2008.

As further described in Note 10, in March 2009, we entered into an agreement with Novartis, pursuant to which, among other things, we granted to Novartis a worldwide, non-exclusive license to our liposomal technology for siRNA delivery in consideration of the payment of a one-time, non-refundable fee of $7.25 million.

As further described in Note 10, on April 1, 2009, we announced that we had entered into an Asset Purchase Agreement with Par under which Par will acquire our manufacturing facilities in Hauppauge, New York as well as our ANDA for generic calcitonin-salmon nasal spray. Under the terms of the Asset Purchase Agreement, we received $0.8 million in cash and will receive profit sharing for five years on commercial sales of calcitonin. In addition, Par will assume all of our current supply and manufacturing obligations with QOL for Nascobal® nasal spray, as well as all operating costs and leases associated with the facilities, including employment of our Hauppauge employees.

ITEM 9. ***Changes in and Disagreements With Accountants on Accounting and Financial Disclosure.***

Not applicable.

ITEM 9A. ***Controls and Procedures.***

(a) *Disclosure Controls and Procedures.* As of the end of the period covered by this Annual Report on Form 10-K, we carried out an evaluation, under the supervision and with the participation of senior management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), of the effectiveness of the design and operation of our disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Based upon that evaluation, our CEO and CFO concluded that our disclosure controls and procedures were effective in recording, processing, summarizing and reporting, on a timely basis, information required to be disclosed by us in the reports that we file or submit under the Exchange Act.

(b) *Internal Control over Financial Reporting.* There have been no changes in our internal controls over financial reporting or in other factors during the fourth fiscal quarter ended December 31, 2008 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting subsequent to the date we carried out our most recent evaluation.

(c) *Management Report on Internal Control.* Management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act, is a process designed by, or under the supervision of, our CEO and CFO, or persons performing similar functions, and effected by our Board, management and other personnel, 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. Our management, with the participation of our CEO and CFO, has established and maintained policies and procedures designed to maintain the adequacy of our internal control over financial reporting, and include those policies and procedures that:

1) Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets;

2) Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and

3) Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Management has evaluated the effectiveness of our internal control over financial reporting as of December 31, 2008 based on the control criteria established in a report entitled *Internal Control — Integrated Framework*, issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on our assessment and those criteria, our management has concluded that our internal control over financial reporting is effective as of December 31, 2008.

(d) Because of its inherent limitations, internal control over financial reporting may not prevent or detect all errors or misstatements and all fraud. Therefore, even those systems determined to be effective can provide only reasonable, not absolute, assurance that the objectives of the policies and procedures are met. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

ITEM 9B. ***Other Information.***

None.

PART III

ITEM 10. ***Directors, Executive Officers and Corporate Governance.***

The information required by this Item is incorporated by reference to our Definitive Proxy Statement for our annual meeting of stockholders expected to be held on May 20, 2009.

ITEM 11. ***Executive Compensation.***

The information required by this Item is incorporated by reference to our Definitive Proxy Statement for our annual meeting of stockholders expected to be held on May 20, 2009.

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

The information required by this Item is incorporated by reference to our Definitive Proxy Statement for our annual meeting of stockholders expected to be held on May 20, 2009.

ITEM 13. ***Certain Relationships and Related Transactions, and Director Independence.***

The information required by this Item is incorporated by reference to our Definitive Proxy Statement for our annual meeting of stockholders expected to be held on May 20, 2009.

ITEM 14. ***Principal Accounting Fees and Services.***

The information required by this Item is incorporated by reference to our Definitive Proxy Statement for our annual meeting of stockholders expected to be held on May 20, 2009.

PART IV

ITEM 15. ***Exhibits, Financial Statement Schedules.***

(a)(1) *Financial Statements and Financial Statement Schedule*

The financial statements listed in the Index to Financial Statements are filed as part of this Form 10-K.

(a)(3) *Exhibits*

The exhibits required by this item are set forth on the Exhibit Index attached hereto.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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, in the City of Bothell, State of Washington, on April 8, 2009.

MDRNA, INC.

By: /s/ J. Michael French
J. Michael French
Director, President and
Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed by the following persons on behalf of the Registrant and in the capacities indicated on April 8, 2009.

Signature	Title
/s/ J. MICHAEL FRENCH J. Michael French	Director, President and Chief Executive Officer (Principal Executive Officer)
/s/ BRUCE R. YORK Bruce R. York	Secretary and Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)
/s/ DR. ALEXANDER D. CROSS Dr. Alexander D. Cross	Director
/s/ DANIEL L. PETERS Daniel L. Peters	Director
_____ John V. Pollock	Director
/s/ JAMES ROTHMAN, PH.D. James Rothman, Ph.D.	Director
/s/ GREGORY SESSLER Gregory Sessler	Director
/s/ BRUCE R. THAW Bruce R. Thaw	Director
/s/ STEVEN C. QUAY, M.D., PH.D. Steven C. Quay, M.D., Ph.D.	Director

EXHIBIT INDEX

Exhibit No.	Description
2.1	Agreement and Plan of Reorganization, dated August 8, 2000, among the Registrant, Atossa Acquisition Corporation, a Delaware corporation and our wholly-owned subsidiary, and Atossa HealthCare, Inc. (filed as Exhibit 2.1 to our Current Report on Form 8-K dated August 8, 2000, and incorporated herein by reference).
2.2	Asset Purchase Agreement, dated September 30, 2002, between the Registrant and Schwarz Pharma, Inc. (filed as Exhibit 2.1 to our Current Report on Form 8-K dated September 30, 2002, and incorporated herein by reference).
3.1	Restated Certificate of Incorporation of the Registrant dated July 20, 2005 (filed as Exhibit 3.1 to our Current Report on Form 8-K dated July 20, 2005, and incorporated herein by reference).
3.2	Certificate of Amendment of the Amended and Restated Certificate of Incorporation of the Registrant, dated June 10, 2008 (filed as Exhibit 3.1 to our Current Report on Form 8-K dated June 10, 2008, and incorporated herein by reference).
3.3	Amended and Restated Bylaws of the Registrant dated September 19, 2007 (filed as Exhibit 3.1 to our Current Report on Form 8-K dated September 19, 2007, and incorporated herein by reference).
3.4	Certificate of Designation, Rights and Preferences of Series A Junior Participating Preferred Stock dated January 17, 2007 (filed as Exhibit 3.1 to our Current Report on Form 8-K dated January 19, 2007, and incorporated herein by reference).
3.5	Amended Designation, Rights, and Preferences of Series A Junior Participating Preferred Stock, dated June 10, 2008 (filed as Exhibit 3.2 to our Current Report on Form 8-K dated June 10, 2008, and incorporated herein by reference).
4.1	Rights Agreement, dated February 22, 2000, between the Registrant and American Stock Transfer & Trust Company as Rights Agent (filed as Exhibit 1 to our Current Report on Form 8-K dated February 22, 2000, and incorporated herein by reference).
4.2	Amendment No. 1 to Rights Agreement dated as of January 17, 2007 by and between the Registrant and American Stock Transfer and Trust Company (filed as Exhibit 4.1 to our Current Report on Form 8-K dated January 19, 2007, and incorporated herein by reference).
10.1	Lease Agreement, dated April 23, 2002, with Phase 3 Science Center LLC, Ahwatukee Hills Investors LLC and J. Alexander's LLC (filed as Exhibit 10.26 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2002, and incorporated herein by reference).
10.2	First Amendment dated June 17, 2003, to Lease Agreement dated April 23, 2002, with Phase 3 Science Center LLC, Ahwatukee Hills Investors LLC and J. Alexander's LLC (filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2003, and incorporated herein by reference).
10.3	Second Amendment, dated February 4, 2004, to Lease Agreement dated April 23, 2002, with Phase 3 Science Center LLC, Ahwatukee Hills Investors LLC and J. Alexander's LLC (filed as Exhibit 10.24 to our Annual Report on Form 10-K for the year ended December 31, 2003, and incorporated herein by reference).
10.4	Third Amendment, dated as of March 5, 2009, to Lease Agreement dated April 23, 2002, with BMR-3450 Monte Villa Parkway LLC (as successor-in-interest to Phase 3 Science Center LLC) (filed as Exhibit 10.1 to our Current Report on Form 8-K dated March 5, 2009, and incorporated herein by reference).
10.5	Stock Purchase Agreement, dated as of March 5, 2009, between the Registrant and BioMed Realty, L.P. (filed as Exhibit 10.2 to our Current Report on Form 8-K dated March 5, 2009, and incorporated herein by reference).

Exhibit No.	Description
10.6	Lease Agreement with Ditty Properties Limited Partnership for facilities at 3830 Monte Villa Parkway, Bothell, WA, effective as of March 1, 2006 (filed as Exhibit 10.1 to Amendment No. 1 to our Current Report on Form 8-K/A dated March 1, 2006 and filed on July 26, 2006, and incorporated herein by reference).(1)
10.7	First Amendment to Lease Agreement with Ditty Properties Limited Partnership for facilities at 3830 Monte Villa Parkway, Bothell, WA, effective as of July 17, 2006 (filed as Exhibit 10.7 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2006, and incorporated herein by reference).
10.8	Amended and Restated Employment Agreement dated June 10, 2008 by and between the Registrant and Steven C. Quay, M.D., Ph.D. (filed as Exhibit 10.1 to our Current Report on Form 8-K dated June 10, 2008, and incorporated herein by reference).**
10.9	Amendment, Acknowledgement and Release, effective as of March 20, 2009, between the Registrant and Steven C. Quay, M.D., Ph.D. (filed as Exhibit 10.1 to our Current Report on Form 8-K dated March 16, 2009, and incorporated herein by reference).**
10.10	Employment Agreement effective as of March 7, 2008 by and between the Registrant and Bruce R. York (filed as Exhibit 10.1 to our Current Report on Form 8-K dated March 10, 2008, and incorporated herein by reference).**
10.11	Employment Agreement effective as of June 23, 2008 by and between the Registrant and J. Michael French (filed as Exhibit 10.2 to our Current Report on Form 8-K dated June 10, 2008, and incorporated herein by reference).**
10.12	Employment Agreement effective as of January 2, 2009 by and between the Registrant and Barry Polisky (filed as Exhibit 10.1 to our Current Report on Form 8-K dated October 27, 2008 and incorporated herein by reference).**
10.13	The Registrant's 1990 Stock Option Plan (filed as Exhibit 4.2 to our Registration Statement on Form S-8, File No. 333-28785, and incorporated herein by reference).**
10.14	The Registrant's Amended and Restated 2000 Nonqualified Stock Option Plan (filed as Exhibit 4.4 to our Registration Statement on Form S-8, File No. 333-49514, and incorporated herein by reference).**
10.15	Amendment No. 1 to the Registrant's Amended and Restated 2000 Nonqualified Stock Option Plan (filed as Exhibit 10.18 to our Annual Report on Form 10-K for the year ended December 31, 2005, and incorporated herein by reference).**
10.16	Amendment No. 2 to the Registrant's Amended and Restated 2000 Nonqualified Stock Option Plan (filed as Exhibit 10.19 to our Quarterly Report on Form 10-Q for the quarter ended September 30, 2006, and incorporated herein by reference).**
10.17	The Registrant's 2002 Stock Option Plan (filed as Exhibit 10.28 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2002, and incorporated herein by reference).**
10.18	Amendment No. 1 to the Registrant's 2002 Stock Option Plan (filed as Exhibit 10.20 to our Annual Report on Form 10-K for the year ended December 31, 2005, and incorporated herein by reference).**
10.19	The Registrant's 2004 Stock Incentive Plan (filed as Exhibit 99 to our Registration Statement on Form S-8, File No. 333-118206, and incorporated herein by reference).**
10.20	Amendment No. 1 to the Registrant's 2004 Stock Incentive Plan (filed as Exhibit 10.4 to our Current Report on Form 8-K dated July 20, 2005, and incorporated herein by reference).**
10.21	Amendment No. 2 to the Registrant's 2004 Stock Incentive Plan (filed as Exhibit 10.18 to our Quarterly Report on Form 10-Q for the quarter ended September 30, 2005, and incorporated herein by reference).**

Exhibit No.	Description
10.22	Amendment No. 3 to the Registrant's 2004 Stock Incentive Plan (filed as Exhibit 10.24 to our Annual Report on Form 10-K for the year ended December 31, 2005, and incorporated herein by reference).**
10.23	Amendment No. 4 to the Registrant's 2004 Stock Incentive Plan (filed as Exhibit 10.5 to our Registration Statement on Form S-8, File No 333-135724, and incorporated herein by reference).**
10.24	Amendment No. 5 to the Registrant's 2004 Stock Incentive Plan (filed as Exhibit 10.27 to our Quarterly Report on Form 10-K for the quarter ended September 30, 2006, and incorporated herein by reference).**
10.25	The Registrant's 2008 Stock Incentive Plan (filed as Appendix A to our Definitive Proxy Statement on Schedule 14A filed on April 29, 2008, and incorporated herein by reference).**
10.26	Form of Purchase Agreement (filed as Exhibit 99.2 to our Current Report on Form 8-K dated September 4, 2003, and incorporated herein by reference).
10.27	Development and License Agreement by and between the Registrant and Amylin Pharmaceuticals, Inc. dated June 23, 2006 (filed as Exhibit 10.66 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2006, and incorporated herein by reference).(1)
10.28	Form of Restricted Stock Grant Agreement (filed as Exhibit 10.1 to our Current Report on Form 8-K dated February 6, 2007, and incorporated herein by reference).**
10.29	Form of Stock Option Agreement (filed as Exhibit 10.2 to our Current Report on Form 8-K dated February 6, 2007, and incorporated herein by reference).**
10.30	Form of Omnibus Amendment to Certain Grant Agreements, dated May 4, 2007 (filed as Exhibit 10.42 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2007, and incorporated herein by reference.**
10.31	The Registrant's 2007 Employee Stock Purchase Plan (filed as Exhibit 10.1 to our Registration Statement on Form S-8, File No. 333-146183, and incorporated herein by reference).**
10.32	Placement Agency Agreement, dated March 7, 2008, between the Registrant and Maxim Group LLC (filed as Exhibit 10.1 to our Current Report on Form 8-K dated April 25, 2008, and incorporated herein by reference).
10.33	Securities Purchase Agreement, dated as of April 25, 2008, between the Registrant and the purchasers identified on the signature page thereto (filed as Exhibit 10.2 to our Current Report on Form 8-K dated April 25, 2008, and incorporated herein by reference).
10.34	Form of Warrant (filed as Exhibit 10.3 to our Current Report on Form 8-K dated April 25, 2008, and incorporated herein by reference).
23.1	Consent of KPMG LLP, independent registered public accounting firm.(2)
31.1	Certification of our Chief Executive Officer pursuant to Rules 13a-14 and 15d-14 under the Securities Exchange Act of 1934, as amended.(2)
31.2	Certification of our Chief Financial Officer pursuant to Rules 13a-14 and 15d-14 under the Securities Exchange Act of 1934, as amended.(2)
32.1	Certification of our Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.(2)
32.2	Certification of our Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.(2)

(1) Portions of this exhibit have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities and Exchange Act of 1934, amended, and the omitted material has been separately filed with the Securities and Exchange Commission.

(2) Filed Herewith.

** Indicates management contract or compensatory plan or arrangement.

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors
MDRNA, Inc.

We consent to incorporation by reference in the registration statements (No. 333-16507 and No. 333-45264) on Forms S-2, (No. 333-44035, No. 333-59472, No. 333-62800, No. 333-72742, No. 333-108845, No. 333-111324, No. 333-119429, No. 333-127831, No. 333-138088 and No. 333-148771) on Forms S-3 and (No. 333-28785, No. 333-46214, No. 333-49514, No. 333-92206, No. 333-92222, No. 333-118206, No. 333-126905, No. 333-135724, No. 333-146183 and No. 333-153594) on Forms S-8 of MDRNA, Inc. and subsidiaries (formerly Nastech Pharmaceutical Company Inc.) of our report dated April 8, 2009, with respect to the consolidated balance sheets of MDRNA, Inc. and subsidiaries as of December 31, 2007 and 2008, and the related consolidated statements of operations, stockholders' equity (deficit) and comprehensive loss, and cash flows for each of the years in the two-year period ended December 31, 2008. Our report dated April 8, 2009 contains an explanatory paragraph that states that the Company has suffered recurring losses, has had recurring negative cash flows from operations, and has an accumulated deficit that raise substantial doubt about its ability to continue as a going concern. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

/s/ KPMG LLP

Seattle, Washington
April 8, 2009

EXHIBIT 31.1

CHIEF EXECUTIVE OFFICER CERTIFICATION

REQUIRED BY RULES 13A-14 AND 15D-14 UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED

I, J. Michael French, certify that:

1. I have reviewed this annual report on Form 10-K of MDRNA, 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 we 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;

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 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, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):

a) all significant deficiencies 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.

By: /s/ J. Michael French

Name: J. Michael French
Title: President and Chief Executive Officer

Date: April 8, 2009

EXHIBIT 31.2

CHIEF FINANCIAL OFFICER CERTIFICATION

REQUIRED BY RULES 13A-14 AND 15D-14 UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED

I, Bruce R. York, certify that:

1. I have reviewed this annual report on Form 10-K of MDRNA, 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 we 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;

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 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, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):

a) all significant deficiencies 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.

By: /s/ Bruce R. York

Name: Bruce R. York
Title: Chief Financial Officer

Date: April 8, 2009

EXHIBIT 32.1

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

I, J. Michael French., President and Chief Executive Officer of MDRNA, Inc. ("MDRNA"), certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of MDRNA on Form 10-K for the year ended December 31, 2008 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that information contained in the Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of MDRNA.

By: /s/ J. Michael French
Name: J. Michael French
Title: President and Chief Executive Officer

Date: April 8, 2009

A signed original of this written statement required by Section 906 has been provided to MDRNA and will be retained by MDRNA and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies each periodic report pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 and shall not, except to the extent required by the Sarbanes-Oxley Act of 2002, be deemed filed by MDRNA for purposes of Section 18 of the Securities Exchange Act of 1934, as amended.

EXHIBIT 32.2

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

I, Bruce R. York, Chief Financial Officer of MDRNA, Inc. ("MDRNA"), certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of MDRNA on Form 10-K for the year ended December 31, 2008 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that information contained in the Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of MDRNA.

By: /s/ Bruce R. York
Name: Bruce R. York
Title: Chief Financial Officer

Date: April 8, 2009

A signed original of this written statement required by Section 906 has been provided to MDRNA and will be retained by MDRNA and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies each periodic report pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 and shall not, except to the extent required by the Sarbanes-Oxley Act of 2002, be deemed filed by MDRNA for purposes of Section 18 of the Securities Exchange Act of 1934, as amended.

FORWARD-LOOKING STATEMENT

This Annual Report contains Forward-looking statements and readers should carefully review the risk factors contained in our filings with the Securities and Exchange Commission, including those discussed under the caption "Forward-Looking Statements" in the Form 10-K included herein.

INDEPENDENT REGISTERED PUBLIC ACCOUNTANTS

KPMG LLP
801 Second Avenue
Seattle, WA. 98104

ANNUAL REPORT ON FORM 10-K

The Company's Annual Report on Form 10-K, filed with the Securities and Exchange Commission, is available without charge by writing, phoning or visiting our website at www.mdrnainc.com.

REGISTRAR AND TRANSFER AGENT

American Stock Transfer & Trust Co.
59 Maiden Lane
New York, N.Y. 10038
Toll-free: 1-877-777-0800

LEGAL COUNSEL

Pryor Cashman LLP
410 Park Avenue
New York, N.Y. 10022

STOCK LISTING

The Company's Common Stock is traded on the Nasdaq Global Market under the symbol MRNA.

ANNUAL MEETING

May 20, 2009
10:00 a.m.
The University Club
1 West 54th Street
New York, N.Y. 10019

BOARD OF DIRECTORS

*Alexander D. Cross, Ph.D. **
J. Michael French
Daniel Peters
*John V. Pollock **
*Steven C. Quay, M.D., Ph.D. **
James E. Rothman, Ph.D.
Gregory Sessler
Bruce R. Thaw - Chairman of the Board

** Term ending May 2009*

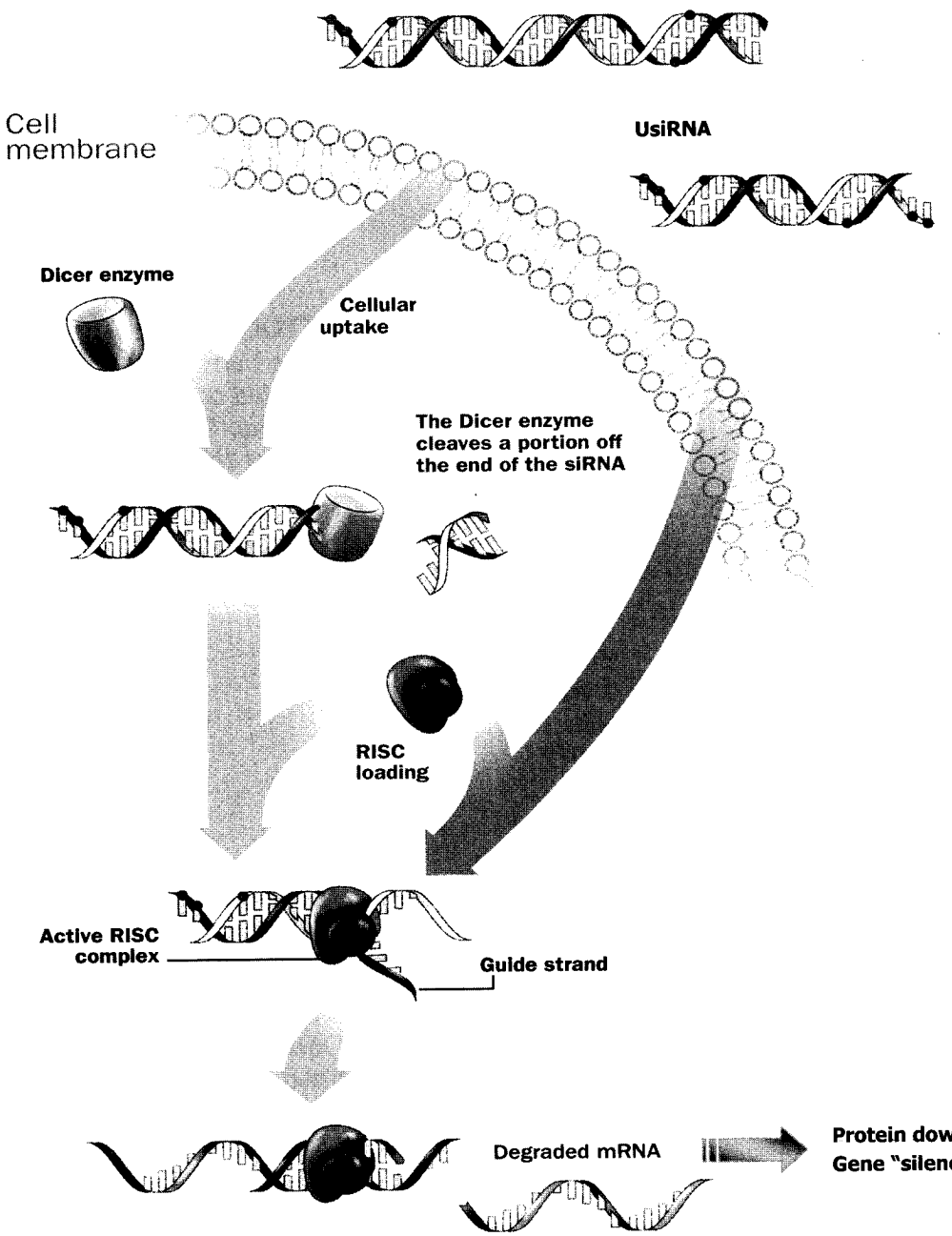
EXECUTIVE MANAGEMENT

J. Michael French
- President and CEO

Barry Polisky, Ph.D.
- Chief Scientific Officer

Bruce R. York
- Chief Financial Officer and Secretary

RNAi Therapeutic Mechanism of Action



MDRNA, Inc.
Company Headquarters: 3830 Monte Villa Parkway, Bothell, WA 98021
Phone: (425) 908-3600 Fax: (425) 908-3650 *www.mdrnainc.com*