

**DICERNA PHARMACEUTICALS, INC.
CHARTER OF THE COMPENSATION COMMITTEE
OF THE BOARD OF DIRECTORS**

PURPOSES:

The purpose of the Compensation Committee (the “*Committee*”) of the Board of Directors of Dicerna Pharmaceuticals, Inc., a Delaware corporation (the “*Company*”), shall be to review the type and level of compensation for directors, officers, employees and compensation consultants of the Company and to recommend compensation actions to the Board of Directors of the Company (the “*Board*”).

The purpose of the Committee shall also be to administer the variable compensation programs to be adopted by the Company and to perform such other functions as may be deemed necessary or convenient in the efficient and lawful discharge of the foregoing. In administering the foregoing, the Committee is to ensure that executive management is rewarded appropriately for its contributions to the growth, development and long-term success of the Company, that executive compensation strategy is in support of the Company’s objectives and stockholder interests and that the incentive compensation program (e.g., stock options, restricted stock, and the like) is administered consistent with the Company’s compensation strategy and policies for risk assessment and risk management.

Overall, the Committee’s responsibility is to ensure to the degree possible that the Company’s total compensation program is timely designed to attract, retain and motivate the very best talent that is available.

COMPOSITION:

The Committee shall be comprised of a minimum of two (2) members of the Board, all of whom shall be non-employee directors and shall satisfy the independence requirements established by the applicable laws, rules and regulations of the Securities and Exchange Commission and the Nasdaq Stock Market. The members of the Committee and its chairperson (the “*Chairperson*”) will be appointed by and serve at the discretion of the Board.

FUNCTIONS AND AUTHORITY:

The operation of the Committee shall be subject to the Bylaws of the Company, as in effect from time to time, and Section 141 of the Delaware General Corporation Law. The Committee may act in reliance on management of the Company as it deems necessary or appropriate. The Committee shall have the full power and authority to carry out the following responsibilities:

1. Review and approve the structure and guidelines for various incentive compensation and benefit plans and recommend for the Board’s approval incentive compensations plans in which the Chief Executive Officer, an officer subject to Section 16 of Securities Exchange Act of 1934, as amended (a “*Section 16 Officer*”), senior vice-president level employees or above, and employees that report directly to the Chief Executive Officer participates.

2. Grant equity awards under the various equity incentive compensation and benefit plans. Delegate to an equity grant subcommittee, which may be comprised of management representatives, authority to grant such awards and certain administrative authority as the Committee deems necessary or appropriate, provided that the Committee shall not delegate authority to grant any equity awards (i) that are expressly required in this Charter to be granted by the Committee or the Board or (ii) to the extent prohibited by applicable law.
3. Approve Chief Executive Officer compensation, including, but not limited to, annual salary, bonus, equity compensation and other direct or indirect benefits. Inform the Board regarding Chief Executive Officer compensation decisions.
4. Approve the compensation levels for each Section 16 Officer, senior vice-president level employees and above, and other management-level employees that report directly to the Chief Executive Officer (collectively, the “Executive Team”), including, but not limited to, annual salary, bonus, equity compensation and other direct or indirect benefits. Inform the Board on the compensation decisions for the Executive Team.
5. Recommend for approval by the Board the compensation levels for the members of the Board who are outside directors.
6. Review on a periodic basis the operation of the Company’s executive compensation programs to determine whether they remain supportive of the Company’s business objectives and are competitive relative to comparable companies and to establish and periodically review policies for the administration of executive compensation programs.
7. Review the Company’s executive compensation arrangements to evaluate whether incentive and other forms of compensation do not encourage inappropriate or excessive risk taking and review and discuss, at least annually, the relationship between risk management policies and practices, corporate strategy and the Company’s executive compensation arrangements.
8. Review and discuss with management, as appropriate, the Company’s major risks relating to the purview of the Committee, the Company’s policies for assessment and management of such risks, and the steps to be taken to control such risks, which may include the areas of compensation, benefits, succession planning, or employment practices, or other risks as the Committee or the Board deems appropriate.
9. Prepare and approve the Committee report to be included as part of the Company’s annual proxy statement and Annual Report on Form 10-K.
10. Review management recommendations on organization structure and development, including succession planning and any performance concerns for Executive Team.
11. Review performance of the Executive Team.
12. Review and reassess the adequacy of this charter on at least an annual basis.
13. Investigate any matter, at Company expense, brought to the Committee’s attention within the scope of the Committee’s duties.

14. Perform such other functions and have such other powers as may be necessary or convenient in the efficient discharge of the foregoing.

The Committee shall have the authority to delegate any of its functions to a subcommittee thereof to the extent permitted by applicable law.

MEETINGS:

The Committee will hold at least one (1) regular meeting per year and additional meetings, as the Chairperson or Committee deems appropriate. The President and Chief Executive Officer of the Company may attend any meeting of the Committee, except for portions of the meetings where his, her or their presence would be inappropriate, as determined by the Committee, but shall not participate in any discussion or deliberation unless invited to do so by the Committee, and in any event shall not be entitled to vote. The Committee may, at its discretion, include in its meetings members of the Company's management, representatives of the independent auditor, the internal auditor, any other financial personnel employed or retained by the Company or any other person whose presence the Committee believes to be necessary or appropriate. Notwithstanding anything to the contrary set forth herein, the Chief Executive Officer may not be present for any portion of any meeting of the Committee at which the compensation of the Chief Executive Officer is deliberated or voted upon, unless invited by the Committee.

CONSULTANTS AND ADVISORS:

The Committee shall have the sole authority, as it deems appropriate, to retain or replace (or obtain the advice of), as needed, any independent counsel, compensation and benefits consultants and other outside experts or advisors as the Committee believes to be necessary or appropriate. The Committee may also utilize the services of the Company's regular legal counsel or other advisors to the Company. The Company shall provide for appropriate funding, as determined by the Committee in its sole discretion, for payment of reasonable compensation to any such persons retained or consulted by the Committee. The Committee shall be directly responsible for the appointment, compensation and oversight of any such person and may select, or receive advice from, any such person only after taking into consideration such factors as may be prescribed by the applicable laws, rules and regulations of the Securities and Exchange Commission and the Nasdaq Stock Market for assessing the independence of such person.

MINUTES AND REPORTS:

Minutes of each meeting of the Committee shall be kept and distributed to each member of the Committee, each member of the Board who is not a member of the Committee and the Secretary of the Company. The Chairperson shall report to the Board from time to time or whenever so requested by the Board.