

CORPORATE GOVERNANCE AND NOMINATING COMMITTEE CHARTER
APTOSE BIOSCIENCES INC.
(the “Company”)

As revised and adopted by the Board of Directors (the “Board”) on March 3, 2015

1. Purpose

The primary purposes of the Corporate Governance and Nominating Committee (the “Committee”) of the Board are to assist the Board in (a) identifying qualified individuals to become Board members, consistent with criteria approved by the Board, (b) determining the composition of the Board and its committees, (c) selecting the director nominees for the next annual meeting of shareholders, (d) monitoring a process to assess Board, committee and management effectiveness, (e) aiding and monitoring management succession planning and (f) developing, recommending to the Board, implementing and monitoring policies and processes related to the Company’s corporate governance guidelines.

2. Composition

(a) At Least Two Members. The Committee shall consist of a minimum of two unrelated or independent directors as defined in Section 2(b) below. The Board may designate a Committee member as the Chair of the Committee on an annual basis, or if the Board does not do so, the Committee members may appoint a Committee member as Chair by a majority vote of the authorized number of Committee members.

(b) Independence. All members of the Committee shall be “unrelated” or “independent” as determined by the Board, applicable securities laws, the rules and regulations of the applicable securities regulatory authorities and stock exchanges and any other laws applicable to the Company, including “independent” within the meaning of National Instrument 58-101 Disclosure of Corporate Governance Practices any exceptions permitted by these requirements.

(c) Appointment and Removal. Committee members shall be appointed by the Board. Members of the Committee shall serve until their resignation or removal. The Board may fill vacancies on the Committee by a majority vote of the authorized numbers of directors, but may remove Committee members only with the approval of a majority of the independent directors then serving on the full Board.

3. Meetings, Procedures and Resources of the Committee

(a) Meetings. In discharging its responsibilities, the Committee shall meet as often as it determines necessary or advisable, but not less than once a year. The Committee may also hold special meetings or act by unanimous written consent as the Committee may decide. The meetings may be in person, by video conference or by telephone. The Committee shall appoint a secretary to be the secretary of each meeting of the Committee to keep written minutes of the meeting and deliberations and will ensure that such minutes are included in the Company’s minute book. The Chair of the Committee shall report at the next regularly scheduled Board meeting following the applicable Committee meeting.

(b) Procedures. The Committee may establish its own procedures, including the formation and delegation to subcommittees, upon approval by a majority vote of Committee members, in a manner

not inconsistent with this charter, the articles, or applicable laws or regulations. The Chair or majority of the Committee members may call meetings of the Committee. A majority of the members of the Committee shall constitute a quorum for the transaction of Committee business, and the vote of a majority of the Committee members present at the meeting at which a quorum is present shall be the act of the Committee. The Committee shall review, discuss and assess its own performance at least annually. The Committee shall periodically review and assess the adequacy of this charter, including the Committee's role and responsibilities as outlined in this charter, and shall periodically, but at least annually, report to the Board on its proceedings, reviews undertaken and any associated recommendations for its consideration.

(c) Resources. The Committee may retain and terminate any search firm engaged to assist in identifying director candidates, and may retain outside counsel and any other advisors as the Committee may deem appropriate in its sole discretion. The Committee shall have sole authority to approve the search firm's related fees and retention terms.

4. Responsibilities

In furtherance of its purpose, the Committee shall have the following responsibilities, subject to the Company's constating documents and applicable laws:

(a) To lead the search for and identify individuals qualified to become members of the Board, consistent with any criteria as may be approved by the Board from time to time, and to select director nominees to be presented at the Company's next annual meeting of shareholders, and one or more director nominees for each vacancy on the Board that occurs between annual meetings of shareholders, subject to legal rights, if any, of third parties to nominate or appoint directors. The Committee shall select or recommend individuals as director nominees who meet the qualifications approved by the Board and who shall have high personal and professional integrity, who can devote sufficient time and resources to his or her duties as a member of the Board, who shall have demonstrated ability and sound judgment and who shall be effective, in conjunction with the other nominees to the Board, in collectively serving the long-term interests of the Company and its shareholders. Candidates recommended by the Company's shareholders shall be evaluated in the same manner as all other director nominees. The Committee should consult fully with the CEO in its process of recruiting new directors. For further assistance with selecting appropriate directors, the Committee should refer to "Selection Criteria – Directors," attached as Schedule "A."

(b) To review director candidates properly submitted by the Company's shareholders in accordance with submission procedures established by the Committee. Nominees shall be reviewed on a periodic individual basis and approved by the Committee.

(c) To prepare a policy on the orientation and training of new directors.

(d) To review and evaluate the Board's committee structure and ensure that the powers and responsibilities of each Board committee are set out in a charter. Also, to make any recommendations it deems appropriate regarding revisions to the Board and any Board committee's meeting policies.

(e) To recommend to the Board for its approval directors qualified to serve as members of each committee, giving consideration to the criteria for service on each committee as set forth in the charter for such committee. The Committee shall review and recommend committee slates annually and shall recommend additional committee members to fill vacancies as needed.

(f) To, through the Chair of the Board, approach and secure confirmation of consent to act from persons approved by the Board either for appointment to the Board to fill vacancies or for nomination.

(g) To regularly review issues and developments related to corporate governance issues including directorship practices, criteria for selecting directors, policies relating to tenure and retirement of directors, compensation and benefit programs for non-employee directors and to develop and recommend to the Board for its approval a Code of Business Conduct and Ethics (the “Code”) applicable to the Company. The Committee shall review the guidelines and the Code from time to time and recommend changes as necessary.

(h) Prior to each annual meeting of shareholders, to review the size of the Board, its composition and its efficiency in order to make the necessary corrections in relation to the long-term needs of the Company and in accordance with the strategic development plan of the Company.

(i) To review at least annually the effectiveness of the Board, all Board committees, including the Committee, and management, and to make recommendations for improvements and to develop and recommend to the Board for its approval an annual self-evaluation process of the Board and its committees. This assessment shall include evaluation of the Board’s approach to corporate governance issues, the Board’s contribution as a whole and effectiveness in serving the best interests of the Company and its shareholders, specific areas in which the Board and/or management believe contributions could be improved, and overall Board composition and makeup, including the reelection of current Board members. The factors to be considered shall include whether the directors, both individually and collectively, can and do provide the integrity, experience, judgment, commitment (including having sufficient time to devote to the Company and level of participation), skills, diversity and expertise appropriate for the Company. In assessing the directors, both individually and collectively, the Committee may consider the current needs of the Board and the Company to maintain a balance of knowledge, experience and capability in various areas. The Committee shall also consider and assess the independence of directors, including whether a majority of the Board continue to be independent from management in both fact and appearance, as well as within the meaning prescribed by any of the applicable securities laws and the rules and regulations of any applicable securities regulatory authority and stock exchange. Also, the Committee shall review the existence, terms of coverage and adequacy of directors’ and officers’ insurance. The results of these reviews shall be provided to the Board for further discussion as appropriate. The Committee shall assist the Board in performing the annual self-evaluation of the Board, its committees and directors and may make recommendations to the Board for any improvements that the Committee may deem appropriate.

(j) To determine the reasons for the resignation of any director.

(k) To review and assist the Board in developing succession plans for the senior officers and other management personnel. The Committee shall also assist the Board in evaluating potential candidates for senior officers of the Company, including the CEO.

(l) To review, on an annual basis, each of the directors’ contributions to the Board, and provide such information to the Board for its review.

(m) To ensure that a process is established for the orientation and education of new directors and senior officers of the Company and that new officers and directors are aware of their obligations and responsibilities under the Company’s Disclosure and Insider Trading Policy.

(n) To ensure that directors receive adequate information and continuing education opportunities on an on-going basis to enable them to maintain their skills and abilities as directors and to ensure their knowledge and understanding of the Company's business remains current.

(o) The Committee shall periodically review Company policy statements to determine their adherence to the Code and consider any requests by directors or executive officers of the Company for a waiver from the Code.

(p) The Committee shall review the processes and procedures used by the Company to provide information to the Board and its committees. The Committee should consider, among other factors, the reporting channels through which the Board and its committees receive information and the level of access to outside advisors where necessary or appropriate, as well as the procedures for providing accurate, relevant and appropriately detailed information to the Board and its committees on a timely basis.

(q) To approve in advance the engagement of any outside expert by the Committee at the expense of the Company when such engagement is appropriate and necessary for the purpose of allowing the Committee to discharge its mandate and responsibilities.

(r) To review the program of the Board each year and the methods and processes to be pursued in carrying out its program.

(s) To review and make recommendations with respect to the disclosure required concerning corporate governance to be contained in public disclosure documents filed with securities regulators or otherwise circulated by the Company from time to time.

The approval of this Corporate Governance and Nominating Committee Charter shall be construed as delegation of authority to the Corporate Governance and Nominating Committee with respect to the responsibilities set forth herein.

Schedule “A”
APTOSE BIOSCIENCES INC.

SELECTION CRITERIA — DIRECTORS

General Qualifications

The role of a director today is more onerous, demanding, complex and multi-dimensional than it has been in the past. There are also more risks, and potential liabilities are relatively heavy. Society expects and demands more from directors, and consequently, the director’s role has become more professional.

Directors of Aptose Biosciences Inc. (the “**Company**”) are expected to bring to the board of directors (the “**Board**”) the broadest possible knowledge and depth of experience from their chosen business or profession.

Directors should evidence a demonstrated ability to deal with business, financial and social issues, both nationally and internationally. This implies a capacity to provide additional strength, diversity of views and up-to-date perceptions to the Board and its deliberations.

Potential candidates for membership on the Board will not be denied consideration by reason of race, sex, religion or affiliation with some special constituency group, nor will any candidate be selected solely for such reason.

A director should possess integrity, be willing to articulate his or her views frankly, be able to work productively with others, and have the ability and willingness to commit the time and effort required.

1. Directors should be fully informed regarding their responsibilities and liabilities as a director prior to a commitment to serve.

Legal Requirements

2. Effective June 30, 2005, National Instrument 58-101 *Disclosure of Corporate Governance Practices* (“**NI 58-101**”) and National Policy 58-201 *Corporate Governance Guidelines* (“**58-201**”) were adopted by the Canadian securities regulatory authorities in each of the provinces and territories of Canada. NI 58-101 requires issuers to disclose the corporate governance practices that they have adopted. NP 58-201 provides guidance on governance practices. NP 58-201 recommends that board of directors should have a majority of independent directors. Independence for that purpose is defined in section 1.4 of National Instrument 52-110 *Audit Committees* (“**NI 52-110**”). Generally, a director is independent if he or she has no direct or indirect material relationship with the Company. A “material relationship” is a relationship that could, in the view of the Board, reasonably interfere with the exercise of a director's independent judgment.
3. In addition, NI 52-110 prescribes that the Company must have an audit committee composed of at least three members, all of whom must be financially literate and all of whom must be independent directors.

4. The *Canada Business Corporations Act* requires that at least 25% of the Board be “resident Canadians” and disqualifies directors who are less than 18 years old, have been found by a Court to be of unsound mind, or who are bankrupt.
5. A director should be willing and prepared to commit the time necessary for full participation on the Board and its committees and well as for interaction with the management of the Company.
6. Nasdaq Listing Rule 5605(b)(1) requires that a majority of the Board be comprised of independent directors.

Desired Business Background/Experience

Specific expertise in these categories will be considered positive attributes of potential candidates for Board appointment:

- (a) biotechnology sector experience and operations expertise in the biotechnology sector;
- (b) scientific experience;
- (c) financial/public market experience;
- (d) knowledge and experience in mergers and acquisitions;
- (e) clinical trials experience;
- (f) drug development experience;
- (g) governance, audit and/or operational risk management; and
- (h) investor relations/communications expertise.

Attributes

The following attributes will be considered when selecting candidates for Board appointment:

- (a) international stature in the individual’s chosen business or profession;
- (b) ability to bring to the Board a knowledgeable perspective on issues affecting business in the geographic jurisdiction in which the individual resides or carries on business;
- (c) ability to act in the best interests of the Company as a whole, and independently of any particular interest arising as a result of any previous, existing or future relationship with the Company’s shareholders, customers or suppliers;
- (d) willingness to ask probing questions and challenge management within the appropriate governance context;
- (e) ability to “speak with one voice” once a full discussion has been undertaken and a decision has been made by the Board in accordance with its governance policies;

- (f) compatibility with the Company's strategic objectives and operational values;
- (g) ability and willingness to make a real contribution to the Company, its Board and its shareholders;
- (h) ability to dedicate a sufficient amount of time necessary to discharge the duties required of a director, including attendance at all Board and committee (as applicable) meetings (either in person or by teleconference);
- (i) high ethical standards;
- (j) a strong, independent individual who also contributes effectively as a team member of the Board and its committees;
- (k) ability to assist the Company in making contacts and assisting in business development where appropriate;
- (l) ability to critically assess business strategies and operations;
- (m) forward thinking and knowledge of potential changes and trends facing the future of the industry; and
- (n) well versed in corporate governance and risk assessment.

Shareholder Nominees

Nominees associated with or proposed by significant shareholders or customers for appointment to the Board shall be subject to these qualification criteria and be reviewed on a periodic individual basis, and approved by the Corporate Governance and Nominating Committee and the Board.