

ALNYLAM PHARMACEUTICALS, INC.

RESTATED SCIENCE AND TECHNOLOGY COMMITTEE CHARTER

A. Purpose

The purpose of the Science and Technology Committee of the Board of Directors (the “Board”) of Alnylam Pharmaceuticals, Inc. (the “Company”) is to assist the Board’s oversight of the Company’s research and development activities and to advise the Board with respect to strategic and tactical scientific issues.

B. Structure and Membership

1. Number. The Science and Technology Committee shall consist of such number of directors as the Board shall from time to time determine.
2. Chair. The Board shall elect a Chair of the Science and Technology Committee.
3. Compensation. The compensation of Science and Technology Committee members shall be as determined by the Board.
4. Selection and Removal. Members of the Science and Technology Committee shall be appointed by the Board, upon the recommendation of the Nominating and Corporate Governance Committee. The Board may remove members of the Science and Technology Committee from such Committee, with or without cause.

C. Authority and Responsibilities

1. General. The Science and Technology Committee shall discharge its responsibilities, and shall assess the information provided by the Company’s management, in accordance with its business judgment.
2. Science and Technology Matters. The Science and Technology Committee shall function as a knowledgeable and objective group of scientists and non-scientists to consider and report periodically to the Board on matters relating to the Company’s research and development initiatives. The Science and Technology Committee shall:
 - oversee the Company’s Scientific Advisory Board;
 - review the overall scientific and research and development strategy of the Company;
 - review the Company’s research and development programs;
 - review the Company’s regulatory compliance/quality programs;
 - review cognate external scientific research, discoveries and commercial developments, as appropriate; and
 - review the Company’s overall intellectual property strategies.

3. Additional Duties. The Science and Technology Committee shall have such other duties as may be delegated from time to time by the Board.

D. Procedures and Administration

1. Meetings. The Science and Technology Committee shall meet at least quarterly and as often as it deems necessary in order to perform its responsibilities. The Science and Technology Committee may also act by unanimous written consent in lieu of a meeting. The Science and Technology Committee shall keep such records of its meetings as it shall deem appropriate.
2. Subcommittees. The Science and Technology Committee may form and delegate authority to one or more subcommittees (including a subcommittee consisting of a single member), as it deems appropriate from time to time under the circumstances.
3. Reports to Board. The Science and Technology Committee shall report regularly to the Board.
4. Charter. The Science and Technology Committee shall, from time to time as it deems appropriate, review and reassess the adequacy of this Charter and recommend any proposed changes to the Board for approval.
5. Independent Advisors. The Science and Technology Committee is authorized, without further action by the Board, to engage such independent advisors as it deems necessary or appropriate to carry out its responsibilities. Such independent advisors may be the regular advisors to the Company. The Science and Technology Committee is empowered, without further action by the Board, to cause the Company to pay the compensation of such advisors as established by the Committee.
6. Company Participation. The Science and Technology Committee may from time to time request any officer, employee or advisor of the Company to meet with the Committee or any advisors engaged by the Committee.
7. Periodic Self-Evaluation. The Science and Technology Committee shall periodically evaluate its own performance.

* * *

Approved by the Board on March 22, 2012