

ATYR PHARMA, INC.

COMPENSATION COMMITTEE CHARTER

I. General Statement of Purpose

The Compensation Committee of the Board of Directors (the “Compensation Committee”) of aTyr Pharma, Inc. (the “Company”), on behalf of the Board of Directors (the “Board”), discharges the Board’s responsibilities relating to compensation of the Company’s directors and executives, oversees the Company’s overall compensation structure, policies and programs, reviews the Company’s processes and procedures for the consideration and determination of director and executive compensation, and is responsible for producing a report for inclusion in the Company’s proxy statement relating to its annual meeting of stockholders or annual report on Form 10-K, in accordance with applicable rules and regulations. The primary objective of the Compensation Committee is to develop and implement compensation policies and plans that ensure the attraction and retention of key management personnel, the motivation of management to achieve the Company’s corporate goals and strategies, and the alignment of the interests of management with the interests of the Company’s stockholders.

II. Compensation Committee Composition

The number of individuals serving on the Compensation Committee shall be fixed by the Board from time to time but shall consist of no fewer than three members, each of whom shall satisfy the independence requirements of the Nasdaq Stock Market (“Nasdaq”) applicable to compensation committee members, as in effect from time to time, when and as required by Nasdaq, including any exceptions permitted by these requirements. In determining the members of the Compensation Committee, the Board will consider whether the members qualify as “non-employee directors” as defined in Rule 16b-3 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and as “outside directors” as defined in Section 162(m) of the Internal Revenue Code of 1986, as amended.

The members of the Compensation Committee shall be appointed annually by the Board and may be replaced or removed by the Board at any time, with or without cause. Resignation or removal of a Director from the Board, for whatever reason, shall automatically constitute resignation or removal, as applicable, from the Compensation Committee. Vacancies occurring, for whatever reason, may be filled by the Board. The Board shall designate one member of the Compensation Committee to serve as Chairperson of the Compensation Committee.

III. Meetings

The Compensation Committee shall meet as often as it determines is appropriate to carry out its responsibilities, which meetings may be in person or by telephone conference or other communications equipment by means of which all persons participating in the meeting can hear each other. A majority of the members of the Compensation Committee shall constitute a quorum for purposes of holding a meeting and the Compensation Committee may act by a vote of a majority of members present at such meeting. In lieu of a meeting, the Compensation Committee may act by unanimous written consent in accordance with the Company’s bylaws. The Chairperson of the Compensation Committee, in consultation with the other members and

management, may determine the frequency and length of the Compensation Committee meetings and may set meeting agendas consistent with this Charter.

IV. Compensation Committee Activities

The Compensation Committee's purpose and responsibilities shall be to:

A. Review of Charter

- Review and reassess the adequacy of this Charter annually and submit any proposed changes to the Board for approval.

B. Processes and Procedures for Considering and Determining Director and Executive Compensation

- Review and reassess periodically (and where appropriate, make such recommendations to the Board as the Compensation Committee deems advisable with regard to) the Company's processes and procedures for the consideration and determination of director and executive compensation, and review and discuss with management any description of such processes and procedures to be included in the Company's annual proxy statement.

C. Compensation Committee Report

- Review and discuss with management the Compensation Discussion and Analysis, if required, to be included in the Company's proxy statement or annual report on Form 10-K ("CD&A").
- Based on the Compensation Committee's review and discussions with management of the CD&A, if required, make a recommendation to the Board that the CD&A be included in the Company's proxy statement or annual report on Form 10-K.
- Prepare the Compensation Committee Report to be included in the Company's proxy statement or annual report on Form 10-K in accordance with the applicable rules and regulations of the Securities and Exchange Commission, any securities exchange on which the Company's securities are traded, and any other rules and regulations applicable to the Company.

D. Performance Evaluation of the Compensation Committee

- The Compensation Committee or the Company's Nominating and Corporate Governance Committee shall periodically conduct a performance evaluation of the Compensation Committee and report to the Board on the results of such evaluation.

E. Incentive-Compensation and Equity-Based Plans

- Administer the Company's equity incentive plans, interpret plan documents, select participants, approve grants and awards (subject to any limitations in this Charter with respect to officers and directors of the Company) and exercise such other power and authority as may be permitted or required under such plans.
- Review and oversee grants and awards by the Chief Executive Officer pursuant to the authority delegated by the Compensation Committee to the Chief Executive Officer in accordance with the terms of the Company's Equity Award Grant Policy and determine and review annually the share range for each level of employment and for consultants, if applicable; provided that such delegation shall in no way limit the Compensation Committee's ability to make separate or different grants or awards or make recommendations in respect thereof to the Board.
- Review and approve, or upon the request of the Board, review and recommend for approval by the Board, grants and awards to "officers" (as defined in Section 16 of the Exchange Act and Rule 16a-1 promulgated thereunder) of the Company (other than the Chief Executive Officer), employees and consultants under incentive-based compensation plans and equity-based plans, in each case consistent with the terms of such plans and the Company's Equity Award Grant Policy.
- Evaluate and determine, or upon the request of the Board, recommend for determination by the Board, the achievement of milestones that are subjective or that otherwise call for an affirmative determination by the Board or the Compensation Committee under any incentive or equity-based awards to officers (other than the Chief Executive Officer), consultants and other employees of the Company.
- Review and recommend to the Board grants and awards for the Chief Executive Officer under incentive-based compensation plans and equity-based plans, in each case consistent with the terms of such plans and the Company's Equity Award Grant Policy.
- Review and approve, or make recommendations to the Board as the Compensation Committee deems advisable, with regard to the adoption of new equity-based compensation plans, the amendment of any existing equity-based compensation plans and the number of shares reserved and available for the grant of awards under any equity-based compensation plans.
- Review and make such recommendations to the Board as the Compensation Committee deems advisable with regard to policies and procedures for the grant of equity-based awards by the Company.

F. Matters Related to Compensation of the Company’s Chief Executive Officer

- Review and approve, or upon the request of the Board, review and recommend for approval by the Board, the corporate goals and objectives that may be relevant to the compensation of the Company’s Chief Executive Officer (“CEO”).
- Evaluate the CEO’s performance in light of the goals and objectives that were set for the CEO and recommend to the Board the CEO’s compensation based on such evaluation. In connection with determining the long-term incentive component of the CEO’s compensation, the Compensation Committee should consider the Company’s performance and relative stockholder return, the value of similar incentive awards to CEOs at comparable companies, and the awards given to the Company’s CEO in past years.
- Review periodically the aggregate amount of compensation being paid or potentially payable to the CEO through the use of tally sheets or such other method as the Compensation Committee may determine.
- The CEO may not be present during voting or deliberations concerning his or her compensation.

G. Matters Related to Compensation of the Officers Other Than the Chief Executive Officer

- Review and determine the compensation of all officers of the Company other than the CEO, including with respect to any cash compensation (including severance), incentive compensation plans, equity-based plans, perquisites and other benefits. For purposes hereof the term “officer” has the meaning defined in Section 16 of the Exchange Act and Rule 16a-1 promulgated thereunder.
- Review periodically the aggregate amount of compensation being paid or potentially payable to the Company’s officers through the use of tally sheets or such other method as the Compensation Committee may determine.

V. Additional Compensation Committee Authority

The Compensation Committee is authorized, on behalf of the Board, to do any of the following, as the Compensation Committee deems necessary or appropriate in its discretion:

A. Matters Related to Compensation of the Company’s Directors

- Review and make such recommendations to the Board as the Compensation Committee deems advisable with regard to the compensation of the directors of the Company, including with respect to any equity-based plans.

B. Matters Related to Compensation of Non-Officer Employees

- Review management's aggregate decisions regarding the compensation of all employees of the Company other than the Company's "officers," as defined in Section 16 of the Exchange Act and Rule 16a-1 promulgated thereunder, including any benefit plans (e.g., 401(k) plans) and perquisites.
- Review periodically the aggregate amount of compensation being paid or potentially payable to members of the Company's senior management through the use of tally sheets or such other method as the Compensation Committee may determine.

C. Matters Related to Compensation Consulting Firms or Other Outside Advisors

- Retain or obtain the advice of compensation consultants, legal counsel and/or other advisers; provided that:
 - The Compensation Committee is authorized to, and must, have direct responsibility for the appointment, compensation and oversight of the work of any compensation consultant, legal counsel or other adviser retained by the Compensation Committee and the Company must provide for appropriate funding, as determined by the Compensation Committee, for payment of reasonable compensation to any such compensation consultant, legal counsel or other adviser; and
 - Before any compensation consultant, legal counsel or other adviser (other than (1) in-house legal counsel or (2) any compensation consultant, legal counsel or other adviser whose role is limited to the following activities for which no disclosure would be required under Item 407(e)(3)(iii) of Regulation S-K: (i) consulting on any broad-based plan that does not discriminate in scope, terms, or operation, in favor of executive officers or directors of the Company, and that is available generally to all salaried employees or (ii) providing information that either is not customized for a particular company or that is customized based on parameters that are not developed by the compensation consultant, legal counsel or other adviser and about which the compensation consultant, legal counsel or other adviser does not provide advice) is selected by, or provides advice to, the Compensation Committee, the Compensation Committee shall take into consideration the factors specified in the Nasdaq listing rules applicable to the independence of outside advisors to compensation committees. However, nothing in this provision requires that any advisers be independent.
- Prohibit the Company from engaging a compensation consultant engaged by the Compensation Committee, or an affiliate of any such compensation

consultant, to provide any other services to the Company without the approval of the Compensation Committee.

D. Succession Planning

- Review and discuss with the Board corporate succession plans for the CEO and other key officers of the Company.

VI. General

- The Compensation Committee may establish and delegate authority to one or more subcommittees consisting of one or more of its members, when the Compensation Committee deems it appropriate to do so in order to carry out its responsibilities.
- The Compensation Committee shall make regular reports to the Board concerning areas of the Compensation Committee's responsibility.
- In carrying out its responsibilities, the Compensation Committee shall be entitled to rely upon advice and information that it receives in its discussions and communications with management and such experts, advisors and professionals with whom the Compensation Committee may consult. The Compensation Committee shall have the authority to request that any officer or employee of the Company, the Company's outside legal counsel, the Company's independent auditor or any other professional retained by the Company to render advice to the Company attend a meeting of the Compensation Committee or meet with any members of or advisors to the Compensation Committee.
- The Compensation Committee may perform such other functions as may be requested by the Board from time to time.

ADOPTED: April 25, 2015

EFFECTIVE: May 6, 2015

AMENDED: December 3, 2019