

Aptose Biosciences Inc.
16,125,000 Common Shares
(no par value per share)

Underwriting Agreement

December 16, 2019

PIPER JAFFRAY & CO.
As Representative of the Several Underwriters
named in Schedule A

c/o Piper Jaffray & Co.
800 Nicollet Mall, Suite 800
Minneapolis, MN 55402

Ladies and Gentlemen:

Aptose Biosciences Inc., a company incorporated under the Canada Business Corporations Act (the “**Company**”), proposes to issue and sell to the several underwriters named in Schedule A (the “**Underwriters**”) an aggregate of 16,125,000 common shares, no par value per share (the “**Shares**”). The 16,125,000 Shares to be sold by the Company are called the “**Firm Shares**.” In addition, the Company has granted to the Underwriters an option to purchase up to an additional 2,418,750 Shares as provided in Section 2. The additional 2,418,750 Shares that may be sold by the Company pursuant to such option are collectively called the “**Optional Shares**.” The Firm Shares and, if and to the extent such option is exercised, the Optional Shares, are collectively called the “**Offered Shares**.” Piper Jaffray & Co. (“**Piper Jaffray**”) has agreed to act as representative of the several Underwriters (in such capacity, the “**Representative**”) in connection with the offering and sale of the Offered Shares. To the extent there are no additional underwriters listed on Schedule A, the term “Representative” as used herein shall mean you, as Underwriter.

The Company has prepared and filed with the U.S. Securities and Exchange Commission (the “**Commission**”) a shelf registration statement on Form S-3, as amended, File No. 333-230218, including a base prospectus (the “**Base Prospectus**”) to be used in connection with the public offering and sale of the Offered Shares. Such registration statement, as amended, including the financial statements, exhibits and schedules thereto, in the form in which it became effective under the U.S. Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder (collectively, the “**Securities Act**”), including all documents incorporated or deemed to be incorporated by reference therein and any information deemed to be a part thereof at the time of effectiveness pursuant to Rule 430A or Rule 430B under the Securities Act, is called the

“Registration Statement.” Any registration statement filed by the Company pursuant to Rule 462(b) under the Securities Act in connection with the offer and sale of the Offered Shares is called the **“Rule 462(b) Registration Statement,”** and from and after the date and time of filing of any such Rule 462(b) Registration Statement the term **“Registration Statement”** shall include the Rule 462(b) Registration Statement. The preliminary prospectus supplement dated December 16, 2019 describing the Offered Shares and the offering thereof (the **“Preliminary Prospectus Supplement”**), together with the Base Prospectus, is called the **“Preliminary Prospectus,”** and the Preliminary Prospectus and any other prospectus supplement to the Base Prospectus in preliminary form that describes the Offered Shares and the offering thereof and is used prior to the filing of the Prospectus (as defined below), together with the Base Prospectus, is called a **“preliminary prospectus.”** As used herein, the term **“Prospectus”** shall mean the final prospectus supplement to the Base Prospectus that describes the Offered Shares and the offering thereof (the **“Final Prospectus Supplement”**), together with the Base Prospectus, in the form first used by the Underwriters to confirm sales of the Offered Shares or in the form first made available to the Underwriters by the Company to meet requests of purchasers pursuant to Rule 173 under the Securities Act.

As used herein, **“Applicable Time”** is 7:00 p.m. (New York time) on December 16, 2019. As used herein, **“free writing prospectus”** has the meaning set forth in Rule 405 under the Securities Act, and **“Time of Sale Prospectus”** means the Preliminary Prospectus, as amended or supplemented immediately prior to the Applicable Time, together with the free writing prospectuses, if any, identified on Schedule B hereto and the pricing information set forth on Schedule C hereto. As used herein, **“Road Show”** means a “road show” (as defined in Rule 433 under the Securities Act) relating to the offering of the Offered Shares contemplated hereby that is a “written communication” (as defined in Rule 405 under the Securities Act).

All references in this Agreement to financial statements and schedules and other information which are “contained,” “included” or “stated” in, or “part of” the Registration Statement, the Rule 462(b) Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, the Time of Sale Prospectus or the Prospectus, and all other references of like import, shall be deemed to mean and include all such financial statements and schedules and other information which is or is deemed to be incorporated by reference in the Registration Statement, the Rule 462(b) Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, the Time of Sale Prospectus or the Prospectus, as the case may be.

All references in this Agreement to amendments or supplements to the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, the Time of Sale Prospectus or the Prospectus shall be deemed to mean and include the filing of any document under the U.S. Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder (collectively, the **“Exchange Act”**) that is or is deemed to be incorporated by reference in the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, or the Prospectus, as the case may be.

All references in this Agreement to (i) the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus or the Prospectus, any amendments or supplements to any of the foregoing, or any free writing prospectus, shall include any copy thereof filed with the Commission pursuant to its Electronic Data Gathering, Analysis and

Retrieval System (“**EDGAR**”) and (ii) the Prospectus shall be deemed to include any “electronic Prospectus” provided for use in connection with the offering of the Offered Shares as contemplated by Section 3(n) of this Agreement.

In the event that the Company has only one subsidiary, then all references herein to “subsidiaries” of the Company shall be deemed to refer to such single subsidiary, mutatis mutandis.

The Company hereby confirms its agreements with the Underwriters as follows:

1. Representations and Warranties of the Company. The Company represents and warrants to each Underwriter as of the date of this Agreement, the Applicable Time, the First Closing Date (as hereinafter defined) and each Option Closing Date (as hereinafter defined), if any, as follows:

(a) Continuing Effectiveness of Registration Statement. The Registration Statement and any Rule 462(b) Registration Statement have been declared effective by the Commission under the Securities Act. The Company has complied, to the Commission’s satisfaction, with all requests of the Commission for additional or supplemental information. No stop order suspending the effectiveness of the Registration Statement or any Rule 462(b) Registration Statement is in effect and no proceedings for such purpose have been instituted or are pending or, to the knowledge of the Company, contemplated or threatened by the Commission. The Company meets the requirements for use of Form S-3 under the Securities Act. The sale of the Offered Shares hereunder meets the requirements of General Instruction I.B.1. of Form S-3.

(b) No Material Misstatements or Omissions. The Prospectus when filed complied, and as amended or supplemented, if applicable, will comply in all material respects with the Securities Act. Each of the Registration Statement, any Rule 462(b) Registration Statement, the Preliminary Prospectus, the Time of Sale Prospectus and the Prospectus and any post-effective amendments or supplements thereto, at the time it became effective or its date, as applicable, and as of the First Closing Date or the Option Closing Date, as the case may be, complied in all material respects with the Securities Act, and as of each effective date and as of the First Closing Date or the Option Closing Date, as the case may be, and with respect to the Time of Sale Prospectus, as of the Applicable Time, did not and will not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading. The Preliminary Prospectus, the Time of Sale Prospectus and the Prospectus and any post-effective amendments or supplements thereto, as of its date and with respect to the Time of Sale Prospectus, as of the Applicable Time, did not and, as of the First Closing Date or the Option Closing Date, as the case may be, will not contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The representations and warranties set forth in the two immediately preceding sentences do not apply to statements in or omissions from the Registration Statement, any Rule 462(b) Registration Statement, or any post-effective amendment thereto, or the Preliminary Prospectus, the Time of Sale Prospectus or the Prospectus, or any amendments or supplements thereto, made in reliance upon and in conformity with information relating to the Underwriters furnished to the Company in writing by the Representative expressly for use therein. There are no contracts or other documents required to be described in the Preliminary Prospectus, the Time of Sale Prospectus and the Prospectus or to

be filed as exhibits to the Registration Statement which have not been described or filed as required. No forward-looking statement (within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act) included in any of the Registration Statement, the Time of Sale Prospectus and the Prospectus has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

(c) Eligible Issuer. The Company is not an “ineligible issuer” (as defined in Rule 405 under the Securities Act) as of the eligibility determination date for purposes of Rules 164 and 433 under the Securities Act with respect to the offering of the Offered Shares contemplated by the Registration Statement, the Time of Sale Prospectus and the Prospectus; the parties hereto agree and understand that the content of any and all “road shows” (as defined in Rule 433 under the Securities Act) related to the offering of the Offered Shares contemplated hereby is solely the property of the Company.

(d) Financial Statements. The historical financial statements (including the related notes and supporting schedules) to be included or incorporated by reference, in the Registration Statement, the Time of Sale Prospectus and the Prospectus comply as to form in all material respects with the requirements of Regulation S-X under the Securities Act (“**Regulation S-X**”) and present fairly the financial condition, results of operations and cash flows of the entities purported to be shown thereby at the dates and for the periods indicated and have been prepared in conformity with generally accepted accounting principles in the United States applied on a consistent basis throughout the periods involved. There are no financial statements (historical or pro forma) that are required to be included in the Registration Statement, the Time of Sale Prospectus or the Prospectus that are not so included as required. The interactive data in eXtensible Business Reporting Language (“**XBRL**”) included or incorporated by reference in the Registration Statement, the Time of Sale Prospectus and the Prospectus fairly present the information called for in all material respects and have been prepared in accordance with the Commission’s rules and guidelines applicable thereto.

(e) No Off-Balance Sheet Transactions. There are no transactions, arrangements and other relationships between and/or among the Company, and/or, to the knowledge of the Company, any of its affiliates and any unconsolidated entity, including, but not limited to, any structural finance, special purpose or limited purpose entity (each, an “**Off-Balance Sheet Transaction**”) that could reasonably be expected to affect materially the Company’s liquidity or the availability of or requirements for its capital resources, including those Off Balance Sheet Transactions described in the Commission’s Statement about Management’s Discussion and Analysis of Financial Conditions and Results of Operations (Release Nos. 33-8056; 34-45321; FR-61), and are required to be described in the Registration Statement, the Time of Sale Prospectus or the Prospectus, which have not been described as required.

(f) Auditor Independence. KPMG LLP, who have audited certain consolidated financial statements of the Company, whose report appears in the Registration Statement, the Time of Sale Prospectus and the Prospectus, are independent public accountants as required by the Securities Act and the Public Accounting Oversight Board.

(g) No Material Adverse Effect. The Company and each of its consolidated subsidiaries (the “**Subsidiaries**”) (a complete list of the Subsidiaries is included as Schedule D hereto) has been duly organized, validly existing as a corporation and in good standing under the

laws of their respective jurisdictions of organization. The Company and each of its Subsidiaries are, and will be, duly licensed or qualified as a foreign corporation for transaction of business and in good standing under the laws of each other jurisdiction in which their respective ownership or lease of property or the conduct of their respective businesses requires such license or qualification, and have all corporate power and authority necessary to own or hold their respective properties and to conduct their respective businesses as described in the Registration Statement, the Time of Sale Prospectus and the Prospectus, except where the failure to be so qualified or in good standing or have such power or authority would not, individually or in the aggregate, have a material adverse effect or would reasonably be expected to have a material adverse effect on or affecting the assets, business, operations, earnings, properties, condition (financial or otherwise), prospects, stockholders' equity or results of operations of the Company and the Subsidiaries taken as a whole, or prevent or materially interfere with consummation of the transactions contemplated hereby (a "**Material Adverse Effect**"). The Company does not own or control, directly or indirectly, any corporation, association or other entity other than the Subsidiaries listed in Exhibit 21.1 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018, except for Subsidiaries that in the aggregate would not constitute a "significant subsidiary" (as defined in Rule 405 under the Securities Act). None of the Subsidiaries of the Company is a "significant subsidiary" (as defined in Rule 405 under the Securities Act).

(h) Capitalization. The Company has an authorized capitalization as set forth in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus, and all of the issued shares of the Company have been duly authorized and validly issued, are fully paid and non-assessable, conform in all material respects to the description thereof contained in the Registration Statement, the Time of Sale Prospectus and the Prospectus and were not issued in violation of any preemptive right, resale right, right of first refusal or similar right. All of the Company's options, warrants and other rights to purchase or exchange any securities for shares of the Company's capital stock have been duly authorized and validly issued, and conform in all material respects to the description thereof contained in the Registration Statement, the Time of Sale Prospectus and the Prospectus. All of the issued shares of capital stock or other ownership interest of each Subsidiary of the Company have been duly authorized and validly issued, are fully paid and non-assessable and are owned directly or indirectly by the Company, free and clear of all liens, encumbrances, equities or claims, except for such liens, encumbrances, equities or claims as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(i) Due Authorization, Valid Issuance and Non-Assessability of Shares. The Offered Shares to be issued and sold by the Company to the Underwriters hereunder have been duly authorized, and upon payment and delivery in accordance with this Agreement, will be validly issued, fully paid and non-assessable, will conform in all material respects to the description thereof contained in the Registration Statement, the Time of Sale Prospectus and the Prospectus, will be issued in compliance with federal and state securities laws and will be free of statutory and contractual preemptive rights, rights of first refusal and similar rights.

(j) Authority to Enter into this Agreement. The Company has all requisite corporate power and authority to execute, deliver and perform its obligations under this Agreement. This Agreement has been duly and validly authorized, executed and delivered by the Company.

(k) Non-Contravention. The issue and sale of the Offered Shares, the execution, delivery and performance of this Agreement by the Company, the consummation of the transactions contemplated hereby and the application of the proceeds from the sale of the Offered Shares as described under “Use of Proceeds” in the Registration Statement, the Time of Sale Prospectus and the Prospectus will not (i) conflict with or result in a breach or violation of any of the terms or provisions of, impose any lien, charge or encumbrance upon any property or assets of the Company and its Subsidiaries, or constitute a default under, any indenture, mortgage, deed of trust, loan agreement, license, lease or other agreement or instrument to which the Company or any of its Subsidiaries is a party or by which the Company or any of its Subsidiaries is bound or to which any of the property or assets of the Company or any of its Subsidiaries is subject; (ii) result in any violation of the provisions of the articles of association, charter or by-laws (or similar organizational documents) of the Company or any of its Subsidiaries; or (iii) result in any violation of any statute or any judgment, order, decree, rule or regulation of any court or governmental agency or body having jurisdiction over the Company or any of its Subsidiaries or any of their properties or assets, except, with respect to clauses (i) and (iii), for such conflicts, breaches, violations, liens, charges, encumbrances or defaults that would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. The issuance and sale of the Shares hereunder does not contravene the rules and regulations of the Exchange or the Toronto Stock Exchange (the “TSX”).

(l) No Consent or Approval Required. No consent, approval, authorization or order of, or filing, registration or qualification with, any court or governmental agency or body having jurisdiction over the Company or any of its Subsidiaries or any of their properties or assets is required for the issue and sale of the Offered Shares, the execution, delivery and performance of this Agreement by the Company, the consummation of the transactions contemplated hereby, the application of the proceeds from the sale of the Offered Shares as described under “Use of Proceeds” in the Registration Statement, the Time of Sale Prospectus and the Prospectus, except for (i) the registration of the Offered Shares under the Securities Act; (ii) such consents, approvals, authorizations, orders, filings, registrations or qualifications as may be required under the Exchange Act, and applicable state or foreign securities laws and/or the bylaws and rules of the Financial Industry Regulatory Authority (the “FINRA”) and/or the TSX in connection with the sale of the Offered Shares to the Underwriters; and (iii) the inclusion of the Offered Shares on the Nasdaq Capital Market (the “Exchange”).

(m) Internal Accounting Controls. The Company and each of its Subsidiaries maintain internal accounting controls designed to provide reasonable assurances regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles in the United States, including, but not limited to, internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management’s general or specific authorization, (ii) transactions are recorded as necessary to permit preparation of the Company’s financial statements in conformity with generally accepted accounting principles in the United States and to maintain accountability for its assets, (iii) access to the Company’s assets is permitted only in accordance with management’s general or specific authorization, (iv) the recorded accountability for the Company’s assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences, and (v) the interactive data in XBRL included or incorporated by reference in the Registration Statement, the Time of Sale Prospectus and the Prospectus fairly present the information called for in all material respects and are prepared in

accordance with the Commission's rules and guidelines applicable thereto. Except as disclosed in the Registration Statement, the Time of Sale Prospectus or the Prospectus, as of the date of the most recent balance sheet of the Company and its consolidated Subsidiaries audited by KPMG LLP, there were no material weaknesses in the Company's internal controls.

(n) Disclosure Controls. The Company and each of its Subsidiaries maintain disclosure controls and procedures (as such term is defined in Rule 13a-15(e) under the Exchange Act) designed to ensure that the information required to be disclosed by the Company and its Subsidiaries in the reports they file or submit under the Exchange Act is accumulated and communicated to management of the Company and its Subsidiaries, including their respective principal executive officers and principal financial officers, as appropriate, to allow timely decisions regarding required disclosure to be made, and as of December 31, 2018, such disclosure controls and procedures are effective in all material respects to perform the functions for which they were established.

(o) Critical Accounting Policies. The section entitled "Critical Accounting Policies" incorporated by reference in the Registration Statement, the Time of Sale Prospectus and the Prospectus accurately describes in all material respects (i) the accounting policies that the Company believes are the most important in the portrayal of the Company's financial condition and results of operations and that require management's most difficult, subjective or complex judgments ("**Critical Accounting Policies**"); (ii) the judgments and uncertainties affecting the application of Critical Accounting Policies; and (iii) the likelihood that materially different amounts would be reported under different conditions or using different assumptions, and an explanation thereof.

(p) Sarbanes-Oxley Compliance. There is and has been no failure on the part of the Company or, to the knowledge of the Company, any of the Company's directors or officers, in their capacities as such, to comply with any provision of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated in connection therewith that are applicable to the Company or its directors or officers in their capacities as directors or officers of the Company.

(q) Exceptions. Except as would not, in the aggregate, reasonably be expected to have a Material Adverse Effect, since the date of the latest audited financial statements included in the Registration Statement, the Time of Sale Prospectus and the Prospectus, and, except as disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, neither the Company nor any of its Subsidiaries has (i) sustained any loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree, (ii) issued or granted any securities (other than pursuant to employee benefit plans, qualified stock option plans or other equity compensation plans or arrangements existing on the date hereof and disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus (the "**Specified Equity Plans**")), (iii) incurred any material liability or obligation, direct or contingent, other than liabilities and obligations that were incurred in the ordinary course of business, (iv) entered into any material transaction not in the ordinary course of business, or (v) declared or paid any dividend on its share capital; and since such date, except as disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, there has not been any change in the share capital, long-term debt, net current assets or short-term debt of the Company or any of its Subsidiaries or any adverse change, or any development involving a prospective adverse change, in or affecting the condition

(financial or otherwise), results of operations, shareholders' equity, properties, management, business or prospects of the Company and its Subsidiaries taken as a whole.

(r) Valid Title. The Company and each of its Subsidiaries have good and marketable title in fee simple to all real property and good and marketable title to all personal property owned by them, that are material to the business of the Company, in each case free and clear of all liens, encumbrances and defects, except such liens, encumbrances and defects as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company and its Subsidiaries. All assets held under lease by the Company and its Subsidiaries, that are material to the business of the Company, are held by them under valid, subsisting and enforceable leases, with such exceptions as do not materially interfere with the use made and proposed to be made of such assets by the Company and its Subsidiaries.

(s) Intellectual Property. The Company and each of its Subsidiaries owns, possesses or has valid and enforceable licenses to use, or can acquire on reasonable terms, all Intellectual Property (as defined below) necessary for the conduct of the Company's and its Subsidiaries' business as now conducted or as described in the Registration Statement, the Time of Sale Prospectus and the Prospectus to be conducted, except as such failure to own, possess, or acquire such rights would not reasonably be expected to, individually or in the aggregate, result in a Material Adverse Effect. Furthermore, (A) to the knowledge of the Company, there is no infringement, misappropriation or violation by third parties of any such Intellectual Property, the effect of which would have a Material Adverse Effect; (B) there is no pending or, to the knowledge of the Company, threatened, action, suit, proceeding or claim by others challenging the Company's or any of its Subsidiaries' rights in or to any such Intellectual Property, the effect of which would have a Material Adverse Effect; (C) the Intellectual Property owned by the Company and its Subsidiaries, and to the knowledge of the Company, the Intellectual Property licensed to the Company and its Subsidiaries, has not been adjudged invalid or unenforceable, in whole or in part, and there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others challenging the validity or scope of any such Intellectual Property, the effect of which would have a Material Adverse Effect; (D) there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others that the Company or any of its Subsidiaries infringes, misappropriates or otherwise violates any Intellectual Property or other proprietary rights of others, and neither the Company or any of its Subsidiaries has received any written notice of such claim, the effect of which would have a Material Adverse Effect; (E) to the Company's knowledge, no employee of the Company or any of its Subsidiaries is in or has ever been in violation of any term of any employment contract, patent disclosure agreement, invention assignment agreement, non-competition agreement, non-solicitation agreement, nondisclosure agreement or any restrictive covenant to or with a former employer where the basis of such violation relates to such employee's employment with the Company or any of its Subsidiaries or actions undertaken by the employee while employed with the Company or any of its Subsidiaries, the effect of which would have a Material Adverse Effect; and (F) there is no U.S. patent or published U.S. patent application which contains claims that dominate or may dominate any Intellectual Property described in the Registration Statement, Time of Sale Prospectus and the Prospectus as being owned by or licensed to the Company or that interferes with the issued or pending claims of any such Intellectual Property. **"Intellectual Property"** shall mean all patents, patent applications, trade and service marks, trade and service mark registrations, trade names, copyrights, licenses, inventions, trade secrets, domain names, technology, know-how and other

intellectual property.

(t) Consents and Permits. Except as set forth in the Registration Statement, the Time of Sale Prospectus and the Prospectus, the Company and each of its Subsidiaries have such permits, licenses, patents, franchises, certificates of need and other approvals consents and other authorizations (the “**Regulatory Permits**”) issued by the appropriate domestic or foreign regional, federal, state, or local regulatory agencies or bodies necessary to conduct the business of the Company, including, without limitation, any Investigational New Drug Application (an “**IND**”) and/or New Drug Application (an “**NDA**”), as required by the U.S. Food and Drug Administration (the “**FDA**”), any authorizations issued by the Drug Enforcement Administration (the “**DEA**”), or any other authorizations issued by domestic or foreign regional, federal, state, or local agencies or bodies engaged in the regulation of pharmaceuticals such as those being developed by the Company and its Subsidiaries, except for any of the foregoing that would not reasonably be expected to, individually or in the aggregate, have a Material Adverse Effect; the Company (i) is in compliance in all material respects with the requirements of the Regulatory Permits, and (ii) all of the Regulatory Permits are valid and in full force and effect, in each case, except for any of the foregoing that would not reasonably be expected to, individually or in the aggregate, have a Material Adverse Effect; the Company has not received any written notice of proceedings relating to the revocation, termination, modification or impairment of rights of any of the Regulatory Permits that, individually or in the aggregate, if the subject of an unfavorable decision, ruling or finding, would reasonably be expected to result in a Material Adverse Effect; the Company has not failed to submit to the FDA any IND or NDA necessary to conduct the business of the Company, any such filings that were required to be made were in material compliance with applicable laws when filed, and no material deficiencies have been asserted by the FDA with respect to any such filings or submissions that were made.

(u) Compliance with Applicable Laws and Regulations. Except as described in the Registration Statement, the Time of Sale Prospectus and the Prospectus, as applicable, the Company and its Subsidiaries (i) are and at all times have been in compliance with all statutes, rules and regulations applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, advertising, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product manufactured or distributed by the Issuer including, without limitation the Federal Food, Drug and Cosmetic Act (21 U.S.C. §301 et seq.), the federal Anti-Kickback Statute (42 U.S.C. §1320a-7b(b)), the Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Affordability Reconciliation Act of 2010, the regulations promulgated pursuant to such laws, and any successor government programs and comparable state laws, regulations relating to Good Clinical Practices and Good Laboratory Practices and all other local, state, federal, national, supranational and foreign laws, manual provisions, policies and administrative guidance relating to the regulation of the Company (collectively, the “**Applicable Laws**”); (ii) have not received any notice from any court or arbitrator or governmental or regulatory authority or third party alleging or asserting noncompliance with any Applicable Laws or any licenses, exemptions, certificates, approvals, clearances, authorizations, permits, registrations and supplements or amendments thereto required by any such Applicable Laws (“**Authorizations**”); (iii) possess all Authorizations and such Authorizations are valid and in full force and effect and are not in violation of any term of any such Authorizations; (iv) have not received written notice of any claim, action, suit, proceeding,

hearing, enforcement, investigation arbitration or other action from any court or arbitrator or governmental or regulatory authority or third party alleging that any product operation or activity is in violation of any Applicable Laws or Authorizations nor is any such claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action threatened; (v) have received any written notice that any court or arbitrator or governmental or regulatory authority has taken, is taking or intends to take, action to limit, suspend, materially modify or revoke any Authorizations nor is any such limitation, suspension, modification or revocation threatened; (vi) have filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and accurate on the date filed (or were corrected or supplemented by a subsequent submission); and (vii) are not a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement orders, or similar agreements with or imposed by any governmental or regulatory authority.

(v) Clinical Trials. The clinical and pre-clinical trials conducted by or on behalf of or sponsored by the Company, or in which the Company has participated, that are described in the Registration Statement, the Time of Sale Prospectus and the Prospectus or the results of which are referred to in the Registration Statement, the Time of Sale Prospectus and the Prospectus, as applicable, and are intended to be submitted to Regulatory Authorities as a basis for product approval, were and, if still pending, are being conducted in accordance with standard medical and scientific research procedures and all applicable statutes, rules and regulations of the FDA and comparable drug regulatory agencies outside of the United States to which it is subject (collectively, the “**Regulatory Authorities**”), including, without limitation, 21 C.F.R. Parts 50, 54, 56, 58, and 312, and current Good Clinical Practices and Good Laboratory Practices; the descriptions in the Registration Statement, the Time of Sale Prospectus or the Prospectus of the results of such studies and trials are accurate and complete and fairly present the data derived from such trials; the Company has no knowledge of any other trials the results of which are inconsistent with or otherwise call into question the results described or referred to in the Registration Statement, the Time of Sale Prospectus and the Prospectus; the Company and its Subsidiaries have each operated and are currently in compliance with all applicable statutes, rules and regulations of the Regulatory Authorities; neither the Company, nor any of its Subsidiaries, has not received any written notices, correspondence or other communication from the Regulatory Authorities or any governmental authority which could lead to the termination or suspension of any clinical or pre-clinical trials that are described in the Registration Statement, the Time of Sale Prospectus or the Prospectus or the results of which are referred to in the Registration Statement, the Time of Sale Prospectus or the Prospectus, and there are no reasonable grounds for same.

(w) Regulatory Filings. Except as disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, neither the Company nor any of its Subsidiaries has failed to file with the applicable regulatory authorities (including, without limitation, the FDA, or any foreign, federal, state, provincial or local governmental or regulatory authority performing functions similar to those performed by the FDA) any required filing, declaration, listing, registration, report or submission, except for such failures that, individually or in the aggregate, would not reasonably be expected to have a Material Adverse Effect; except as disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, all such filings, declarations, listings, registrations, reports or submissions were in compliance with applicable laws

when filed and no deficiencies have been asserted by any applicable regulatory authority with respect to any such filings, declarations, listings, registrations, reports or submissions, except for any deficiencies that, individually or in the aggregate, would not reasonably be expected to have a Material Adverse Effect. The Company has operated and currently is in compliance with the United States Federal Food, Drug, and Cosmetic Act, all applicable rules and regulations of the FDA and other federal, state, local and foreign governmental bodies exercising comparable authority, except where the failure to be so in compliance would not reasonably be expected to have a Material Adverse Effect. The Company has no knowledge of any studies, tests or trials not described in the Registration Statement, the Time of Sale Prospectus or the Prospectus the results of which reasonably call into question in any material respect the results of the studies, tests and trials described in the Registration Statement, the Time of Sale Prospectus or the Prospectus.

(x) Clinical Studies. The studies, tests and preclinical and clinical investigations conducted by or on behalf of the Company and its Subsidiaries were and, if still pending, are, in all material respects, being conducted in accordance with established protocols, procedures and controls pursuant to accepted professional scientific standards and all Applicable Laws and Authorizations, including, without limitation, the Federal Food, Drug, and Cosmetic Act and implementing regulations including good laboratory practice (“GLP”) regulations (21 C.F.R. Part 58) if any such studies, tests or preclinical and clinical investigations are being conducted pursuant to GLP, and good clinical practice and IND requirements (21 C.F.R. Parts 50, 54, 56, and 312) if any such studies, tests or preclinical and clinical investigations were or are subject to good clinical practice regulations or were or are being conducted under an IND; the descriptions of the results of such studies, tests and trials contained in the Registration Statement, the Time of Sale Prospectus and the Prospectus are accurate in all material respects and fairly present the data derived from such studies, tests and trials; except to the extent disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, the Company is not aware of any studies, tests or trials the results of which the Company believes reasonably call into question the study, test, or trial results described or referred to in the Registration Statement, the Time of Sale Prospectus and the Prospectus when viewed in the context in which such results are described and the clinical state of development; and neither the Company nor any of its Subsidiaries have received any notices or correspondence from any governmental authority requiring the termination, suspension or material modification of any studies, tests or preclinical or clinical investigations conducted by or on behalf of the Company or any of its Subsidiaries.

(y) Absence of Settlement Agreements or Undertakings. Except as disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, the Company is not a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement orders, or similar agreements with or imposed by any governmental authority.

(z) Absence of Legal or Governmental Proceedings. Except as disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, there are no legal or governmental proceedings pending to which the Company or any of its Subsidiaries is a party or of which any property or assets of the Company or any of its Subsidiaries is the subject that, if determined adversely to the Company, would, in the aggregate, reasonably be expected to have a Material Adverse Effect or would, in the aggregate, reasonably be expected to have a Material Adverse Effect on the performance of this Agreement or the consummation of the transactions contemplated hereby; and to the Company’s knowledge, no such proceedings are threatened or contemplated by governmental authorities or others.

(aa) Material Contracts. There are no contracts or other documents required to be described in the Registration Statement, the Time of Sale Prospectus and the Prospectus or filed as exhibits to the Registration Statement that are not described and filed as required. The statements made in the Registration Statement, the Time of Sale Prospectus and the Prospectus, insofar as they purport to constitute summaries of the terms of the contracts and other documents described and filed, constitute accurate summaries of the terms of such contracts and documents in all material respects. Except as disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, neither the Company nor any of its Subsidiaries has knowledge that any other party to any such contract or other document has any intention not to render full performance as contemplated by the terms thereof.

(bb) Insurance. The Company and each of its Subsidiaries maintain insurance from nationally recognized, in the applicable country, insurers in such amounts and covering such risks as is commercially reasonable in accordance with customary practices for companies engaged in similar businesses and similar industries for the conduct of their respective businesses and the value of their respective properties and as is customary for companies engaged in similar businesses in similar industries. All policies of insurance of the Company and its Subsidiaries are in full force and effect; the Company and each of its Subsidiaries are in compliance with the terms of such policies in all material respects; and neither the Company nor any of its Subsidiaries has received notice from any insurer or agent of such insurer that capital improvements or other expenditures are required or necessary to be made in order to continue such insurance; there are no material claims by the Company or any of its Subsidiaries under any such policy or instrument as to which any insurance company is denying liability or defending under a reservation of rights clause; and neither the Company nor any such Subsidiary has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not reasonably be expected to have a Material Adverse Effect.

(cc) Related Party Disclosure. No relationship, direct or indirect, exists between or among the Company, on the one hand, and the directors, officers, shareholders, customers or suppliers of the Company, on the other hand, that is required to be described in the Registration Statement, the Time of Sale Prospectus or the Prospectus which is not so described.

(dd) No Labor Dispute. No labor disturbance by or dispute with the employees of the Company or any of its Subsidiaries exists or, to the knowledge of the Company, is imminent that could reasonably be expected to have a Material Adverse Effect.

(ee) No Default. Except as disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, neither the Company nor any of its Subsidiaries (i) is in violation of its articles of association, charter or by-laws (or similar organizational documents), (ii) is in default, and no event has occurred that, with notice or lapse of time or both, would constitute such a default, in the due performance or observance of any term, covenant, condition or other obligation contained in any indenture, mortgage, deed of trust, loan agreement, license or other agreement or instrument to which it is a party or by which it is bound or to which any of its properties or assets is subject, or (iii) is in violation of any statute or any order, rule or regulation of any court or governmental agency or body having jurisdiction over it or its property or assets or has failed to obtain any license, permit, certificate, franchise or other governmental authorization

or permit necessary to the ownership of its property or to the conduct of its business, except in the case of clauses (ii) and (iii), to the extent any such conflict, breach, violation or default would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(ff) Environmental Laws. Except as set forth in the Registration Statement, the Time of Sale Prospectus or the Prospectus, the Company and its Subsidiaries (i) are in compliance with any and all applicable federal, state, local and foreign laws, rules, regulations, decisions and orders relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants (collectively, “**Environmental Laws**”); (ii) have received and are in compliance with all permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses as described in the Registration Statement, the Time of Sale Prospectus or the Prospectus; and (iii) have not received notice of any actual or potential liability for the investigation or remediation of any disposal or release of hazardous or toxic substances or wastes, pollutants or contaminants, except, in the case of any of clauses (i), (ii) or (iii) above, for any such failure to comply or failure to receive required permits, licenses, other approvals or liability as would not reasonably be expected to, individually or in the aggregate, have a Material Adverse Effect.

(gg) Taxes. The Company and each of its Subsidiaries have filed all federal, state, local and foreign tax returns required to be filed through the date hereof, subject to permitted extensions, and have paid all taxes due, and no tax deficiency has been determined adversely to the Company or any of its Subsidiaries, nor does the Company have any knowledge of any tax deficiencies that have been, or would reasonably be expected to be asserted against the Company, that would, in the aggregate, reasonably be expected to have a Material Adverse Effect.

(hh) ERISA Compliance. (i) Each “employee benefit plan” (within the meaning of Section 3(3) of the Employee Retirement Security Act of 1974, as amended (“**ERISA**”)) for which the Company or any member of its “Controlled Group” (defined as any organization which is a member of a controlled group of corporations within the meaning of Section 414 of the Internal Revenue Code of 1986, as amended (the “**Code**”)) would have any liability (each a “**Plan**”) has been maintained in compliance in all material respects with its terms and with the requirements of all applicable statutes, rules and regulations including ERISA and the Code; (ii) no prohibited transaction, within the meaning of Section 406 of ERISA or Section 4975 of the Code, has occurred with respect to any Plan excluding transactions effected pursuant to a statutory or administrative exemption; (iii) with respect to each Plan subject to Title IV of ERISA (A) no “reportable event” (within the meaning of Section 4043(c) of ERISA) has occurred or is reasonably expected to occur that would result in a material loss to the Company, (B) no “accumulated funding deficiency” (within the meaning of Section 302 of ERISA or Section 412 of the Code), whether or not waived, has occurred or is reasonably expected to occur, (C) the fair market value of the assets under each Plan that is required to be funded exceeds the present value of all benefits accrued under such Plan (determined based on those assumptions used to fund such Plan), and (D) neither the Company or any member of its Controlled Group has incurred, or reasonably expects to incur, any liability under Title IV of ERISA (other than contributions to the Plan or premiums to the Pension Benefit Guaranty Corporation in the ordinary course and without default) in respect of a Plan (including a “multiemployer plan”, within the meaning of Section 4001(c)(3) of ERISA); and (iv) each Plan that is intended to be qualified under Section 401(a) of the Code is so qualified and nothing has occurred, to the Company’s knowledge, whether by action or by failure to act, which would cause the loss of such qualification.

(ii) Accuracy of Statistical and Market Data. The statistical and market-related data included in the Registration Statement, the Time of Sale Prospectus and the Prospectus and the consolidated financial statements of the Company and its Subsidiaries included or incorporated by reference in the Registration Statement, the Time of Sale Prospectus and the Prospectus are based on or derived from sources that the Company believes to be reliable in all material respects.

(jj) Not an Investment Company. Neither the Company nor any of its Subsidiaries is, and as of the First Closing Date or Option Closing Date, as the case may be, and, after giving effect to the offer and sale of the Offered Shares and the application of the proceeds therefrom as described under “Use of Proceeds” in the Registration Statement, the Time of Sale Prospectus and the Prospectus, none of them will be, (i) an “investment company” or a company “controlled” by an “investment company” within the meaning of the Investment Company Act of 1940, as amended (the “**Investment Company Act**”), and the rules and regulations of the Commission thereunder, or (ii) a “business development company” (as defined in Section 2(a)(48) of the Investment Company Act).

(kk) Accuracy of Certain Summaries and Statements. The statements set forth or incorporated by reference, as applicable, in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus under the captions “Description of Common Shares, Warrant and Related Information,” and in the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 under the captions “Legal Proceedings” and “Certain Relationships and Related Transactions, and Director Independence”, insofar as they purport to summarize the provisions of the laws and documents referred to therein, are accurate summaries in all material respects.

(ll) Registration Rights. Except as disclosed in the Registration Statement, the Time of Sale Prospectus and the Prospectus, there are no contracts, agreements or understandings between the Company and any person granting such person the right to require the Company to file a registration statement under the Securities Act with respect to any securities of the Company owned or to be owned by such person. There are no contracts, agreements or understandings to require the Company to include any such securities in the securities proposed to be offered pursuant to this Agreement.

(mm) No Other Brokers. Neither the Company nor any of its Subsidiaries is a party to any contract, agreement or understanding with any person (other than this Agreement) that would give rise to a valid claim against any of them or the Underwriters for a brokerage commission, finder’s fee or like payment in connection with the offering and sale of the Offered Shares.

(oo) No Integration. The Company has not sold or issued any securities that would be integrated with the offering of the Shares contemplated by this Agreement pursuant to the Securities Act or the interpretations thereof by the Commission.

(pp) Absence of Stabilization or Manipulation. The Company and its affiliates have not taken, directly or indirectly, any action designed to or that has constituted or that could reasonably be expected to cause or result in the stabilization or manipulation of the price of any security of the Company in connection with the offering of the Offered Shares.

(qq) Exchange Act Registration and Listing of the Shares. The Shares are registered pursuant to Section 12(b) of the Exchange Act and listed on the Exchange; the Company has taken no action designed to, or reasonably likely to have the effect of, terminating the registration of the Shares under the Exchange Act or delisting the Shares from the Exchange, nor has the Company received any notification that the Commission or FINRA is contemplating terminating such registration or listing. The Shares are currently listed on (i) the Exchange under the trading symbol “APTO” and (ii) the TSX under the trading symbol “APS”. The Company has not, in the twelve (12) months preceding the date hereof, received any notice from any Person to the effect that the Company is not in compliance with the rules and regulations of the Exchange or the TSX. The Company is, and has no reason to believe that it will not in the foreseeable future continue to be, in material compliance with the rules and regulations of the Exchange and the TSX.

(rr) Offering Material. The Company has not distributed and prior to First Closing Date or Option Closing Date, as the case may be, will not distribute any offering material in connection with the offering of the Offered Shares, other than the Preliminary Prospectus, Time of Sale Prospectus and the Prospectus, and any free writing prospectus to which the Representative has consented.

(ss) Compliance with Labor Laws. Neither the Company nor any Subsidiary is in violation of or has received notice of any violation with respect to any federal or state law relating to discrimination in the hiring, promotion or pay of employees, nor any applicable federal or state wage and hour laws, nor any state law precluding the denial of credit due to the neighborhood in which a property is situated, the violation of any of which could reasonably be expected to have a Material Adverse Effect.

(tt) No Unlawful Payments. Neither the Company nor any of its Subsidiaries, nor, to the knowledge of the Company, any director, officer, agent, employee or other person associated with or acting on behalf of the Company or any of its Subsidiaries, has (i) used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity; (ii) made any direct or indirect unlawful payment to any foreign or domestic government official or employee from corporate funds; (iii) violated or is in violation of any provision of the U.S. Foreign Corrupt Practices Act of 1977, the Organization for Economic Co-operation and Development Convention on Bribery of Foreign Public Officials in International Business Transactions, and the rules and regulations thereunder and any other similar foreign or domestic law or regulation; or (iv) made any bribe, rebate, payoff, influence payment, kickback or other unlawful payment. The Company has instituted and maintains policies and procedures designed to ensure continued compliance with the laws and regulations referenced in clause (iii) of this paragraph.

(uu) Anti-Money Laundering Compliance. The operations of the Company and its Subsidiaries are and have been conducted at all times in compliance with applicable financial recordkeeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the money laundering statutes of all applicable jurisdictions, the rules and regulations thereunder and any applicable related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the “**Money Laundering Laws**”) and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its Subsidiaries with respect to the

Money Laundering Laws is pending or, to the knowledge of the Company, threatened.

(vv) OFAC Compliance. Neither the Company nor any of its Subsidiaries nor, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company or any of its Subsidiaries, is a person that is, or is 50% or more owned or otherwise controlled by a person that is: (i) is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department (“OFAC”) or (ii) located, organized or resident in a country or territory that is, or whose government is, the subject of sanctions that broadly prohibit dealings with that country or territory (currently, Cuba, Iran, North Korea, Sudan, and Syria); and the Company will not directly or indirectly use the proceeds of the offering, or lend, contribute or otherwise make available such proceeds to any Subsidiary, joint venture partner or other person or entity, for the purpose of financing the activities of any person currently subject to any U.S. sanctions administered by OFAC.

(ww) Not a Passive Foreign Investment Company. Subject to the qualifications and assumptions set forth in the Registration Statement, the Time of Sale Prospectus or the Prospectus, the Company believes that it is, and upon the sale of the Offered Shares contemplated by this Agreement expects to be, a “passive foreign investment company” (as defined in Section 1297 of the Code, and the regulations promulgated thereunder).

(xx) No Taxes or Fees Due Upon Issuance. No stamp, issue, registration, documentary, transfer or other similar taxes and duties, including interest and penalties, are payable on or in connection with the issuance and sale of the Offered Shares by the Company or the execution and delivery of this Agreement.

(yy) No Immunity. Neither the Company nor any Subsidiary, nor any of their respective properties or assets, has any immunity from the jurisdiction of any court or from any legal process (whether through service or notice, attachment to prior judgment, attachment in aid of execution or otherwise) under the laws of any jurisdiction in which it is organized, headquartered or doing business.

(zz) No Legal, Accounting or Tax Advice. The Company has not relied upon the Underwriters or legal counsel for the Underwriters for any legal, tax or accounting advice in connection with the offering and sale of the Offered Shares.

(aaa) Parties to Lock-Up Agreements. The Company has furnished to the Underwriters a letter agreement in the form attached hereto as Exhibit A (the “**Lock-up Agreement**”) from each of the persons listed on Exhibit B. Such Exhibit B lists under an appropriate caption the directors and executive officers and certain other shareholders of the Company. If any additional persons shall become directors or executive officers of the Company prior to the end of the Company Lock-up Period (as defined below), the Company shall cause each such person, prior to or contemporaneously with their appointment or election as a director or executive officer of the Company, to execute and deliver to the Representative a Lock-up Agreement.

Any certificate signed by any officer of the Company or any of its Subsidiaries and delivered to any Underwriter or to counsel for the Underwriters in connection with the offering, or

the purchase and sale, of the Offered Shares shall be deemed a representation and warranty by the Company to each Underwriter as to the matters covered thereby.

The Company has a reasonable basis for making each of the representations set forth in this Section 1. The Company acknowledges that the Underwriters and, for purposes of the opinions to be delivered pursuant to Section 6 hereof, counsel to the Company and counsel to the Underwriters, will rely upon the accuracy and truthfulness of the foregoing representations and hereby consents to such reliance.

2. Purchase, Sale and Delivery of the Offered Shares.

(a) The Firm Shares. Upon the terms herein set forth, the Company agrees to issue and sell to the several Underwriters an aggregate of 16,125,000 Firm Shares. On the basis of the representations, warranties and agreements herein contained, and upon the terms but subject to the conditions herein set forth, the Underwriters agree, severally and not jointly, to purchase from the Company the respective number of Firm Shares set forth opposite their names on Schedule A. The purchase price per Firm Share to be paid by the several Underwriters to the Company shall be \$3.72 per share.

(b) The First Closing Date. Delivery of book-entry entitlements for the Firm Shares to be purchased by the Underwriters and payment therefor shall be made at the offices of Goodwin Procter LLP, 620 Eighth Avenue, New York, NY 10018 (or such other place as may be agreed to by the Company and the Representative) at 10:00 a.m. Eastern time, on December 19, 2019, or such other time and date as the Representative shall designate by notice to the Company (the time and date of such closing are called the “**First Closing Date**”). The Company hereby acknowledges that circumstances under which the Representative may provide notice to postpone the First Closing Date as originally scheduled include, but are not limited to, any determination by the Company or the Representative to recirculate to the public copies of an amended or supplemented Prospectus or a delay as contemplated by the provisions of Section 11.

(c) The Optional Shares; Option Closing Date. In addition, on the basis of the representations, warranties and agreements herein contained, and upon the terms but subject to the conditions herein set forth, the Company hereby grants an option to the several Underwriters to purchase, severally and not jointly, up to an aggregate of 2,418,750 Optional Shares from the Company at the purchase price per share to be paid by the Underwriters for the Firm Shares. The option granted hereunder may be exercised at any time and from time to time in whole or in part upon notice by the Representative to the Company, which notice may be given at any time within 30 days from the date of this Agreement. Such notice shall set forth (i) the aggregate number of Optional Shares as to which the Underwriters are exercising the option and (ii) the time, date and place at which book-entry entitlements for the Optional Shares will be delivered (which time and date may be simultaneous with, but not earlier than, the First Closing Date; and in the event that such time and date are simultaneous with the First Closing Date, the term “**First Closing Date**” shall refer to the time and date of delivery of book-entry entitlements for the Firm Shares and such Optional Shares). Any such time and date of delivery, if subsequent to the First Closing Date, is called an “**Option Closing Date,**” shall be determined by the Representative and shall not be earlier than two or later than five full business days after delivery of such notice of exercise. If any Optional Shares are to be purchased, (a) each Underwriter agrees, severally and not jointly, to purchase the number of Optional Shares (subject to such adjustments to eliminate fractional shares

as the Representative may determine) that bears the same proportion to the total number of Optional Shares to be purchased as the number of Firm Shares set forth on Schedule A opposite the name of such Underwriter bears to the total number of Firm Shares and (b) the Company agrees to sell the number of Optional Shares set forth in the paragraph “Introductory” of this Agreement (subject to such adjustments to eliminate fractional shares as the Representative may determine). The Representative may cancel the option at any time prior to its expiration by giving written notice of such cancellation to the Company.

(d) Public Offering of the Offered Shares. The Representative hereby advises the Company that the Underwriters intend to offer for sale to the public, initially on the terms set forth in the Registration Statement, the Time of Sale Prospectus and the Prospectus, their respective portions of the Offered Shares as soon after this Agreement has been executed as the Representative, in its sole judgment, has determined is advisable and practicable.

(e) Payment for the Offered Shares. Payment for the Offered Shares shall be made at the First Closing Date (and, if applicable, at each Option Closing Date) by wire transfer of immediately available funds to the order of the Company. It is understood that the Representative has been authorized, for its own account and the accounts of the several Underwriters, to accept delivery of and receipt for, and make payment of the purchase price for, the Firm Shares and any Optional Shares the Underwriters have agreed to purchase. Piper Jaffray, individually and not as the Representative of the Underwriters, may (but shall not be obligated to) make payment for any Offered Shares to be purchased by any Underwriter whose funds shall not have been received by the Representative by the First Closing Date or the applicable Option Closing Date, as the case may be, for the account of such Underwriter, but any such payment shall not relieve such Underwriter from any of its obligations under this Agreement. In the event that the Firm Shares (and Optional Shares, if elected by the Representative) are not delivered to the Representative by 2:30 p.m., New York City time, on the First Closing Date (and the Second Closing Date, if elected by the Representative), the Company will return payment of the full purchase price to the Representative’s agent, Pershing LLC, via same day funds by 4:30 p.m., New York City time. The Company shall remain liable to Pershing LLC for the full amount of the purchase price and any costs associated with recovering the purchase price until the full amount has been received by Pershing LLC.

(f) Delivery of the Offered Shares. The Company shall deliver, or cause to be delivered to the Representative for the accounts of the several Underwriters book-entry entitlements for the Firm Shares at the First Closing Date, against the irrevocable release of a wire transfer of immediately available funds for the amount of the purchase price therefor. The Company shall also deliver, or cause to be delivered through the facilities of DTC unless the Representative shall otherwise instruct, to the Representative for the accounts of the several Underwriters, book-entry entitlements for the Optional Shares the Underwriters have agreed to purchase at the First Closing Date or the applicable Option Closing Date, as the case may be, against the release of a wire transfer of immediately available funds for the amount of the purchase price therefor. If the Representative so elects, delivery of the Offered Shares will be made by credit to the accounts designated by the Representative through The Depository Trust Company’s full fast transfer or DWAC programs. Time shall be of the essence, and delivery at the time and place specified in this Agreement is a further condition to the obligations of the Underwriters.

3. Additional Covenants of the Company.

The Company further covenants and agrees with each Underwriter as follows:

(a) Delivery of Registration Statement, Time of Sale Prospectus and Prospectus.

The Company shall furnish to you in New York City, without charge, prior to 4:00 p.m. New York City time on the business day next succeeding the date of this Agreement and during the period when a prospectus relating to the Offered Shares is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule) in connection with sales of the Offered Shares, as many copies of the Time of Sale Prospectus, the Prospectus and any supplements and amendments thereto or to the Registration Statement as you may reasonably request.

(b) Representative's Review of Proposed Amendments and Supplements.

During the period when a prospectus relating to the Offered Shares is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule), the Company (i) will furnish to the Representative for review, a reasonable period of time prior to the proposed time of filing of any proposed amendment or supplement to the Registration Statement, a copy of each such amendment or supplement and (ii) will not amend or supplement the Registration Statement (including any amendment or supplement through incorporation of any report filed under the Exchange Act) without the Representative's prior written consent, not to be unreasonably withheld, conditioned or delayed. Prior to amending or supplementing any preliminary prospectus, the Time of Sale Prospectus or the Prospectus (including any amendment or supplement through incorporation of any report filed under the Exchange Act), the Company shall furnish to the Representative for review, a reasonable amount of time prior to the time of filing or use of the proposed amendment or supplement, a copy of each such proposed amendment or supplement. The Company shall not file or use any such proposed amendment or supplement without the Representative's prior written consent, not to be unreasonably withheld, conditioned or delayed. The Company shall file with the Commission within the applicable period specified in Rule 424(b) under the Securities Act any prospectus required to be filed pursuant to such Rule.

(c) Free Writing Prospectuses. The Company shall furnish to the

Representative for review, a reasonable amount of time prior to the proposed time of filing or use thereof, a copy of each proposed free writing prospectus or any amendment or supplement thereto prepared by or on behalf of, used by, or referred to by the Company, and the Company shall not file, use or refer to any proposed free writing prospectus or any amendment or supplement thereto without the Representative's prior written consent, not to be unreasonably withheld, conditioned or delayed. The Company shall furnish to each Underwriter, without charge, as many copies of any free writing prospectus prepared by or on behalf of, used by or referred to by the Company as such Underwriter may reasonably request. If at any time when a prospectus is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule) in connection with sales of the Offered Shares (but in any event if at any time through and including the First Closing Date) there occurred or occurs an event or development as a result of which any free writing prospectus prepared by or on behalf of, used by, or referred to by the Company conflicted or would conflict with the information contained in the Registration Statement or included or would include an untrue statement of a material fact or omitted or would omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances prevailing at such time, not misleading, the Company shall

promptly amend or supplement such free writing prospectus to eliminate or correct such conflict so that the statements in such free writing prospectus as so amended or supplemented will not include an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances prevailing at such time, not misleading, as the case may be; *provided, however*, that prior to amending or supplementing any such free writing prospectus, the Company shall furnish to the Representative for review, a reasonable amount of time prior to the proposed time of filing or use thereof, a copy of such proposed amended or supplemented free writing prospectus, and the Company shall not file, use or refer to any such amended or supplemented free writing prospectus without the Representative's prior written consent, not to be unreasonably withheld, conditioned or delayed.

(d) Filing of Underwriter Free Writing Prospectuses. The Company shall not take any action that would result in an Underwriter or the Company being required to file with the Commission pursuant to Rule 433(d) under the Securities Act a free writing prospectus prepared by or on behalf of such Underwriter that such Underwriter otherwise would not have been required to file thereunder.

(e) Amendments and Supplements to Time of Sale Prospectus. If the Time of Sale Prospectus is being used to solicit offers to buy the Offered Shares at a time when the Prospectus is not yet available to prospective purchasers, and any event shall occur or condition exist as a result of which it is necessary to amend or supplement the Time of Sale Prospectus so that the Time of Sale Prospectus does not include an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances when delivered to a prospective purchaser, not misleading, or if any event shall occur or condition exist as a result of which the Time of Sale Prospectus conflicts with the information contained in the Registration Statement, or if, in the opinion of counsel for the Underwriters, it is necessary to amend or supplement the Time of Sale Prospectus to comply with applicable law, the Company shall (subject to Section 3(b) and Section 3(c) hereof) promptly prepare, file with the Commission and furnish, at its own expense, to the Underwriters and to any dealer upon request, either amendments or supplements to the Time of Sale Prospectus so that the statements in the Time of Sale Prospectus as so amended or supplemented will not include an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances when delivered to a prospective purchaser, not misleading or so that the Time of Sale Prospectus, as amended or supplemented, will no longer conflict with the information contained in the Registration Statement, or so that the Time of Sale Prospectus, as amended or supplemented, will comply with applicable law.

(f) Certain Notifications and Required Actions. During the period when a prospectus relating to the Offered Shares is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule), the Company shall promptly advise the Representative in writing of: (i) the receipt of any comments of, or requests for additional or supplemental information from, the Commission; (ii) the time and date of any filing of any post-effective amendment to the Registration Statement or any amendment or supplement to any preliminary prospectus, the Time of Sale Prospectus, any free writing prospectus or the Prospectus; (iii) the time and date that any post-effective amendment to the Registration Statement becomes effective; and (iv) the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or any post-effective amendment thereto or any amendment or supplement to any preliminary prospectus, the Time of Sale

Prospectus or the Prospectus or of any order preventing or suspending the use of any preliminary prospectus, the Time of Sale Prospectus, any free writing prospectus or the Prospectus, or of any proceedings to remove, suspend or terminate from listing or quotation the Shares from any securities exchange upon which they are listed for trading or included or designated for quotation, or of the threatening or initiation of any proceedings for any of such purposes. If the Commission shall enter any such stop order at any time, the Company will use its best efforts to obtain the lifting of such order as soon as practicable. Additionally, the Company agrees that it shall comply with all applicable provisions of Rule 424(b), Rule 433 and Rule 430B under the Securities Act and will use its reasonable efforts to confirm that any filings made by the Company under Rule 424(b) or Rule 433 were received in a timely manner by the Commission.

(g) Amendments and Supplements to the Prospectus and Other Securities Act Matters. If any event shall occur or condition exist as a result of which it is necessary to amend or supplement the Prospectus so that the Prospectus does not include an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances when the Prospectus is delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule) to a purchaser, not misleading, or if in the opinion of the Representative or counsel for the Underwriters it is otherwise necessary to amend or supplement the Prospectus to comply with applicable law, the Company agrees (subject to Section 3(b) and Section 3(c) hereof) to promptly prepare, file with the Commission and furnish, at its own expense, to the Underwriters and to any dealer upon request, amendments or supplements to the Prospectus so that the statements in the Prospectus as so amended or supplemented will not include an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances when the Prospectus is delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule) to a purchaser, not misleading or so that the Prospectus, as amended or supplemented, will comply with applicable law. Neither the Representative's consent to, nor delivery of, any such amendment or supplement shall constitute a waiver of any of the Company's obligations under Section 3(b) or Section 3(c).

(h) Blue Sky Compliance. The Company shall cooperate with the Representative and counsel for the Underwriters to qualify or register the Offered Shares for sale under (or obtain exemptions from the application of) the state securities or blue sky laws (or other foreign laws as reasonably requested by the Underwriters and agreed to by the Company) of those jurisdictions designated by the Representative, shall comply in all material respects with such laws and shall continue such qualifications, registrations and exemptions in effect so long as required for the distribution of the Offered Shares. The Company shall not be required to qualify as a foreign corporation or other entity or to take any action that would subject it to general service of process in any such jurisdiction where it is not presently qualified or where it would be subject to taxation as a foreign corporation or other entity. The Company will advise the Representative promptly of the suspension of the qualification or registration of (or any such exemption relating to) the Offered Shares for offering, sale or trading in any jurisdiction or any initiation or threat of any proceeding for any such purpose, and in the event of the issuance of any order suspending such qualification, registration or exemption, the Company shall use its reasonable best efforts to obtain the withdrawal thereof as soon as practicable.

(i) Use of Proceeds. The Company shall apply the net proceeds from the sale of the Offered Shares sold by it in the manner described under the caption "Use of Proceeds" in the

Registration Statement, the Time of Sale Prospectus and the Prospectus.

(j) Transfer Agent. The Company shall engage and maintain, at its expense, a registrar and transfer agent for the Shares.

(k) Earnings Statement. The Company will make generally available (which may be satisfied by filing with EDGAR) to its security holders and to the Representative as soon as practicable an earnings statement (which need not be audited) covering a period of at least twelve months beginning with the first fiscal quarter of the Company commencing after the date of this Agreement that will satisfy the provisions of Section 11(a) of the Securities Act and the rules and regulations of the Commission thereunder.

(l) Continued Compliance with Securities Laws. The Company will comply with the Securities Act, the Exchange Act and all applicable Canadian securities laws so as to permit the completion of the distribution of the Offered Shares as contemplated by this Agreement, the Registration Statement, the Time of Sale Prospectus and the Prospectus. Without limiting the generality of the foregoing, the Company will, during the period when a prospectus relating to the Offered Shares is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule), file on a timely basis with the Commission and the Exchange all reports and documents required to be filed under the Exchange Act.

(m) Listing. The Company will use its best efforts to list, subject to notice of issuance, the Offered Shares on the Exchange and on the TSX.

(n) Company to Provide Copy of the Prospectus in Form That May be Downloaded from the Internet. If requested by the Representative, the Company shall cause to be prepared and delivered, at its expense, within one business day from the effective date of this Agreement, to the Representative, an “**electronic Prospectus**” to be used by the Underwriters in connection with the offering and sale of the Offered Shares. As used herein, the term “**electronic Prospectus**” means a form of Time of Sale Prospectus, and any amendment or supplement thereto, that meets each of the following conditions: (i) it shall be encoded in an electronic format, satisfactory to the Representative, that may be transmitted electronically by the Representative and the other Underwriters to offerees and purchasers of the Offered Shares; (ii) it shall disclose the same information as the paper Time of Sale Prospectus, except to the extent that graphic and image material cannot be disseminated electronically, in which case such graphic and image material shall be replaced in the electronic Prospectus with a fair and accurate narrative description or tabular representation of such material, as appropriate; and (iii) it shall be in or convertible into a paper format or an electronic format, satisfactory to the Representative, that will allow investors to store and have continuously ready access to the Time of Sale Prospectus at any future time, without charge to investors (other than any fee charged for subscription to the Internet as a whole and for on-line time). The Company hereby confirms that it has included or will include in the Prospectus filed pursuant to EDGAR or otherwise with the Commission and in the Registration Statement at the time it was declared effective an undertaking that, upon receipt of a request by an investor or his or her representative, the Company shall transmit or cause to be transmitted promptly, without charge, a paper copy of the Time of Sale Prospectus.

(o) Agreement Not to Offer or Sell Additional Shares. During the period

commencing on and including the date hereof and continuing through and including the 90th day following the date of the Prospectus (such period, as extended as described below, being referred to herein as the “**Lock-up Period**”), the Company will not, without the prior written consent of the Representative (which consent may be withheld in their sole discretion), directly or indirectly: (i) sell, offer to sell, contract to sell or lend any Shares or Related Securities (as defined below); (ii) effect any short sale, or establish or increase any “put equivalent position” (as defined in Rule 16a-1(h) under the Exchange Act) or liquidate or decrease any “call equivalent position” (as defined in Rule 16a-1(b) under the Exchange Act) of any Shares or Related Securities; (iii) pledge, hypothecate or grant any security interest in any Shares or Related Securities; (iv) in any other way transfer or dispose of any Shares or Related Securities; (v) enter into any swap, hedge or similar arrangement or agreement that transfers, in whole or in part, the economic risk of ownership of any Shares or Related Securities, regardless of whether any such transaction is to be settled in securities, in cash or otherwise; (vi) announce the offering of any Shares or Related Securities; (vii) file any registration statement under the Securities Act or prospectus in Canada under applicable securities laws in respect of any Shares or Related Securities (other than as contemplated by this Agreement with respect to the Offered Shares); or (viii) publicly announce the intention to do any of the foregoing; *provided, however*, that the Company may (A) effect the transactions contemplated hereby; (B) issue Shares or options to purchase Shares or restricted stock units or similar equity securities, or issue Shares upon exercise of options, restricted stock units or similar equity securities, pursuant to any options, share bonus or other share plan or arrangement described in the Registration Statement, the Time of Sale Prospectus and the Prospectus; (C) file a registration statement on Form S-8; and (D) issue or sell Shares or Related Securities to a third party as part of a transaction that also involves a bona fide commercial relationship, including, without limitation, a joint venture, a marketing or distribution arrangement, a collaboration agreement or license of intellectual property, or the acquisition or license by the Company of securities, businesses, property or other assets of another person or entity; *provided, however*, that in the case of clause (D), such Shares shall not in the aggregate exceed 10% of the Company’s outstanding Shares after giving effect to the sale of the Offered Shares contemplated by this Agreement. For purposes of the foregoing, “**Related Securities**” shall mean any options or warrants or other rights to acquire Shares or any securities exchangeable or exercisable for or convertible into Shares, or to acquire other securities or rights ultimately exchangeable or exercisable for, or convertible into, Shares.

(p) Future Reports to the Representative. During the period of five years hereafter, the Company will furnish to the Representative: (i) as soon as practicable after the end of each fiscal year, copies of the Annual Report of the Company containing the balance sheet of the Company as of the close of such fiscal year and statements of income, shareholders’ equity and cash flows for the year then ended and the opinion thereon of the Company’s independent public or certified public accountants; (ii) as soon as practicable after the filing thereof, copies of each proxy statement, Annual Report on Form 10-K, Quarterly Report on Form 10-Q, Current Report on Form 8-K or other report filed by the Company with the Commission, FINRA or any securities exchange; and (iii) as soon as available, copies of any report or communication of the Company furnished or made available generally to holders of its capital stock; *provided, however*, that the requirements of this Section 3(p) shall be satisfied to the extent that such reports, statement, communications, financial statements or other documents are available on EDGAR.

(q) Investment Limitation. The Company shall not invest or otherwise use the proceeds received by the Company from its sale of the Offered Shares in such a manner as would

require the Company or any of its Subsidiaries to register as an investment company under the Investment Company Act.

(f) No Stabilization or Manipulation and Compliance with Regulation M. The Company will not take, and will use its reasonable best efforts to ensure that no affiliate of the Company will take, directly or indirectly, without giving effect to activities by the Underwriters, any action designed to or that might cause or result in stabilization or manipulation of the price of the Shares or any reference security with respect to the Shares, whether to facilitate the sale or resale of the Offered Shares or otherwise, and the Company will, and shall use its reasonable best efforts to cause each of its affiliates to, comply with all applicable provisions of Regulation M.

(g) Enforce Lock-Up Agreements. During the Lock-up Period, the Company will enforce all agreements between the Company and any of its security holders that restrict or prohibit, expressly or in operation, the offer, sale or transfer of Shares or Related Securities or any of the other actions restricted or prohibited under the terms of the form of Lock-up Agreement.

(h) Company to Provide Interim Financial Statements. Prior to the First Closing Date and each applicable Option Closing Date, the Company will furnish the Underwriters, as soon as they have been prepared by or are available to the Company, a copy of any unaudited interim financial statements of the Company for any period subsequent to the period covered by the most recent financial statements appearing in the Registration Statement and the Prospectus.

The Representative, on behalf of the several Underwriters, may, in its sole discretion, waive in writing the performance by the Company of any one or more of the foregoing covenants or extend the time for its performance.

4. Payment of Expenses. The Company agrees to pay all costs, fees and expenses incurred in connection with the performance of its obligations hereunder and in connection with the transactions contemplated hereby, including without limitation (i) all expenses incident to the issuance and delivery of the Offered Shares (including all printing and engraving costs), (ii) all fees and expenses of the registrar and transfer agent of the Shares, (iii) all necessary issue, transfer and other stamp taxes in connection with the issuance and sale of the Offered Shares to the Underwriters, (iv) all fees and expenses of the Company's counsel, independent public or certified public accountants and other advisors, (v) all costs and expenses incurred in connection with the preparation, printing, filing, shipping and distribution of the Registration Statement (including financial statements, exhibits, schedules, consents and certificates of experts), the Time of Sale Prospectus, the Prospectus, each free writing prospectus prepared by or on behalf of, used by, or referred to by the Company, and each preliminary prospectus, and all amendments and supplements thereto, and this Agreement, (vi) all filing fees, attorneys' fees and expenses incurred by the Company or the Underwriters in connection with qualifying or registering (or obtaining exemptions from the qualification or registration of) all or any part of the Offered Shares for offer and sale under the state securities or blue sky laws, and, if requested by the Representative, preparing and printing a "Blue Sky Survey" or memorandum, and any supplements thereto, advising the Underwriters of such qualifications, registrations and exemptions, (vii) the reasonable, actual and documented out-of-pocket costs, fees and expenses incurred by the Underwriters in connection with determining their compliance with the rules and regulations of FINRA related to the Underwriters' participation in the offering and distribution of the Offered Shares, including any related filings fees and the legal fees of, and disbursements by, counsel to the Underwriters,

(viii) the costs and expenses of the Company relating to investor presentations on any “road show”, including, without limitation, expenses associated with the preparation or dissemination of any electronic road show, expenses associated with the production of road show slides and graphics, fees and expenses of any consultants engaged in connection with the road show presentations with the prior approval of the Company, reasonable travel and lodging expenses of the Representative, employees and officers of the Company and any such consultants, and 50% of the cost of any aircraft chartered in connection with the road show, the remaining 50% of the cost of such aircraft to be paid by the Underwriters (provided that no aircraft may be chartered without the Company’s prior written consent), (xi) the fees and expenses associated with listing the Offered Shares on the Exchange and the TSX, (x) all other fees, costs and expenses of the nature referred to in Item 14 of Part II of the Registration Statement and (xi) all other “out of pocket” costs of the Underwriters and all fees and disbursements of the Underwriters’ legal counsel; provided that the amount payable pursuant to foregoing clauses (vi), (vii) and (xi) in the aggregate shall not exceed \$100,000. Any such amount payable to the Underwriters may be deducted from the purchase price for the Offered Shares to the extent invoiced prior to closing. Except as provided in this Section 4 or in Section 7, Section 9 or Section 10 hereof, the Underwriters shall pay their own expenses, including the fees and disbursements of their counsel.

5. Covenant of the Underwriters. Each Underwriter severally and not jointly covenants with the Company not to take any action that would result in the Company being required to file with the Commission pursuant to Rule 433(d) under the Securities Act a free writing prospectus prepared by or on behalf of such Underwriter that otherwise would not, but for such actions, be required to be filed by the Company under Rule 433(d). Each Underwriter, severally and not jointly, covenants with the Company not to knowingly confirm any sale of Shares to any person resident in Canada.

6. Conditions of the Obligations of the Underwriters. The respective obligations of the several Underwriters hereunder to purchase and pay for the Offered Shares as provided herein on the First Closing Date and, with respect to the Optional Shares, each Option Closing Date, shall be subject to the accuracy of the representations and warranties on the part of the Company set forth in Section 1 hereof as of the date hereof and as of the First Closing Date as though then made and, with respect to the Optional Shares, as of each Option Closing Date as though then made, to the timely performance by the Company of its covenants and other obligations hereunder, and to each of the following additional conditions:

(a) Comfort Letter. On the date hereof, the Representative shall have received from KPMG LLP, independent registered public accountants for the Company, a letter dated the date hereof addressed to the Representative, in form and substance satisfactory to the Representative, confirming that they are independent public accountants within the meaning of the Securities Act and are in compliance with the applicable requirements relating to the qualifications of accountants under Rule 2-01 of Regulation S-X of the Commission, and stating the conclusions and findings of said firm with respect to the financial information and other matters covered by its letter.

(b) Compliance with Registration Requirements; No Stop Order; No Objection from FINRA. For a period from and after the date of this Agreement and through and including the First Closing Date and, with respect to any Optional Shares purchased after the First Closing Date, each Option Closing Date:

(i) The Company shall have filed the Prospectus with the Commission (including the information required by Rule 430A or Rule 430B under the Securities Act) in the manner and within the time period required by Rule 424(b) under the Securities Act; or the Company shall have filed a post-effective amendment to the Registration Statement containing the information required by such Rule 430A or Rule 430B, and such post-effective amendment shall have become effective.

(ii) No stop order suspending the effectiveness of the Registration Statement or any post-effective amendment to the Registration Statement shall be in effect, and no proceedings for such purpose shall have been instituted or threatened by the Commission.

(iii) FINRA shall have raised no objection to the fairness and reasonableness of the underwriting terms and arrangements.

(iv) No securities regulatory authority in any province or territory of Canada shall have issued a cease trade order or an equivalent order.

(c) No Material Adverse Effect. For the period from and after the date of this Agreement and through and including the First Closing Date and, with respect to any Optional Shares purchased after the First Closing Date, each Option Closing Date, in the judgment of the Representative there shall not have occurred any material adverse change in the authorized capital stock of the Company or any Material Adverse Effect or any development that would cause a Material Adverse Effect.

(d) Opinion of U.S. Counsel for the Company. On each of the First Closing Date and each Option Closing Date the Representative shall have received the opinion and negative assurance letter of Dorsey and Whitney, U.S. counsel for the Company, dated as of such date and addressed to the Underwriters, in form and substance reasonably satisfactory to the Representative.

(e) Opinion of Canadian Counsel for the Company. On each of the First Closing Date and each Option Closing Date the Representative shall have received the opinion of McCarthy Tétrault LLP, Canadian counsel for the Company, dated as of such date and addressed to the Underwriters, in form and substance reasonably satisfactory to the Representative.

(f) Opinion of Intellectual Property Counsel. On each of the First Closing Date and each Option Closing Date the Representative shall have received the opinion of Cooley LLP, intellectual property and patent counsel for the Company, dated as of such date and addressed to the Underwriters, in form and substance reasonably satisfactory to the Representative.

(g) Opinion of U.S. Counsel for the Underwriters. On each of the First Closing Date and each Option Closing Date the Representative shall have received the opinion of Goodwin Procter LLP, U.S. counsel for the Underwriters in connection with the offer and sale of the Offered Shares, in form and substance satisfactory to the Representative, dated as of such date.

(h) Officers' Certificate. On each of the First Closing Date and each Option Closing Date, the Representative shall have received a certificate executed by the Chief Executive Officer or President of the Company and the Chief Financial Officer of the Company, dated as of

such date, to the effect set forth in Section 6(b)(ii) and further to the effect that:

(i) for the period from and including the date of this Agreement through and including such date, there has not occurred any Material Adverse Effect;

(ii) the representations, warranties and covenants of the Company set forth in Section 1 of this Agreement are true and correct with the same force and effect as though expressly made on and as of such date; and

(iii) the Company has complied with all the agreements hereunder and satisfied all the conditions on its part to be performed or satisfied hereunder at or prior to such date.

(i) Chief Financial Officer's Certificate. On each of the date hereof, the First Closing Date and each Option Closing Date, the Representative shall have received a certificate executed by the Chief Financial Officer of the Company, dated as of such date.

(j) Bring-down Comfort Letter. On each of the First Closing Date and each Option Closing Date the Representative shall have received from KPMG LLP, independent registered public accountants for the Company, a letter dated such date, in form and substance satisfactory to the Representative, which letter shall: (a) reaffirm the statements made in the letter furnished by them pursuant to Section 6(a), except that the specified date referred to therein for the carrying out of procedures shall be no more than three business days prior to the First Closing Date or the applicable Option Closing Date, as the case may be.

(k) Lock-Up Agreements. On or prior to the date hereof, the Company shall have furnished to the Representative an agreement in the form of Exhibit A hereto from each of the directors and officers (as defined in Rule 16a-1(f) under the Exchange Act) and shareholders listed on Exhibit B hereto, and each such agreement shall be in full force and effect on each of the First Closing Date and each Option Closing Date.

(l) Rule 462(b) Registration Statement. In the event that a Rule 462(b) Registration Statement is filed in connection with the offering contemplated by this Agreement, such Rule 462(b) Registration Statement shall have been filed with the Commission on the date of this Agreement and shall have become effective automatically upon such filing.

(m) Exchange and TSX Listing. The Company shall have submitted a listing of additional shares notification form to the Exchange with respect to the Offered Shares and shall have received no objection thereto from the Exchange and shall have received a conditional listing approval from the TSX with respect to the listing of the Offered Shares that is subject only to customary listing conditions.

(n) Additional Documents. On or before each of the First Closing Date and each Option Closing Date, the Representative and counsel for the Underwriters shall have received such information, documents and opinions as they may reasonably request for the purposes of enabling them to pass upon the issuance and sale of the Offered Shares as contemplated herein, or in order to evidence the accuracy of any of the representations and warranties, or the satisfaction of any of the conditions or agreements, herein contained; and all proceedings taken by the Company in

connection with the issuance and sale of the Offered Shares as contemplated herein and in connection with the other transactions contemplated by this Agreement shall be satisfactory in form and substance to the Representative and counsel for the Underwriters.

If any condition specified in this Section 6 is not satisfied when and as required to be satisfied, this Agreement may be terminated by the Representative by notice from the Representative to the Company at any time on or prior to the First Closing Date and, with respect to the Optional Shares, at any time on or prior to the applicable Option Closing Date, which termination shall be without liability on the part of any party to any other party, except that Section 4, Section 7, Section 9 and Section 10 shall at all times be effective and shall survive such termination.

7. Reimbursement of Underwriters' Expenses. If this Agreement is terminated by the Representative pursuant to Section 6, Section 11 or Section 12, or if the sale to the Underwriters of the Offered Shares on the First Closing Date is not consummated because of any refusal, inability or failure on the part of the Company to perform any agreement herein or to comply with any provision hereof, the Company agrees to reimburse the Representative and the other Underwriters (or such Underwriters as have terminated this Agreement with respect to themselves), severally, upon demand for all out-of-pocket expenses that shall have been reasonably incurred by the Representative and the Underwriters in connection with the proposed purchase and the offering and sale of the Offered Shares, including, but not limited to, fees and disbursements of counsel, printing expenses, travel expenses, postage, facsimile and telephone charges.

8. Effectiveness of this Agreement. This Agreement shall become effective upon the execution and delivery hereof by the parties hereto.

9. Indemnification.

(a) Indemnification of the Underwriters. The Company shall indemnify and hold harmless each Underwriter, its affiliates, the directors, officers, employees, counsel and agents of each Underwriter and each person, if any, who controls each Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act from and against any and all losses, claims, liabilities, expenses and damages (including any and all investigative, legal and other expenses reasonably incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding between any of the indemnified parties and any indemnifying parties or between any indemnified party and any third party, or otherwise, or any claim asserted), to which they, or any of them, may become subject under the Securities Act, the Exchange Act or other Federal or state statutory law or regulation, at common law or otherwise, insofar as such losses, claims, liabilities, expenses or damages arise out of or are based on (i) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement (or any amendment thereto), including any information deemed to be a part thereof pursuant to Rules 430A, 430B or 430C, as applicable or the omission or alleged omission therefrom of a material fact required to be stated therein or necessary to make the statements therein not misleading, (ii) any untrue statement or alleged untrue statement of a material fact contained in any preliminary prospectus, any preliminary prospectus supplement, any Issuer Free Writing Prospectus, the Time of Sale Prospectus or the Prospectus (or any amendment or supplement to any of the foregoing) or the omission or alleged omission therefrom of a material fact necessary in order to make the statements therein, in the light of the circumstances under

which they were made, not misleading, (iii) any untrue statement or alleged untrue statement of a material fact contained in any materials or information provided to investors by, or with the approval of, the Company in connection with the marketing of the offering of the Offered Shares, including any roadshow or investor presentations made to investors by the Company (whether in person or electronically) or the omission or alleged omission therefrom of a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading or (iv) any investigation or proceeding by any governmental authority, commenced or threatened (whether or not the Underwriters are a target of or party to such investigation or proceeding); *provided, however*, that the Company shall not be liable to the extent that such loss, claim, liability, expense or damage arises from the sale of the Offered Shares in the public offering to any person by an Underwriter and is based on an untrue statement or omission or alleged untrue statement or omission made in reliance on and in conformity with Underwriter Information. This indemnity agreement will be in addition to any liability that the Company might otherwise have.

(b) Indemnification of the Company, its Directors and Officers. Each Underwriter shall indemnify and hold harmless the Company, its agents, each person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, each director of the Company and each officer of the Company who signs the Registration Statement to the same extent as the foregoing indemnity from the Company to each Underwriter, but only insofar as losses, claims, liabilities, expenses or damages arise out of or are based on any untrue statement or omission or alleged untrue statement or omission made in reliance on and in conformity with Underwriter Information. This indemnity will be in addition to any liability that each Underwriter might otherwise have. The Company hereby acknowledges that the only information that the Underwriters have furnished to the Company expressly for use in the Registration Statement, any preliminary prospectus, any preliminary prospectus supplement, any Issuer Free Writing Prospectus, the Time of Sale Prospectus or the Prospectus (or any amendment or supplement to any of the foregoing) are the statements set forth in the third and tenth through twelfth paragraphs under the caption “Underwriting” in the Preliminary Prospectus and Prospectus (the “**Underwriter Information**”).

(c) Notifications and Other Indemnification Procedures. Any party that proposes to assert the right to be indemnified under this Section 9 shall, promptly after receipt of notice of commencement of any action against such party in respect of which a claim is to be made against an indemnifying party or parties under this Section 9, notify each such indemnifying party of the commencement of such action, enclosing a copy of all papers served, but the omission so to notify such indemnifying party shall not relieve the indemnifying party from any liability that it may have to any indemnified party under the foregoing provisions of this Section 9 unless, and only to the extent that, such omission results in the forfeiture of substantive rights or defenses by the indemnifying party. If any such action is brought against any indemnified party and it notifies the indemnifying party of its commencement, the indemnifying party will be entitled to participate in and, to the extent that it elects by delivering written notice to the indemnified party promptly after receiving notice of the commencement of the action from the indemnified party, jointly with any other indemnifying party similarly notified, to assume the defense of the action, with counsel reasonably satisfactory to the indemnified party, and after notice from the indemnifying party to the indemnified party of its election to assume the defense, the indemnifying party will not be liable to the indemnified party for any legal or other expenses except as provided below and except for the reasonable costs of investigation subsequently incurred by the indemnified party in

connection with the defense. The indemnified party will have the right to employ its own counsel in any such action, but the fees, expenses and other charges of such counsel will be at the expense of such indemnified party unless (i) the employment of counsel by the indemnified party has been authorized in writing by the indemnifying party, (ii) the indemnified party has reasonably concluded (based on advice of counsel) that there may be legal defenses available to it or other indemnified parties that are different from or in addition to those available to the indemnifying party, (iii) the indemnified party has reasonably concluded that a conflict or potential conflict exists (based on advice of counsel to the indemnified party) between the indemnified party and the indemnifying party (in which case the indemnifying party shall not have the right to direct the defense of such action on behalf of the indemnified party) or (iv) the indemnifying party has not in fact employed counsel reasonably satisfactory to the indemnified party to assume the defense of such action within a reasonable time after receiving notice of the commencement of the action, in each of which cases the reasonable fees, disbursements and other charges of counsel shall be at the expense of the indemnifying party or parties. It is understood that the indemnifying party or parties shall not, in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the reasonable fees, disbursements and other charges of more than one separate firm admitted to practice in such jurisdiction at any one time for all such indemnified party or parties. All such fees, disbursements and other charges shall be reimbursed by the indemnifying party promptly as they are incurred. An indemnifying party shall not be liable for any settlement of any action or claim effected without its written consent (which consent will not be unreasonably withheld or delayed). No indemnifying party shall, without the prior written consent of each indemnified party, settle or compromise or consent to the entry of any judgment in any pending or threatened claim, action or proceeding relating to the matters contemplated by this Section 9 (whether or not any indemnified party is a party thereto), unless such settlement, compromise or consent (i) includes an unconditional release of each indemnified party from all liability arising or that may arise out of such claim, action or proceeding and (ii) does not include a statement as to or an admission of fault, culpability or a failure to act by or on behalf of any indemnified party. Notwithstanding the foregoing, if at any time an indemnified party shall have requested an indemnifying party to reimburse the indemnified party for fees and expenses of counsel, such indemnifying party agrees that it shall be liable for any settlement of the nature contemplated by Section 9(a) effected without its written consent if (i) such settlement is entered into more than 45 days after receipt by such indemnifying party of the aforesaid request, (ii) such indemnifying party shall have received notice of the terms of such settlement at least 30 days prior to such settlement being entered into and (iii) such indemnifying party shall not have reimbursed such indemnified party in accordance with such request prior to the date of such settlement.

10. Contribution. In order to provide for just and equitable contribution in circumstances in which the indemnification provided for in the foregoing paragraphs of Section 9 is applicable in accordance with its terms but for any reason is held to be unavailable from the Company or the Underwriters, the Company and the Underwriters shall contribute to the total losses, claims, liabilities, expenses and damages (including any investigative, legal and other expenses reasonably incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claim asserted, but after deducting any contribution received by the Company from persons other than the Underwriters, such as persons who control the Company within the meaning of the Securities Act, officers of the Company who signed the Registration Statement and directors of the Company, who also may be liable for contribution) to which the Company and the Underwriters may be subject in such proportion as shall be appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other.

The relative benefits received by the Company on the one hand and the Underwriters on the other shall be deemed to be in the same proportion as the total net proceeds from the offering (before deducting expenses) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters, in each case as set forth in the table on the cover page of the Prospectus. If, but only if, the allocation provided by the foregoing sentence is not permitted by applicable law, the allocation of contribution shall be made in such proportion as is appropriate to reflect not only the relative benefits referred to in the foregoing sentence but also the relative fault of the Company, on the one hand, and the Underwriters, on the other, with respect to the statements or omissions which resulted in such loss, claim, liability, expense or damage, or action in respect thereof, as well as any other relevant equitable considerations with respect to such offering. Such relative fault shall be determined by reference to whether the untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company or Representative on behalf of the Underwriters, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to this Section 10 were to be determined by pro rata allocation or by any other method of allocation (even if the Underwriters were treated as one entity for such purpose) which does not take into account the equitable considerations referred to herein. The amount paid or payable by an indemnified party as a result of the loss, claim, liability, expense or damage, or action in respect thereof, referred to above in this Section 10 shall be deemed to include, for purpose of this Section 10, any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this Section 10, no Underwriter shall be required to contribute any amount in excess of the underwriting discounts and commissions received by it, and no person found guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligation to contribute as provided in this Section 10 are several in proportion to their respective underwriting obligations and not joint. For purposes of this Section 10, any person who controls a party to this Agreement within the meaning of the Securities Act will have the same rights to contribution as that party, and each officer of the Company who signed the Registration Statement will have the same rights to contribution as the Company, and each director, officer, employee, counsel or agent of any Underwriter will have the same rights to contribution as such Underwriter, subject in each case to the provisions hereof. Any party entitled to contribution, promptly after receipt of notice of commencement of any action against such party in respect of which a claim for contribution may be made under this Section 10, will notify any such party or parties from whom contribution may be sought, but the omission so to notify will not relieve the party or parties from whom contribution may be sought from any other obligation it or they may have under this Section 10. No party will be liable for contribution with respect to any action or claim settled without its written consent (which consent will not be unreasonably withheld).

11. Default of One or More of the Several Underwriters. If, on the First Closing Date or any Option Closing Date any one or more of the several Underwriters shall fail or refuse to purchase Offered Shares that it or they have agreed to purchase hereunder on such date, and the aggregate number of Offered Shares which such defaulting Underwriter or Underwriters agreed but failed or refused to purchase does not exceed 10% of the aggregate number of the Offered Shares to be purchased on such date, the Representative may make arrangements satisfactory to the Company for the purchase of such Offered Shares by other persons, including any of the

Underwriters, but if no such arrangements are made by such date, the other Underwriters shall be obligated, severally and not jointly, in the proportions that the number of Firm Shares set forth opposite their respective names on Schedule A bears to the aggregate number of Firm Shares set forth opposite the names of all such non-defaulting Underwriters, or in such other proportions as may be specified by the Representative with the consent of the non-defaulting Underwriters, to purchase the Offered Shares which such defaulting Underwriter or Underwriters agreed but failed or refused to purchase on such date. If, on the First Closing Date or any Option Closing Date any one or more of the Underwriters shall fail or refuse to purchase Offered Shares and the aggregate number of Offered Shares with respect to which such default occurs exceeds 10% of the aggregate number of Offered Shares to be purchased on such date, and arrangements satisfactory to the Representative and the Company for the purchase of such Offered Shares are not made within 48 hours after such default, this Agreement shall terminate without liability of any party to any other party except that the provisions of Section 4, Section 7, Section 9 and Section 10 shall at all times be effective and shall survive such termination (except with respect to any defaulting Underwriter hereunder). In any such case either the Representative or the Company shall have the right to postpone the First Closing Date or the applicable Option Closing Date, as the case may be, but in no event for longer than seven days in order that the required changes, if any, to the Registration Statement and the Prospectus or any other documents or arrangements may be effected.

As used in this Agreement, the term “**Underwriter**” shall be deemed to include any person substituted for a defaulting Underwriter under this Section 11. Any action taken under this Section 11 shall not relieve any defaulting Underwriter from liability in respect of any default of such Underwriter under this Agreement.

12. Termination of this Agreement. Prior to the purchase of the Firm Shares by the Underwriters on the First Closing Date, this Agreement may be terminated by the Representative by notice given to the Company if at any time: (i) trading or quotation in any of the Company’s securities shall have been suspended or limited by the Commission, any other securities regulatory authority, or by the Exchange, the TSX or trading in securities generally on the Exchange, the NYSE or the TSX shall have been suspended or limited, or minimum or maximum prices shall have been generally established on any of such stock exchanges; (ii) a general banking moratorium shall have been declared by any of U.S. or Canadian federal, or New York authorities or a major disruption of securities settlements or clearing services in the United States shall have occurred and be continuing; (iii) there shall have occurred any outbreak or escalation of national or international hostilities or any crisis or calamity, or any substantial change in the United States or international financial markets, or any substantial change or development involving a prospective substantial change in United States’ or international political, financial or economic conditions, as in the judgment of the Representative is material and adverse and makes it impracticable to market the Offered Shares in the manner and on the terms described in the Time of Sale Prospectus or the Prospectus or to enforce contracts for the sale of securities; (iv) in the judgment of the Representative there shall have occurred any material adverse change, or any development or event involving a prospective material adverse change, in the condition, financial or otherwise, or in the business, properties, earnings, results of operations or prospects of the Company and its Subsidiaries considered as one enterprise, whether or not arising in the ordinary course of business; or (v) the Company shall have sustained a loss by strike, fire, flood, earthquake, accident or other calamity of such character as in the judgment of the Representative may interfere materially with the conduct of the business and operations of the Company regardless of whether or not such loss shall have been insured. Any termination pursuant to this Section 12 shall be without liability

on the part of (a) the Company to any Underwriter, except that the Company shall be obligated to reimburse the expenses of the Representative and the Underwriters pursuant to Section 4 or Section 7 hereof or (b) any Underwriter to the Company; provided, however, that the provisions of Section 9 and Section 10 shall at all times be effective and shall survive such termination.

13. No Advisory or Fiduciary Relationship. The Company acknowledges and agrees that (i) the purchase and sale of the Offered Shares pursuant to this Agreement, including the determination of the public offering price of the Offered Shares and any related discounts and commissions, is an arm's-length commercial transaction between the Company, on the one hand, and the several Underwriters, on the other hand, (ii) in connection with the offering contemplated hereby and the process leading to such transaction, each Underwriter is and has been acting solely as a principal and is not the agent or fiduciary of the Company, or its shareholders, or its creditors, employees or any other party, (iii) no Underwriter has assumed or will assume an advisory or fiduciary responsibility in favor of the Company with respect to the offering contemplated hereby or the process leading thereto (irrespective of whether such Underwriter has advised or is currently advising the Company on other matters) and no Underwriter has any obligation to the Company with respect to the offering contemplated hereby except the obligations expressly set forth in this Agreement, (iv) the Underwriters and their respective affiliates may be engaged in a broad range of transactions that involve interests that differ from those of the Company, and (v) the Underwriters have not provided any legal, accounting, regulatory or tax advice with respect to the offering contemplated hereby and the Company has consulted its own legal, accounting, regulatory and tax advisors to the extent it deemed appropriate.

14. Representations and Agreements to Survive Delivery. The respective indemnities, contribution agreements, representations, warranties and other agreements and statements of the Company, of its officers and of the several Underwriters set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation made by or on behalf of any Underwriter or the Company or any of its or their partners, officers, directors or employees or any controlling person, as the case may be, and, anything herein to the contrary notwithstanding, will survive delivery of and payment for the Offered Shares sold hereunder and, subject to Section 11 hereof, any termination of this Agreement.

15. Notices. All communications hereunder shall be in writing and shall be mailed, hand delivered or telecopied and confirmed to the parties hereto as follows:

If to the Representative: c/o Piper Jaffray & Co.
800 Nicollet Mall, Suite 800
Minneapolis, MN 55402
Attention: General Counsel

If to the Company: Aptose Biosciences Inc.
251 Consumers Road, Suite 1105
Toronto, Ontario M2J 4R3
Attention: Chief Financial Officer

Each party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of a new address for such purpose. Each such notice or other communication shall be deemed given (i) when delivered personally or by verifiable facsimile

transmission (with an original to follow) on or before 4:30 p.m., New York City time, on a Business Day or, if such day is not a Business Day, on the next succeeding Business Day, (ii) on the next Business Day after timely delivery to a nationally-recognized overnight courier and (iii) on the Business Day actually received if deposited in the U.S. mail (certified or registered mail, return receipt requested, postage prepaid). For purposes of this Agreement, “**Business Day**” shall mean any day on which the Exchange and commercial banks in the City of New York are open for business.

An electronic communication (“**Electronic Notice**”) shall be deemed written notice for purposes of this Section 15 if sent to the electronic mail address specified by the receiving party under separate cover. Electronic Notice shall be deemed received at the time the party sending Electronic Notice receives verification of receipt by the receiving party. Any party receiving Electronic Notice may request and shall be entitled to receive the notice on paper, in a nonelectronic form (“**Nonelectronic Notice**”) which shall be sent to the requesting party within ten (10) days of receipt of the written request for Nonelectronic Notice.

16. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the Company and the Underwriters and their respective successors and the parties referred to in Section 9 hereof. References to any of the parties contained in this Agreement shall be deemed to include the successors and permitted assigns of such party. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and permitted assigns any rights, remedies, obligations or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement. Neither party may assign its rights or obligations under this Agreement without the prior written consent of the other party; provided, however, that any Underwriter may assign its rights and obligations hereunder to an affiliate thereof without obtaining the Company’s consent.

17. Partial Unenforceability. The invalidity or unenforceability of any section, paragraph or provision of this Agreement shall not affect the validity or enforceability of any other section, paragraph or provision hereof. If any section, paragraph or provision of this Agreement is for any reason determined to be invalid or unenforceable, there shall be deemed to be made such minor changes (and only such minor changes) as are necessary to make it valid and enforceable.

18. Entire Agreement; Amendment; Severability; Waiver. This Agreement (including all schedules and exhibits attached hereto issued pursuant hereto) constitutes the entire agreement and supersedes all other prior and contemporaneous agreements and undertakings, both written and oral, among the parties hereto with regard to the subject matter hereof. Neither this Agreement nor any term hereof may be amended except pursuant to a written instrument executed by the Company and the Underwriters. In the event that any one or more of the provisions contained herein, or the application thereof in any circumstance, is held invalid, illegal or unenforceable as written by a court of competent jurisdiction, then such provision shall be given full force and effect to the fullest possible extent that it is valid, legal and enforceable, and the remainder of the terms and provisions herein shall be construed as if such invalid, illegal or unenforceable term or provision was not contained herein, but only to the extent that giving effect to such provision and the remainder of the terms and provisions hereof shall be in accordance with the intent of the parties as reflected in this Agreement. No implied waiver by a party shall arise in the absence of a waiver in writing signed by such party. No failure or delay in exercising any right, power, or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise

thereof preclude any other or further exercise thereof or the exercise of any right, power, or privilege hereunder.

19. **GOVERNING LAW AND TIME; WAIVER OF JURY TRIAL.** THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAWS. SPECIFIED TIMES OF DAY REFER TO NEW YORK CITY TIME. EACH PARTY HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL RIGHT TO TRIAL BY JURY IN ANY LEGAL PROCEEDING ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY.

20. **CONSENT TO JURISDICTION.** EACH PARTY HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION WITH ANY TRANSACTION CONTEMPLATED HEREBY, AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT, THAT SUCH SUIT, ACTION OR PROCEEDING IS BROUGHT IN AN INCONVENIENT FORUM OR THAT THE VENUE OF SUCH SUIT, ACTION OR PROCEEDING IS IMPROPER. EACH PARTY HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF (CERTIFIED OR REGISTERED MAIL, RETURN RECEIPT REQUESTED) TO SUCH PARTY AT THE ADDRESS IN EFFECT FOR NOTICES TO IT UNDER THIS AGREEMENT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW.

21. Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Delivery of an executed Agreement by one party to the other may be made by facsimile or electronic transmission.

22. Construction.

(a) the section and exhibit headings herein are for convenience only and shall not affect the construction hereof;

(b) words defined in the singular shall have a comparable meaning when used in the plural, and vice versa;

(c) the words “hereof,” “hereto,” “herein” and “hereunder” and words of similar import, when used in this Agreement, shall refer to this Agreement as a whole and not to any particular provision of this Agreement;

(d) wherever the word “include,” “includes” or “including” is used in this

Agreement, it shall be deemed to be followed by the words “without limitation”;

(e) references herein to any gender shall include each other gender;

(f) references herein to any law, statute, ordinance, code, regulation, rule or other requirement of any Governmental Authority shall be deemed to refer to such law, statute, ordinance, code, regulation, rule or other requirement of any Governmental Authority as amended, reenacted, supplemented or superseded in whole or in part and in effect from time to time and also to all rules and regulations promulgated thereunder;

(g) if the last day for the giving of any notice or the performance of any act required or permitted under this Agreement is a day that is not a Business Day, then the time for the giving of such notice or the performance of such action shall be extended to the next succeeding Business Day; and

(h) “**knowledge**” means, as it pertains to the Company, the actual knowledge of the officers and directors of the Company, together with the knowledge which they would have had if they had conducted a reasonable inquiry of the relevant persons into the relevant subject matter.

(i) “**Governmental Authority**” means (i) any federal, provincial, state, local, municipal, national or international government or governmental authority, regulatory or administrative agency, governmental commission, department, board, bureau, agency or instrumentality, court, tribunal, arbitrator or arbitral body (public or private); (ii) any self-regulatory organization (including any stock exchange or quotation system); or (iii) any political subdivision of any of the foregoing.

23. General Provisions. Each of the parties hereto acknowledges that it is a sophisticated business person who was adequately represented by counsel during negotiations regarding the provisions hereof, including, without limitation, the indemnification provisions of Section 9 and the contribution provisions of Section 10, and is fully informed regarding said provisions. Each of the parties hereto further acknowledges that the provisions of Section 9 and Section 10 hereof fairly allocate the risks in light of the ability of the parties to investigate the Company, its affairs and its business in order to assure that adequate disclosure has been made in the Registration Statement, any preliminary prospectus, the Time of Sale Prospectus, each free writing prospectus and the Prospectus (and any amendments and supplements to the foregoing), as contemplated by the Securities Act and the Exchange Act.

[Signature Page Follows]

If the foregoing correctly sets forth the understanding between the Company and the Underwriters, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement between the Company and the Underwriters.

Very truly yours,

APTOSE BIOSCIENCES INC.

By: (s) Gregory K. Chow
Name: Gregory K. Chow
Title: Executive Vice President and
Chief Financial Officer

ACCEPTED as of the date first-above written:

PIPER JAFFRAY & CO.

By: (s) Chad Huber
Name: Chad Huber
Title: Managing Director

Acting on behalf of themselves and as
Representative of the Underwriter named in
Schedule A

Underwriters

**Number of Firm Shares
to be Purchased**

Underwriters

Piper Jaffray & Co.

10,481,250

Canaccord Genuity LLC

3,547,500

Oppenheimer & Co. Inc.

1,612,500

JonesTrading Institutional Services LLC

483,750

Total:

16,125,000

Free Writing Prospectuses Included in the Time of Sale Prospectus

None.

SIGNATURE PAGE

UNDERWRITING AGREEMENT

Pricing Information

Firm Shares: 16,125,000

Optional Shares: 2,418,750

Price to Public: \$4.00

Underwriters' Discount: 7%

SIGNATURE PAGE

UNDERWRITING AGREEMENT

Schedule D

Subsidiaries

Name

State/Jurisdiction of Incorporation

Aptose Biosciences U.S. Inc.
NuChem Pharmaceuticals Inc.

Delaware
Ontario, Canada

Form of Lock-Up Agreement

December ____, 2019

Piper Jaffray & Co.
As representative of the underwriters named
in the Purchase Agreement
referred to below

c/o Piper Jaffray & Co.
800 Nicollet Mall, Suite 800
Minneapolis, MN 55402

Dear Ladies and Gentlemen:

As an inducement to the underwriters (the “*Underwriters*”) to execute a purchase agreement (the “*Purchase Agreement*”) providing for a public offering (the “*Offering*”) of common shares (the “*Common Shares*”) of Aptose Biosciences Inc. and any successor (by merger or otherwise) thereto (the “*Company*”), the undersigned hereby agrees that without, in each case, the prior written consent of Piper Jaffray & Co. (“*Piper Jaffray*” or the “*Representative*”) during the period specified in the second succeeding paragraph (the “*Lock-Up Period*”), the undersigned will not: (1) offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, make any short sale or otherwise transfer or dispose of, directly or indirectly, any Common Shares or any securities convertible into, exercisable or exchangeable for or that represent the right to receive Common Shares (including, without limitation, Common Shares which may be deemed to be beneficially owned by the undersigned in accordance with the rules and regulations of the Securities and Exchange Commission and securities which may be issued upon exercise of a stock option or warrant) whether now owned or hereafter acquired (the “*Undersigned’s Securities*”); (2) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the Undersigned’s Securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of Common Shares or such other securities, in cash or otherwise; (3) make any demand for or exercise any right with respect to, the registration of any Common Shares or any security convertible into or exercisable or exchangeable for Common Shares; or (4) publicly disclose the intention to do any of the foregoing.

The undersigned agrees that the foregoing restrictions preclude the undersigned from engaging in any hedging or other transaction which is designed to or which reasonably could be expected to lead to or result in a sale or disposition of the Undersigned’s Securities even if such Securities would be disposed of by someone other than the undersigned. Such prohibited hedging or other transactions would include without limitation any short sale or any purchase, sale or grant of any right (including without limitation any put or call option) with respect to any of the Undersigned’s Securities or with respect to any security that includes, relates to, or derives any significant part of its value from the Undersigned’s Securities.

The Lock-Up Period will commence on the date of this Agreement and continue and include the date 90 days after the date of the final prospectus used to sell Common Shares in the Offering pursuant to the Purchase Agreement.

Notwithstanding the foregoing, the undersigned may transfer the Undersigned's Securities (i) as a *bona fide* gift or gifts, (ii) to any trust for the direct or indirect benefit of the undersigned or the immediate family of the undersigned, (iii) if the undersigned is a corporation, partnership, limited liability company, trust or other business entity (1) transfers to another corporation, partnership, limited liability company, trust or other business entity that is a direct or indirect affiliate (as defined in Rule 405 promulgated under the Securities Act of 1933, as amended) of the undersigned or (2) distributions of Common Shares or any security convertible into or exercisable for Common Shares to limited partners, limited liability company members or stockholders of the undersigned, (iv) if the undersigned is a trust, transfers to the beneficiary of such trust, (v) transfers by testate succession or intestate succession, (vi) transactions relating to Common Shares or other securities convertible into or exercisable or exchangeable for Common Shares acquired in open market transactions after completion of the Offering, (vii) transfers by operation of law pursuant to a qualified domestic order or in connection with a divorce settlement or (viii) pursuant to the Purchase Agreement; *provided*, in the case of clauses (i)-(vi), that (x) such transfer shall not involve a disposition for value, (y) the transferee agrees in writing with the Underwriters to be bound by the terms of this Lock-Up Agreement, and (z) no filing by any party under Section 16(a) of the Securities Exchange Act of 1934, as amended (the "*Exchange Act*"), shall be required or shall be made voluntarily in connection with such transfer. For purposes of this Agreement, "immediate family" shall mean any relationship by blood, marriage, civil union, domestic partnership or adoption, nor more remote than first cousin.

In addition, the foregoing restrictions shall not apply to (i) the exercise of stock options granted pursuant to the Company's equity incentive plans; *provided* that it shall apply to any of the Undersigned's Securities issued upon such exercise or (ii) the establishment of any contract, instruction or plan (a "*Plan*") that satisfies all of the requirements of Rule 10b5-1(c)(1)(i)(B) under the Exchange Act; *provided* that no sales of the Undersigned's Securities shall be made pursuant to such a Plan prior to the expiration of the Lock-Up Period (as such may have been extended pursuant to the provisions hereof), and such a Plan may only be established if no public announcement of the establishment or existence thereof and no filing with the Securities and Exchange Commission or other regulatory authority in respect thereof or transactions thereunder or contemplated thereby, by the undersigned, the Company or any other person, shall be required, and no such announcement or filing is made voluntarily, by the undersigned, the Company or any other person, prior to the expiration of the Lock-Up Period (as such may have been extended pursuant to the provisions hereof).

In furtherance of the foregoing, the Company and its transfer agent and registrar are hereby authorized to decline to make any transfer of Common Shares if such transfer would constitute a violation or breach of this Agreement.

The undersigned hereby represents and warrants that it: (i) has full power and authority to enter into this Agreement and that upon request, the undersigned will execute and additional documents necessary to ensure the validity or enforcement of this Agreement, and (ii) now has, and except as contemplated by this Agreement, for the duration of this Agreement will have, good and marketable title to the Undersigned's Securities, free and clear of all liens, encumbrances, and claims whatsoever. All authority herein conferred or agreed to be conferred and any obligations of the undersigned shall be binding upon the successors, assigns, heirs or personal representatives of the undersigned.

The undersigned understands that the undersigned shall be released from all obligations under this Agreement if (i) the Company notifies the Underwriters that it does not intend to proceed with the Offering, (ii) the Purchase Agreement does not become effective, or if the Purchase Agreement (other than the provisions thereof which survive termination) shall terminate or be terminated prior to payment for and delivery of the Common Shares to be sold thereunder, or (iii) the Offering is not completed by December 31, 2019.

The undersigned understands that the Underwriters are entering into the Purchase Agreement and proceeding with the Offering in reliance upon this Agreement.

This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York.

Very truly yours,

Printed Name of Holder

By: _____

Lock-Up Signatories

Carol G. Ashe
Denis Burger
Gregory K. Chow
Caroline Loewy
Erich Platzer
William G. Rice
Mark D. Vincent
Warren Whitehead