

MIRNA THERAPEUTICS, INC.

CORPORATE GOVERNANCE GUIDELINES

(Adopted August 25, 2015)

The Board of Directors (the “Board”) of Mirna Therapeutics, Inc., a Delaware corporation (the “Company”), has adopted the following Corporate Governance Guidelines (these “Guidelines”) to assist the Board in the exercise of its responsibilities and to serve the interests of the Company and its stockholders. These Guidelines should be interpreted in the context of all applicable laws and regulations, the rules of The Nasdaq Stock Market LLC (“NASDAQ”) and the Company’s certificate of incorporation, bylaws and other corporate governance documents, as such laws, rules and governing documents are amended from time to time. These Guidelines acknowledge the leadership exercised by the Board’s standing committees and their chairs and are intended to serve as a flexible framework within which the Board may conduct its business and not as a set of legally binding obligations. These Guidelines are subject to modification from time to time by the Board as the Board may deem appropriate and in the best interests of the Company and its stockholders or as required by applicable laws, regulations and NASDAQ rules.

The Board

Size of the Board

The Company’s certificate of incorporation provides that the number of directors will be fixed from time to time by the Board. The Board will periodically review the size of the Board, and determine the size that is most effective in relation to future operations.

Independence of the Board

The Board will be comprised of a majority of directors who qualify as independent directors (the “Independent Directors”) under NASDAQ Rule 5605(a)(2).

Separate Sessions of Non-Management Directors and Independent Directors

The non-management directors will meet in executive session without management directors or management present on a regularly scheduled basis, but no less than two (2) times a year. The non-management directors will review the Company’s implementation of, and compliance with, these Guidelines and consider such matters as they may deem appropriate at such meetings. Non-management directors are all directors who are not Company officers (as that term is defined in Rule 16a-1(f) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), including such directors who are not independent by virtue of a material relationship, former status or family membership, or for any other reason.

In addition, to the extent that the non-management directors include directors who do not qualify as Independent Directors, the Independent Directors shall also have regularly scheduled meetings and meet separately at least two (2) times per year in an executive session.

Director Qualification Standards

The Nominating and Corporate Governance Committee is responsible for reviewing with the Board, on an annual basis, the appropriate characteristics, skills and experience required for the Board as a whole and its individual members. In evaluating the suitability of individual candidates (both new candidates and current Board members), the Nominating and Corporate Governance Committee, in recommending candidates for election, and the Board, in approving (and, in the case of vacancies, appointing) such candidates, may take into account many factors, including: personal and professional integrity, ethics and values; experience in corporate management, such as serving as an officer or former officer of a publicly held company; strong finance experience; experience relevant to the Company's industry; experience as a board member or executive officer of another publicly held company; diversity of expertise and experience in substantive matters pertaining to the Company's business relative to other board members; diversity of background and perspective, including with respect to age, gender, race, place of residence and specialized business or career experience relevant to the success of the Company; practical and mature business judgment, including the ability to make independent analytical inquiries; and any other relevant qualifications, attributes or skills. The Board evaluates each individual in the context of the Board as a whole, with the objective of assembling a group that can best perpetuate the success of the business and represent stockholder interests through the exercise of sound judgment using its diversity of experience in these various areas. In determining whether to recommend a director for re-election, the Nominating and Corporate Governance Committee may consider the director's past attendance at meetings and participation in and contributions to the activities of the Board.

Pursuant to Securities and Exchange Commission ("SEC") disclosure requirements, the Company must disclose the following in its proxy statements and/or annual reports on Form 10-K:

- *Director and director nominee qualifications:* with respect to each director, a description of the basis for selecting such director for Board service, all directorships held by such director at public companies or registered investment companies during the past five (5) years and certain legal proceedings against such director during the past ten (10) years; and
- *Diversity:* whether and how the Nominating and Corporate Governance Committee considers "diversity" in identifying directors.

Selection of New Directors

Our Board is divided into three (3) classes. As a result, approximately one-third (1/3) of the Board will stand for election by the stockholders of the Company each year at the Company's annual meeting for three (3) year terms. Each year, at the annual meeting, the Board will recommend a slate of directors for election by the stockholders. In accordance with the bylaws

of the Company, the Board will also be responsible for filling vacancies or newly created directorships on the Board that may occur between annual meetings of stockholders. The Nominating and Corporate Governance Committee is responsible for identifying, screening and recommending candidates to the entire Board for Board membership.

Director Orientation and Continuing Education

Management, working with the Board, shall provide an orientation process for new directors, including background material on the Company and its business. As appropriate, management shall prepare additional educational sessions for directors on matters relevant to the Company and its business.

No Specific Limitation on Other Board Service

The Board does not believe that its members should be prohibited from serving on boards of other organizations and has not adopted any guidelines limiting such activities. However, the Nominating and Corporate Governance Committee may take into account the nature of and time involved in a director's service on other boards and/or committees in evaluating the suitability of individual director candidates and current directors in making its recommendations.

Service on other boards and/or committees should be consistent with the Company's conflict of interest policies set forth below.

Directors Who Resign or Materially Change Their Current Positions with Their Own Company or Become Aware of Circumstances that May Adversely Reflect upon the Director or the Company

When a director, including any director who is currently an officer or employee of the Company, resigns or materially changes his or her position with his or her employer or becomes aware of circumstances that may adversely reflect upon the director or the Company, such director should notify the Nominating and Corporate Governance Committee of such circumstances. The Nominating and Corporate Governance Committee will consider the circumstances, and may in certain cases recommend that the Board request that the director submit his or her resignation from the Board, if, for example, continuing service on the Board by the individual is not consistent with the criteria deemed necessary for continuing service on the Board.

Term Limits

As each director is periodically subject to election by stockholders, the Board does not believe it is in the best interests of the Company to establish term limits at this time. Additionally, such term limits may cause the Company to lose the contribution of directors who have been able to develop, over a period of time, increasing insight into the Company's business and therefore can provide an increasingly significant contribution to the Board.

Director Responsibilities

The business and affairs of the Company will be managed by or under the direction of the Board, including through one or more of its committees as set forth in the bylaws and committee charters. Each director is expected to spend the time and effort necessary to properly discharge his or her responsibilities. These include (as applicable):

- (1) overseeing the conduct of the Company's business to evaluate whether the business is being properly managed;
- (2) reviewing and, where appropriate, approving the Company's major financial objectives, plans and actions;
- (3) reviewing and, where appropriate, approving major changes in, and determinations of other major issues respecting, the appropriate auditing and accounting principles and practices to be used in the preparation of the Company's financial statements;
- (4) reviewing and, where appropriate, approving major changes in, and determinations under, these Guidelines, the Company's Code of Business Conduct and Ethics and other Company policies;
- (5) reviewing and, where appropriate, approving actions to be undertaken by the Company that would result in a material change in the financial structure or control of the Company, the acquisition or disposition of any business(es) or asset(s) material to the Company or the entry of the Company into any major new line of business;
- (6) reviewing the performance of the Chief Executive Officer (the "CEO") and other members of management based on reports from the Compensation Committee;
- (7) planning for succession with respect to the position of the CEO and monitoring management's succession planning for other key executives; and
- (8) ensuring that the Company's business is conducted with the highest standards of ethical conduct and in conformity with applicable laws and regulations.

Pursuant to SEC disclosure requirements, the Company must disclose the following in its proxy statements and Form 10-K:

- *Board Leadership Structure*: explanation of the Board's leadership structure (e.g., whether the principal executive officer and chairperson positions are combined and whether there is a lead independent director) and why that particular structure is appropriate for the Company; and
- *Risk Oversight*: description of the Board's role in risk oversight and how this oversight is administered.

Compensation

The Company's executive officers shall not receive additional compensation for their service as directors. Senior management of the Company will report at least once a year to the

Compensation Committee regarding the status of the Company's non-management director compensation in relation to other U.S. companies of comparable size and the Company's competitors. Such report will include consideration of both direct and indirect forms of compensation to the Company's non-management directors, including any charitable contributions by the Company to organizations in which a non-management director is involved. Following a review of the report, the Compensation Committee will recommend any changes in non-management director compensation to the Board, which changes will be approved or disapproved by the Board after a full discussion.

Members of the Audit Committee may not directly or indirectly receive any compensation from the Company other than their directors' compensation, including any compensation for service on committees of the Board and the receipt of equity incentive awards.

Stock Ownership

The Company encourages directors to own shares of the Company's stock. However, the number of shares of the Company's stock owned by any director is a personal decision and, at this time, the Board has chosen not to adopt a policy requiring ownership by directors of a minimum number of shares.

Conflicts of Interest

Directors are expected to avoid any action, position or interest that conflicts with the interests of the Company or gives the appearance of a conflict. If an actual or potential conflict of interest develops, the director should immediately report all facts regarding the matter to the Board. Any significant conflict must be resolved or the director should resign. If a director has a personal interest in a matter before the Board, the director must disclose the interest to the Board, excuse himself or herself from discussion on the matter and not vote on the matter.

Interaction with Institutional Investors, the Press and Customers

The Board believes that management speaks for the Company. Each director should refer all inquiries from institutional investors, the press or customers regarding the Company's operations to management. Individual Board members may, from time to time at the request of the management, meet or otherwise communicate with various constituencies that are involved with the Company. If comments from the Board are appropriate, they should, in most circumstances, come from the CEO in his or her Board capacity or other member of the Board designated by the Board.

Board Access to Senior Management

The Board will have complete access to Company management in order to ensure that directors can ask any questions and receive all information necessary to perform their duties. Directors should exercise judgment to ensure that their contact with management does not distract managers from their jobs or disturb the business operations of the Company. Such contact, if in writing, should be copied to the CEO of the Company.

Board Access to Independent Advisors

The Board committees may hire independent advisors as set forth in their applicable charters. The Board as a whole shall have access to such advisors and such other independent advisors that the Company retains or that the Board considers necessary to discharge its responsibilities.

Annual Self-Evaluation

At least one (1) time per fiscal year, the Nominating and Corporate Governance Committee will oversee an annual assessment by the Board of the Board's performance. The Nominating and Corporate Governance Committee will be responsible for establishing the evaluation criteria and implementing the process for such evaluation, as well as considering other corporate governance principles that may, from time to time, merit consideration by the Board.

The assessment should include a review of any areas in which the Board or management believes the Board can make a better contribution to the governance of the Company, as well as a review of the committee structure and an assessment of the Board's compliance with the principles set forth in these Guidelines. The Nominating and Corporate Governance Committee will utilize the results of the Board evaluation process in assessing and determining the characteristics and critical skills required of prospective candidates for election to the Board.

Board Meetings

Frequency of Meetings

The Board will meet at least four (4) times annually. In addition, special meetings may be called from time to time as determined by the needs of the business. It is the responsibility of the directors to attend meetings.

Director Attendance

A director is expected to spend the time and effort necessary to properly discharge his or her responsibilities. Accordingly, a director is expected to regularly prepare for and attend meetings of the Board and all committees on which the director sits (including separate meetings of non-management directors and the Independent Directors), with the understanding that, on occasion, a director may be unable to attend a meeting. A director who is unable to attend a meeting is expected to notify the CEO (if he or she is a member of the Board) or the Chairperson

of the Board or appropriate committee in advance of such meeting, and, whenever possible, participate in such meeting via teleconference.

Attendance of Non-Directors

The Board encourages invitations to management and outside advisors or consultants from time to time to participate in Board and/or committee meetings to (i) provide insight into items being discussed by the Board which involve the manager, advisor or consultant, (ii) make presentations to the Board on matters which involve the manager, advisor or consultant and (iii) bring managers with high potential into contact with the Board. Attendance of non-directors at Board meetings is at the discretion of the Board.

Advance Receipt of Meeting Materials

Information regarding the topics to be considered at a meeting is essential to the Board's understanding of the business and the preparation of the directors for a productive meeting. To the extent feasible, the meeting agenda and any written materials relating to each Board meeting will be distributed to the directors sufficiently in advance of each meeting to allow for meaningful review of such agenda and materials by the directors. Directors are expected to have reviewed and be prepared to discuss all materials distributed in advance of any meeting.

Committee Matters

Number, Name, Responsibilities and Independence of Committees

The Board currently has three (3) committees: Audit, Compensation and Nominating and Corporate Governance (collectively, the "Committees"). The Committees are each composed of Independent Directors, subject to any exceptions provided by applicable laws, rules and regulations. Director nominees shall be subject to the approval of the Independent Director members of the Nominating and Corporate Governance Committee. From time to time, the Board may form a new committee or disband a current committee, depending upon the circumstances. Each committee will perform its duties as assigned by the Board in compliance with the Company's bylaws and the committee's charter.

The current Committees are:

(1) Audit Committee. The Audit Committee consists of at least three (3) members and reviews the work of the Company's internal accounting and audit processes and independent auditors. Among other things, this committee has sole authority to appoint and terminate the Company's independent registered public accountants and to approve or pre-approve any significant non-audit relationship with the independent auditors.

(2) Compensation Committee. The Compensation Committee consists of at least two (2) members and reviews and recommends to the Board for approval the Company's goals and objectives relevant to compensation, stays informed as to market trends of compensation and reviews the competitiveness of the Company's executive compensation program, based on

evaluations submitted by management and other assessments, approves compensation for the executive officers, other than the CEO (unless delegated such authority by the Board), and the Company's other officers (as such term is defined in Rule 16a-1(f), promulgated under the Exchange Act) and certain other employees that correspond to the Company's goals and objectives and reports to the Board concerning these matters. The committee produces an annual report on executive compensation for inclusion in the Company's proxy statement and reviews and recommends Board approval of the Company's Compensation Disclosure and Analysis section of such proxy statement to the extent required by and in accordance with applicable rules and regulations. The committee periodically reports to the Board concerning its compensation determinations with respect to management and employees and also makes recommendations to the Board concerning compensation of the Company's non-employee directors.

(3) Nominating and Corporate Governance Committee. The Nominating and Corporate Governance Committee consists of at least two (2) members and is responsible for recommending to the Board individuals to be nominated as directors and committee members. This includes evaluation of new candidates as well as evaluation of the Board. This committee is also responsible for reviewing and recommending to the Board revisions to these Guidelines on a regular basis. This committee also performs other duties as are described in these Guidelines and prepares any disclosure of the nominating process required by applicable rules and regulations.

Assignment and Rotation of Committee Members

Based on the recommendations of the Nominating and Corporate Governance Committee, the Board appoints committee members and committee chairs according to criteria set forth in the applicable committee charter and such other criteria that the Board determines to be appropriate in light of the responsibilities of each committee. Committee membership and the position of committee chair will not be rotated on a mandatory basis unless the Board determines that rotation is in the best interest of the Company.

Each member of the Audit Committee must satisfy the independence requirements of Rule 10A-3 under the Exchange Act and the NASDAQ rules, subject to the committee independence phase-in schedule permitted under SEC and NASDAQ rules for companies listing in connection with an initial public offering. Each member of the Audit Committee must be able to read and understand fundamental financial statements, including the Company's balance sheet, income statement and cash flow statement. Additionally, at least one (1) member of the Audit Committee must have past employment experience in finance or accounting, requisite professional certification in accounting, or any other comparable experience or background which results in the individual's financial sophistication. Finally, at least one (1) member of the Audit Committee must meet the definition of "audit committee financial expert" under Item 407(d) of Regulation S-K, or the Company shall disclose in its periodic reports required pursuant to the Exchange Act, the reasons why at least one (1) member of the Committee is not an "audit committee financial expert."

Frequency of Committee Meetings

The Compensation Committee and Nominating and Corporate Governance Committee will each meet at least two (2) times annually and the Audit Committee will meet at least four (4) times annually. The Disclosure Committee shall meet as frequently as circumstances dictate to (i) ensure the accuracy and completeness of the Disclosure Statements (as defined herein) and (ii) evaluate the Disclosure Controls (as defined herein) and determine whether any changes to the Disclosure Controls are necessary or advisable in connection with the preparation of the Company's upcoming periodic reports or other Disclosure Statements, taking into account developments since the most recent meeting, including changes in the Company's organization and business lines and any change in economic or industry conditions. In addition, special meetings may be called by the Chairperson of the committee from time to time as determined by the needs of the business. It is the responsibility of the directors to attend the meetings of the committees on which they serve.

Committee Agendas

The Chairperson of each committee, in consultation with the appropriate members of the committee, will develop his or her committee's agenda.

Committee Self-Evaluations

Following the end of each fiscal year, each committee will review its performance and charter and recommend to the Board any changes it deems necessary.

Disclosure Committee

The Board has delegated to management the authority to establish a Disclosure Committee to be composed of executives and other employees of the Company. The Disclosure Committee consists of at least three (3) members and aids the CEO and Chief Financial Officer in fulfilling their responsibility for oversight of the accuracy and timeliness of the disclosures made by the Company. This includes designing and establishing controls and other procedures (the "Disclosure Controls") to ensure that the information required to be disclosed to the SEC and the investment community (the "Disclosure Statements") is recorded, processed, summarized and reported accurately and on a timely basis and that information is accumulated and communicated to management, as appropriate to allow timely decisions regarding such required disclosure. The committee also monitors the integrity and effectiveness of these controls and procedures.

Leadership Development

Annual Review of Chief Executive Officer

The Compensation Committee shall recommend to the Board for approval the corporate goals and objectives relating to the compensation of the Company's CEO. At the end of each year, the CEO shall make a presentation or furnish a written report to the Compensation

Committee indicating his or her progress against such established performance criteria. Thereafter the Compensation Committee shall meet to review the CEO's performance and based on such review shall recommend to the Board for approval the compensation of the CEO. The results of the review and evaluation shall be communicated to the CEO by the Chairperson of the Compensation Committee or another Board member.

Succession Planning

The Board (or a committee delegated by the Board) will work on a periodic basis with the CEO to evaluate the Company's succession plans upon the CEO's retirement and in the event of an unexpected occurrence.

Oversight of Risk Management

The Board and the Board committees shall have an active role in overseeing management of the Company's risks. The Board shall regularly review information regarding the Company's credit, liquidity and operations, as well as the risks associated with each. The Company's Compensation Committee shall be responsible for overseeing the management of risks relating to the Company's executive compensation plans and arrangements. The Audit Committee shall oversee management of financial risks. The Nominating and Corporate Governance Committee shall manage risks associated with the independence of the Board and potential conflicts of interest. While each committee shall be responsible for evaluating certain risks and overseeing the management of such risks, the entire Board is regularly informed through committee reports about such risks.

Ethics Helpline

The Audit Committee will cause the Company to implement, maintain and monitor an ethics helpline that is designed to receive confidential, anonymous submissions (i) regarding the Company's accounting, internal controls, auditing matters and (ii) of any known or suspected violations of the Company's Code of Business Conduct and Ethics or any applicable laws and regulations. The Audit Committee, with assistance from the Company's officers as appropriate, will investigate any submissions received through the ethics helpline and report to the Board periodically with respect to the information received through the ethics helpline and any related investigations.

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