

APTOSE BIOSCIENCES INC.

EQUITY DISTRIBUTION AGREEMENT

May 24, 2019

PIPER JAFFRAY & CO.
U.S. Bancorp Center
800 Nicollet Mall
Minneapolis, Minnesota 55402

CANACCORD GENUITY LLC
535 Madison Avenue, 2nd Floor
New York, New York 10022

Ladies and Gentlemen:

As further set forth in this agreement (this “**Agreement**”), Aptose Biosciences Inc., a company incorporated under the Canada Business Corporations Act (the “**Company**”), proposes to issue and sell from time to time through Piper Jaffray & Co. and Canaccord Genuity LLC (each an “**Agent**”, and together, the “**Agents**”), as sales agents, the Company’s common shares, no par value per share (the “**Common Shares**”) (such Common Shares to be sold pursuant to this Agreement, the “**Shares**”) on terms set forth herein. Notwithstanding anything to the contrary contained herein, the parties hereto agree that compliance with the limitation set forth in Section 2 of this Agreement on the number of Shares issued and sold under this Agreement shall be the sole responsibility of the Company, and the Agents shall have no obligation in connection with such compliance.

The Company hereby confirms its agreement with the Agents with respect to the sale of the Shares.

1. Representations and Warranties of the Company.

(a) The Company represents and warrants to, and agrees with, the Agents that as of the date of this Agreement, each Representation Date, each date on which a Placement Notice (as defined in Section 2(a)(i) below) is given, and any date on which Shares are sold hereunder as follows:

(i) *Registration Statement and Prospectus.* The Company has filed, in accordance with the provisions of the Securities Act of 1933, as amended, and the rules and regulations thereunder (collectively, the “**Securities Act**”), with the Securities and Exchange Commission (the “**Commission**”) a registration statement on Form S-3 (File No. 333-230218), including a base prospectus, relating to certain securities, including the Common Shares, to be issued from time to time by the Company, and which incorporates by reference documents that the Company has filed or will file in accordance with the provisions of the Securities Exchange Act of 1934, as amended, and the rules and

regulations thereunder (collectively, the “**Exchange Act**”). The Company has prepared a prospectus supplement to the base prospectus included as part of such registration statement specifically relating to the Shares (the “**Prospectus Supplement**”). The Company has furnished to the Agents, for use by Agents, copies of the prospectus included as part of such registration statement, as supplemented by the Prospectus Supplement, relating to the Shares. Except where the context otherwise requires, such registration statement, as amended when it became effective, including all documents filed as part thereof or incorporated by reference therein, and including any information contained in a Prospectus (as defined below) subsequently filed with the Commission pursuant to Rule 424(b) under the Securities Act or deemed to be a part of such registration statement pursuant to Rule 430B or 462(b) of the Securities Act, is herein called the “**Registration Statement**.” The base prospectus, including all documents incorporated therein by reference, included in the Registration Statement, as it may be supplemented by the Prospectus Supplement, in the form in which such prospectus and/or Prospectus Supplement have most recently been filed by the Company with the Commission pursuant to Rule 424(b) under the Securities Act, together with any “issuer free writing prospectus,” as defined in Rule 433 of the Securities Act regulations (“**Rule 433**”), relating to the Shares, if any, that (i) is required to be filed with the Commission by the Company or (ii) is exempt from filing pursuant to Rule 433(d)(5)(i), in each case in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company’s records pursuant to Rule 433(g), is herein called the “**Prospectus**.” Any reference herein to the Registration Statement, the Prospectus or any amendment or supplement thereto shall be deemed to refer to and include the documents incorporated by reference therein, and any reference herein to the terms “amend,” “amendment” or “supplement” with respect to the Registration Statement or the Prospectus shall be deemed to refer to and include the filing after the execution hereof of any document with the Commission deemed to be incorporated by reference therein. For purposes of this Agreement, all references to the Registration Statement, the Prospectus or to any amendment or supplement thereto shall be deemed to include any copy filed with the Commission pursuant the Electronic Data Gathering Analysis and Retrieval System (“**EDGAR**”).

(ii) *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 Shares hereunder meets the requirements of General Instruction I.B.1. of Form S-3.

(iii) *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 Prospectus and any post-effective amendments or supplements thereto, at the time it became effective or its date, as applicable, and as of each Settlement Date (as defined in Section 2(a)(vii) below), complied in all material respects with the Securities Act, and as of each effective date and each Settlement Date, 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 Prospectus, as amended or supplemented, as of its date, did not and, as of each of the Settlement Date, 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 Prospectus, or any amendments or supplements thereto, made in reliance upon and in conformity with information relating to the Agents furnished to the Company in writing by the Agents expressly for use therein. There are no contracts or other documents required to be described in the Prospectus or to be filed as exhibits to the Registration Statement which have not been described or filed as required.

(iv) *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 Shares contemplated by the Registration Statement; 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 Shares contemplated hereby is solely the property of the Company.

(v) *Financial Statements.* The historical financial statements (including the related notes and supporting schedules) to be included or incorporated by reference, in the Registration Statement, 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 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 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.

(vi) *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 Prospectus, which have not been described as required.

(vii) *Auditor Independence.* KPMG LLP, who have certified certain financial statements of the Company and its consolidated subsidiaries (the “**Subsidiaries**”), whose report appears in the Registration Statement and the Prospectus, are independent public accountants as required by the Securities Act and the Public Accounting Oversight Board.

(viii) *No Material Adverse Effect.* The Company and each of its Subsidiaries (a complete list of the Subsidiaries is included as Schedule 4 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 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).

(ix) *Capitalization.* The Company has an authorized capitalization as set forth in each of the Registration Statement 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 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 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.

(x) *Due Authorization, Valid Issuance and Non-Assessability of Shares.* The Shares to be issued and sold by the Company to the Agents 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 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.

(xi) *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.

(xii) *Non-Contravention.* The issue and sale of the 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 Shares as described under “Use of Proceeds” in the Registration Statement 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*”).

(xiii) *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 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 Shares as described under “Use of Proceeds” in the Registration Statement and the Prospectus, except for (i) the registration of the 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 Shares by the Agents; and (iii) the inclusion of the Shares on the Nasdaq Capital Market (the “*Exchange*”).

(xiv) *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 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 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.

(xv) *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.

(xvi) *Critical Accounting Policies.* The section entitled “Critical Accounting Policies” incorporated by reference in the Registration Statement 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.

(xvii) *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.

(xviii) *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 and the Prospectus, and, except as disclosed in the Registration Statement 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 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 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.

(xix) *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.

(xx) *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 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; and (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. "*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.

(xxi) *Consents and Permits.* Except as set forth in the Registration Statement 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.

(xxii) *Compliance with Applicable Laws and Regulations.* Except as described in the Registration Statement 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.

(xxiii) *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 Prospectus or the results of which are referred to in the Registration Statement 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 Disclosure Package 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, Disclosure Package 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 Prospectus or the results of which are referred to in the Prospectus, and there are no reasonable grounds for same.

(xxiv) *Regulatory Filings*. Except as disclosed in the Registration Statement 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 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 Prospectus the results of which reasonably call into question in any material respect the results of the studies, tests and trials described in the Prospectus.

(xxv) *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 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 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 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.

(xxvi) *Absence of Settlement Agreements or Undertakings.* Except as disclosed in the Registration Statement 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.

(xxvii) *Absence of Legal or Governmental Proceedings.* Except as disclosed in the Registration Statement 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.

(xxviii) *Material Contracts.* There are no contracts or other documents required to be described in the Registration Statement or filed as exhibits to the Registration Statement that are not described and filed as required. The statements made in the Registration Statement and 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 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.

(xxix) *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.

(xxx) *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 or the Prospectus which is not so described.

(xxxii) *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.

(xxxiii) *No Default.* Except as disclosed in the Registration Statement 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.

(xxxiii) *Environmental Laws*. Except as set forth in the Registration Statement 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 and 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.

(xxxiv) *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.

(xxxv) *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.

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

(xxxvii) *Not an Investment Company.* Neither the Company nor any of its Subsidiaries is, and as of the applicable Settlement Date and, after giving effect to the offer and sale of the Shares and the application of the proceeds therefrom as described under “Use of Proceeds” in the Registration Statement 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).

(xxxviii) *Accuracy of Certain Summaries and Statements.* The statements set forth or incorporated by reference, as applicable, in each of the Registration Statement 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.

(xxxix) *Registration Rights.* Except as disclosed in the Registration Statement 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.

(xl) *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 Agents for a brokerage commission, finder's fee or like payment in connection with the offering and sale of the Shares.

(xli) *No Integration.* Other than the Common Shares issued or issuable to Aspire Capital Fund, LLC pursuant to a Common Shares Purchase Agreement, dated May 7, 2019, between the Company and Aspire Capital Fund, LLC, 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.

(xlii) *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 Shares.

(xliii) *Exchange Act Registration and Listing of the Common Shares.* The Common 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 Common Shares under the Exchange Act or delisting the Common Shares from the Exchange, nor has the Company received any notification that the Commission or FINRA is contemplating terminating such registration or listing. The Common 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.

(xliv) *Offering Material.* The Company has not distributed and prior to any Settlement Date, will not distribute any offering material in connection with any Placement (as defined in Section 2(a)(i) below), other than the Prospectus, and any Permitted Free Writing Prospectus to which the Agents have consented.

(xlv) *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.

(xlvi) *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.

(xlvii) *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.

(xlviii) *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 currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department (“*OFAC*”); 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 Subject to the qualifications and assumptions set forth in the Registration Statement, the Company believes that it is, and upon the sale of the 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) 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.

(xlix) *Not a Passive Foreign Investment Company.*

(l) *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 Shares by the Company or the execution and delivery of this Agreement.

(li) *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.

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

(liii) *Certificate as Representation and Warranty.* Any certificate signed by any officer of the Company and delivered to the Agents or the Agents' counsel in connection with the offering of the Shares shall be deemed a representation and warranty by the Company to Agents as to the matters covered thereby.

2. Purchase, Sale and Delivery of Shares.

(a) *At-the-Market Sales.* On the basis of the representations, warranties and agreements herein contained, but subject to the terms and conditions herein set forth, the Company agrees to issue and sell through the Agents as sales agents, and the Agents agree to use their commercially reasonable efforts to sell for and on behalf of the Company, the Shares on the following terms and conditions; *provided, however*, that any obligation of the Agents to use such commercially reasonable efforts shall be subject to the continuing accuracy of the representations and warranties of the Company herein, the performance by the Company of its covenants and obligations hereunder and the continuing satisfaction of the additional conditions specified in Section 4 of this Agreement. The Company acknowledges and agrees that (i) there can be no assurance that the Agents will be successful in selling Shares, and (ii) the Agents will incur no liability or obligation to the Company or any other person or entity if it does not sell Shares for any reason other than a failure by either Agent to use its commercially reasonable efforts consistent with its normal trading and sales practices to sell such Shares as required under this Section 2.

(i) Each time that the Company wishes to issue and sell the Shares hereunder (each, a “**Placement**”), it will notify either Agent by email notice (or other method mutually agreed to in writing by the parties) (a “**Placement Notice**”) containing the parameters in accordance with which it desires the Shares to be sold, which shall at a minimum include the number of Shares to be issued, the time period during which sales are requested to be made, any limitation on the number of Shares that may be sold in any one Trading Day (as defined below) and any minimum price below which sales may not be made, a form of which containing such minimum sales parameters necessary is attached hereto as Schedule 1. The Placement Notice shall originate from any of the individuals from the Company set forth on Schedule 2 (with a copy to each of the other individuals from the Company listed on such schedule), and shall be addressed to each of

the individuals from the relevant Agent set forth on Schedule 2, as such Schedule 2 may be amended from time to time. The Placement Notice shall be effective upon receipt by the relevant Agent unless and until (i) in accordance with the notice requirements set forth in Section 2(a)(iii) of this Agreement, such Agent declines to accept the terms contained therein for any reason, in its sole discretion, (ii) the entire amount of the Shares have been sold, (iii) the Company suspends or terminates the Placement Notice in accordance with the notice requirements set forth in Section 2(a)(iii) below, (iv) the Company issues a subsequent Placement Notice with parameters superseding those on the earlier dated Placement Notice, or (v) this Agreement has been terminated under the provisions of Section 7. The amount of any commission or other compensation to be paid by the Company to the relevant Agent in connection with the sale of the Shares shall be calculated in accordance with the terms set forth in Section 2(a)(v) below. It is expressly acknowledged and agreed that neither the Company nor the Agents will have any obligation whatsoever with respect to a Placement or any Shares unless and until the Company delivers a Placement Notice to an Agent and such Agent does not decline such Placement Notice pursuant to the terms set forth above, and then only upon the terms specified therein and herein. In the event of a conflict between the terms of this Agreement and the terms of the Placement Notice, the terms of the Placement Notice will control. For the purposes hereof, “**Trading Day**” means any day on which the Company’s Common Shares is purchased and sold on the principal market on which the Common Shares is listed or quoted.

(ii) The Shares are to be sold by an Agent on a daily basis or otherwise as shall be agreed to by the Company and the Agents on any day that is a trading day for the Exchange (other than a day on which the Exchange is scheduled to close prior to its regular weekday closing time). The gross sales price of the Shares sold under this Section 2(a) shall be the market price for the Company’s Common Shares sold by the Agents under this Section 2(a) at the time of such sale.

(iii) Notwithstanding the foregoing, the Company may instruct the Agents by telephone (confirmed promptly by email) not to sell the Shares if such sales cannot be effected at or above the price designated by the Company in any such instruction. Furthermore, the Company shall not authorize the issuance and sale of, and the Agents shall not be obligated to use its commercially reasonable efforts to sell, any Share at a price lower than the minimum price therefor designated from time to time by the Company’s Board of Directors and notified to the Agents in writing. In addition, the Company or either Agent may, upon notice to the other party hereto by telephone (confirmed promptly by email), suspend the offering of the Shares, whereupon such Agent shall so suspend the offering of Shares until further notice is provided to the other party to the contrary; *provided, however*, that such suspension or termination shall not affect or impair the parties’ respective obligations with respect to the Shares sold hereunder prior to the giving of such notice. Notwithstanding any other provision of this Agreement, during any period in which the Company is in possession of material non-public information, the Company and each Agent agree that (i) no sale of Shares will take place, (ii) the Company shall not request the sale of any Shares, and (iii) neither Agent shall be obligated to sell or offer to sell any Shares.

(iv) Subject to the terms of the Placement Notice, the Agents may sell the Shares by any method permitted by law deemed to be an “at the market offering” as defined in Rule 415(a)(4) under the Securities Act, including sales made directly on or through the Exchange. Subject to the terms of any Placement Notice, the Agents may also sell Shares in negotiated transactions at market prices prevailing at the time of sale or at prices related to such prevailing market prices and/or any other method permitted by law, subject to the prior written consent of the Company. In the event the Agents sell Shares in privately negotiated transactions, the number or dollar amount of Shares issued in privately negotiated transactions shall in no case exceed 2% of the aggregate number or dollar amount of Shares authorized for issuance pursuant to this Agreement. During the term of this Agreement, and notwithstanding anything to the contrary herein, the Agents agree that in no event will they or any of their affiliates engage in any market making, bidding, stabilization or other trading activity with regard to the Common Shares if such activity would be prohibited under Regulation M or other anti-manipulation rules under the Securities Act.

(v) The compensation to an Agent for sales of the Shares, as an agent of the Company, shall be 3.0% of the gross sales price of the Shares sold by such Agent pursuant to this Section 2(a), payable in cash (the “*Commission*”); *provided that* the combined Commission and reimbursement of either Agent for the out-of-pocket reasonable fees and disbursements of Agents’ counsel pursuant to Section 3(g), shall not exceed 8.0% of the gross sales price of the Shares. The remaining proceeds, after further deduction for any transaction fees imposed by any governmental or self-regulatory organization in respect of such sales, and reimbursement of expenses that the Agents may be entitled to pursuant to Section 3(g), shall constitute the net proceeds to the Company for such Shares (the “*Net Proceeds*”).

(vi) Each Agent will provide written confirmation to the Company (including by email correspondence to each of the individuals of the Company set forth on Schedule 2), no later than the opening of the Trading Day immediately following the Trading Day on which it has made sales of Shares hereunder, setting forth the number of Shares sold on such day, the volume-weighted average price of the Shares sold, and the Net Proceeds payable to the Company.

(vii) All Shares sold pursuant to this Section 2(a) will be delivered by the Company to the relevant Agent for the account of such Agent, against payment of the Net Proceeds therefor, by wire transfer of same-day funds payable to the order of the Company at the offices of (i) Piper Jaffray & Co., U.S. Bancorp Center, 800 Nicollet Mall, Minneapolis, Minnesota, (ii) Canaccord Genuity LLC, 535 Madison Avenue 2nd Floor, New York, New York 10022, (iii) or such other location as may be mutually acceptable, at 9:00 a.m. Central Time on the second full business day following the date on which such Shares are sold, or at such other time and date as such Agent and the Company determine pursuant to Rule 15c6-1(a) under the Exchange Act, each such time and date of delivery being herein referred to as a “*Settlement Date*.” If an Agent so elects, delivery of the Shares may be made by credit through full fast transfer to an account or accounts at The Depository

Trust Company designated by such Agent. On each Settlement Date, such Agent will deliver the Net Proceeds in same day funds to an account designated by the Company on, or prior to, such Settlement Date. The Company agrees that if the Company, or its transfer agent (if applicable), defaults in its obligation to timely deliver duly authorized Shares on a Settlement Date, the Company agrees that in addition to and in no way limiting the rights and obligations set forth in Section 5 hereto, it will (i) hold the relevant Agent harmless against any loss, claim, damage, or expense (including reasonable legal fees and expenses), as incurred, arising out of or in connection with such default by the Company, (iii) reimburse such Agent for any losses incurred by the Agent attributable, directly or indirectly, to such default and (iii) pay to such Agent any commission or other compensation to which such Agent would otherwise have been entitled absent such default.

(viii) Each of the Company and each Agent hereby agrees and acknowledges that all sales and solicitations of sales of the Shares by each Agent shall be made solely in the United States and no sales or solicitations of sales of the Shares by each Agent shall be done in Canada or through the facilities of the TSX.

(ix) During the term of this Agreement, neither Agent nor any of their respective affiliates or subsidiaries shall engage in (i) any short sale of any security of the Company or (ii) any sale of any security of the Company that such Agent does not own or any sale which is consummated by the delivery of a security of the Company borrowed by, or for the account of, such Agent. Neither Agent nor any of their respective affiliates or subsidiaries shall engage in any proprietary trading or trading for such Agent (or its affiliates' or subsidiaries') own account.

(x) During the term of this Agreement, and notwithstanding anything to the contrary herein, each Agent agrees that in no event will it or any of its affiliates engage in any market making, bidding, stabilization or other trading activity with regard to the Common Shares if such activity would be prohibited under Regulation M or other anti-manipulation rules under the Securities Act.

(b) *Maximum Amount.* Under no circumstances shall the aggregate number or aggregate value of the Shares sold pursuant to this Agreement exceed: (i) the aggregate number and aggregate dollar amount of Common Shares available for issuance under the currently effective Registration Statement, (ii) the aggregate dollar amount of Common Shares permitted to be sold under the Company's effective Registration Statement (including any limit set forth in General Instruction I.B.6 thereof, if applicable) or (iii) the aggregate number or aggregate dollar amount of the Common Shares for which the Company has filed any Prospectus Supplement in connection with the Shares (the lesser of (a), (b), (c) and (d) (the "**Maximum Amount**").

(c) *No Association or Partnership.* Nothing herein contained shall constitute the Agents an unincorporated association or partner with the Company.

(d) *Duration.* Under no circumstances shall any Shares be sold pursuant to this Agreement after the date which is three years after the Registration Statement is first declared effective by the Commission.

(e) *Market Transactions by Agents.* The Company acknowledges and agrees that the Agents have informed the Company that the Agents may, to the extent permitted under the Securities Act, the Exchange Act and this Agreement, purchase and sell Common Shares for its own account while this Agreement is in effect, *provided, that* (i) no sale for its own account shall take place while a Placement Notice is in effect (except to the extent the Agents may engage in sales of Shares purchased or deemed purchased from the Company as a “riskless principal” or in a similar capacity) and (ii) the Company shall not be deemed to have authorized or consented to any such purchases or sales by the Agents. The Company consents to the Agents trading in the Common Shares for the account of any of its clients at the same time as sales of the Shares occur pursuant to this Agreement.

3. *Covenants of the Company.* The Company covenants and agrees with the Agents as follows:

(a) *Amendments to Registration Statement and Prospectus.* After the date of this Agreement and during any period in which a Prospectus relating to any Shares is required to be delivered by the Agents under the Securities Act (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), the Company agrees that it will: (i) notify the Agents promptly of the time when any subsequent amendment to the Registration Statement, other than documents incorporated by reference or amendments not related to the Shares, has been filed with the Commission and/or has become effective or any subsequent supplement to the Prospectus related to the Shares has been filed and of any request by the Commission for any amendment or supplement to the Registration Statement (insofar as it relates to the transactions contemplated hereby) or Prospectus or for additional information; (ii) prepare and file with the Commission, promptly upon the Agents’ request, any amendments or supplements to the Registration Statement or Prospectus that, in the Agents’ reasonable opinion, may be necessary or advisable in connection with the sale of the Shares by the Agents (*provided, however,* that the failure of the Agents to make such request shall not relieve the Company of any obligation or liability hereunder, or affect the Agents’ right to rely on the representations and warranties made by the Company in this Agreement); (iii) not file any amendment or supplement to the Registration Statement or Prospectus, other than documents incorporated by reference, relating to the Shares or a security convertible into the Shares unless a copy thereof has been submitted to the Agents within a reasonable period of time before the filing and the Agents have not reasonably objected thereto (*provided, however,* that (A) the failure of the Agents to make such objection shall not relieve the Company of any obligation or liability hereunder, or affect the Agents’ right to rely on the representations and warranties made by the Company in this Agreement), (B) the Company has no obligation to provide the Agents any advance copy of such filing or to provide the Agents an opportunity to object to such filing if the filing does not name the Agents or does not relate to a Placement or other transaction contemplated hereunder, and (C) the only remedy that the Agents shall have with respect to the failure by the Company to provide the Agents with such copy or the filing of such amendment or supplement despite the Agents’ objection shall be to cease making sales under this Agreement); (iv) furnish to the

Agents at the time of filing thereof a copy of any document that upon filing is deemed to be incorporated by reference into the Registration Statement or Prospectus, except for those documents available via EDGAR; and (iv) cause each amendment or supplement to the Prospectus, other than documents incorporated by reference, to be filed with the Commission as required pursuant to the applicable paragraph of Rule 424(b) of the Securities Act.

(b) *Stop Order.* The Company will advise the Agents, promptly after it receives notice or obtains knowledge thereof, of the issuance or threatened issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement, of the suspension of the qualification of the Shares for offering or sale in any jurisdiction, or of the initiation or threatening of any proceeding for any such purpose, and it will promptly use its commercially reasonable efforts to prevent the issuance of any stop order or to obtain its withdrawal if such a stop order should be issued.

(c) *Continuing Amendments.* During any period in which a Prospectus relating to the Shares is required to be delivered by the Agents under the Securities Act with respect to any Placement or pending sale of the Shares, (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), the Company will comply with all requirements imposed upon it by the Securities Act, as from time to time in force, and to file on or before their respective due dates all reports (taking into account any extensions available under the Exchange Act) and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Sections 13(a), 13(c), 14, 15(d) or any other provision of or under the Exchange Act. If during such period any event occurs as a result of which the Prospectus as then amended or supplemented would include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances then existing, not misleading, or if during such period it is necessary to amend or supplement the Registration Statement or Prospectus to comply with the Securities Act, the Company will promptly notify the Agents to suspend the offering of Shares during such period and the Company will promptly amend or supplement the Registration Statement or Prospectus (at the expense of the Company) so as to correct such statement or omission or effect such compliance.

(d) *Qualification of the Shares.* The Company shall take or cause to be taken all necessary action to qualify the Shares for sale under the securities laws of such jurisdictions as the Agents reasonably designate and to continue such qualifications in effect so long as required for the distribution of the Shares, except that the Company shall not be required in connection therewith to qualify as a foreign corporation or to execute a general consent to service of process in any state. The Company shall promptly advise the Agents of the receipt by the Company of any notification with respect to the suspension of the qualification of the Shares for offer or sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose.

(e) *Copies of Registration Statement and Prospectus.* The Company will furnish to the Agents and counsel for the Agents copies of the Registration Statement (which will include three complete manually signed copies of the Registration Statement and all consents and exhibits filed therewith), the Prospectus and all amendments and supplements to such documents, in

each case as soon as available and in such quantities as the Agents may from time to time reasonably request.

(f) *Section 11(a)*. The Company will make generally available to its security holders as soon as practicable an earnings statement (which need not be audited) covering a 12-month period that shall satisfy the provisions of Section 11(a) of the Securities Act and Rule 158 promulgated thereunder.

(g) *Expenses*. The Company, whether or not the transactions contemplated hereunder are consummated or this Agreement is terminated, will pay or cause to be paid (i) all expenses (including stock or transfer taxes and stamp or similar duties allocated to the respective transferees) incurred in connection with the registration, issue, sale and delivery of the Shares, (ii) all expenses and fees (including, without limitation, fees and expenses of the Company's accountants and counsel) in connection with the preparation, printing, filing, delivery, and shipping of the Registration Statement (including the financial statements therein and all amendments, schedules, and exhibits thereto), the Shares, the Prospectus and any amendment thereof or supplement thereto, and the producing, word-processing, printing, delivery, and shipping of this Agreement and other underwriting documents or closing documents, including Blue Sky Memoranda (covering the states and other applicable jurisdictions) and including the cost to furnish copies of each thereof to the Agents, (iii) all filing fees, (iv) all fees and disbursements of the Agents' counsel incurred in connection with the qualification of the Shares for offering and sale by the Agents or by dealers under the securities or blue sky laws of the states and other jurisdictions which Agents shall designate, (v) the fees and expenses of any transfer agent or registrar, (vi) the filing fees and fees and disbursements of Agents' counsel incident to any required review and approval by FINRA of the terms of the sale of the Shares, (vii) listing fees, if any, (viii) the cost and expenses of the Company relating to investor presentations or any "roadshow" undertaken in connection with marketing of the Shares, and (ix) all other costs and expenses incident to the performance of its obligations hereunder that are not otherwise specifically provided for herein. In addition to (iv) and (vi) above, the Company shall reimburse the Agents for the out of pocket reasonable fees and disbursements of the Agents' counsel actually incurred in an amount which, taken together with the fees and disbursements of Agents' counsel in an amount not to exceed \$50,000.

(h) *Use of Proceeds*. The Company will apply the net proceeds from the sale of the Shares in the manner the Prospectus.

(i) *Restrictions on Future Sales*. Without the prior written consent of the Agents, the Company will not, directly or indirectly, offer to sell, sell, contract to sell, grant any option to sell or otherwise dispose of any Common Shares (other than the Shares offered pursuant to this Agreement) or securities convertible into or exchangeable for Common Shares, warrants or any rights to purchase or acquire Common Shares during the period beginning on the fifth (5th) Trading Day immediately prior to the date on which any Placement Notice is delivered to the Agents hereunder and ending on the fifth (5th) Trading Day immediately following the final Settlement Date with respect to Shares sold pursuant to such Placement Notice (or, if the Placement Notice has been terminated or suspended prior to the sale of all Shares covered by a Placement Notice, the date of such suspension or termination); and will not directly or indirectly in any other "at-

the-market” or continuous equity transaction offer to sell, sell, contract to sell, grant any option to sell or otherwise dispose of any Common Shares (other than the Shares offered pursuant to this Agreement) or securities convertible into or exchangeable for Common Shares, warrants or any rights to purchase or acquire, Common Shares prior to the later of the termination of this Agreement and the sixtieth (60th) day immediately following the final Settlement Date with respect to Shares sold pursuant to such Placement Notice; *provided, however*, that such restrictions will not be required in connection with the Company’s issuance or sale of (i) Common Shares, options to purchase Common Shares or Common Shares issuable upon the exercise of options, pursuant to any employee or director stock option or benefits plan, stock ownership plan or dividend reinvestment plan (but not Common Shares subject to a waiver to exceed plan limits in its dividend reinvestment plan) of the Company whether now in effect or hereafter implemented, (ii) Common Shares issuable upon conversion of securities or the exercise of warrants, options or other rights in effect or outstanding, and disclosed in filings by the Company available on EDGAR or otherwise in writing to the Agent; (iii) Common Shares or securities convertible into or exchangeable for Common Shares as consideration for mergers, acquisitions, other business combinations or strategic alliances, or offered and sold in a privately negotiated transaction to vendors, customers, lenders, investors, strategic partners or potential strategic partners, occurring after the date of this Agreement which are not issued primarily for capital raising purposes; provided however, any sales of Common Shares issued pursuant to the Common Shares Purchase Agreement with Aspire Capital Fund, LLC, with an aggregate offering amount not to exceed \$20,000,000, shall not be subject to this Section 7(g), provided that such provided that such sales shall be made in compliance with Regulation M of the Exchange Act.

(j) *No Stabilization or Manipulation.* The Company has not taken and will not take, directly or indirectly, any action designed to, or which might reasonably be expected to cause or result in, or which constitutes: (i) the stabilization or manipulation of the price of the Common Shares or any other security of the Company to facilitate the sale or resale of the Shares, (ii) a violation of Regulation M. The Company shall notify the Agents of any violation of Regulation M by the Company or any of its Subsidiaries or any of their respective officers or directors promptly after the Company has received notice or obtained knowledge of any such violation. The Company shall not invest in futures contracts, options on futures contracts or options on commodities, unless the Company is exempt from the registration requirements of the Commodity Exchange Act, as amended (the “*Commodity Act*”), or otherwise complies with the Commodity Act. The Company will not engage in any activities bearing on the Commodity Act, unless such activities are exempt from the Commodity Act or otherwise comply with the Commodity Act.

(k) *No Other Broker.* The Company will not incur any liability for any finder’s or broker’s fee or agent’s commission in connection with the execution and delivery of this Agreement, or the consummation of the transactions contemplated hereby.

(l) *Timely Securities Act and Exchange Act Reports.* During any prospectus delivery period, the Company will use its commercially reasonable efforts to file on a timely basis with the Commission such periodic and special reports as required by the Securities Act and the Exchange Act.

(m) *Internal Controls.* The Company and its Subsidiaries will maintain such controls and other procedures, including without limitation, those required by Sections 302 and 906 of the Sarbanes-Oxley Act and the applicable regulations thereunder, that are designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission's rules and forms, including without limitation, controls and procedures designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company's management, including its principal executive officer and its principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure, to ensure that material information relating to Company, including its Subsidiaries, is made known to them by others within those entities.

(n) *Permitted Free Writing Prospectus.* The Company represents and agrees that, unless it obtains the prior written consent of the Agents, and the Agents severally represent and agree that, unless they obtain the prior written consent of the Company, neither Agent has made and will not make any offer relating to the Shares that would constitute an "issuer free writing prospectus," as defined in Rule 433 under the Securities Act, or that would otherwise constitute a "free writing prospectus," as defined in Rule 405 under the Securities Act, required to be filed with the Commission. Any such free writing prospectus consented to by the Company and the Agents is hereinafter referred to as a "**Permitted Free Writing Prospectus.**" The Company represents that it has treated or agrees that it will treat each Permitted Free Writing Prospectus as an "issuer free writing prospectus," as defined in Rule 433, and has complied and will comply with the requirements of Rule 433 applicable to any Permitted Free Writing Prospectus, including timely Commission filing where required, legending and record keeping.

(o) *Representation Date and Opinions of Counsel.* Prior to the date of the first Placement Notice, and thereafter during the term of this Agreement, each time the Company (A) files an amendment to the Registration Statement or Prospectus (other than relating solely to the offering of securities other than the Shares), (B) files an annual report on Form 10-K under the Exchange Act or files its quarterly reports on Form 10-Q under the Exchange Act; and (C) files a report on Form 8-K containing amended financial statements (other than an earnings release) under the Exchange Act, (each of the dates in (A), (B) and (C) are referred to herein as a "**Representation Date**"), the Company shall cause:

(i) McCarthy Tétrault LLP, Canadian counsel for the Company, to furnish to the Agents the opinion of such counsel, dated as of such date and addressed to Agents, in form and substance reasonably satisfactory to the Agents; provided, however that the opinion of such counsel shall only be required for the first Representation Date.

(ii) Dorsey and Whitney, U.S. counsel for the Company, to furnish to the Agents the opinion of such counsel, dated as of such date and addressed to Agents, in form and substance reasonably satisfactory to the Agents.

(iii) Cooley LLP, intellectual property and patent counsel for the Company, to furnish to the Agents the opinion of such counsel, dated as of such date and addressed to Agents, in form and substance reasonably satisfactory to the Agents; provided however, the opinion of counsel shall only be required for the first Representation Date.

Notwithstanding the foregoing, the requirement to provide counsel opinions under this Section 3(o) shall be waived for any Representation Date occurring at a time at which no Placement Notice is pending, which waiver shall continue until the date the Company delivers a Placement Notice to an Agent. Notwithstanding the foregoing, if the Company subsequently decides to sell Shares following a Representation Date when the Company relied on such waiver and did not provide the Agents with opinions under this Section 3(o), then before an Agent sells any Shares pursuant to Section 2(a), the Company shall cause the opinions (including the opinion pursuant to Section 3(o) if not delivered on the date of the prior Form 10-K), comfort letter, certificates and documents that would be delivered on a Representation Date to be delivered.

(p) *Representation Date and Comfort Letter.* Prior to the date of the first Placement Notice and thereafter during the term of this Agreement, on each Representation Date to which a waiver does not apply, the Company shall cause KPMG LLP, or other independent accountants satisfactory to the Agents (the “**Accountants**”), to deliver to the Agents a letter, dated as of such date and addressed to Agents, 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 in form and substance satisfactory to the Agents of the same tenor as the first such letter received hereunder.

(q) *Representation Date and Representation Certificate.* Prior to the date of the First Placement Notice and thereafter during the term of this Agreement, on each Representation Date to which a waiver does not apply, the Company shall furnish to the Agents a certificate (the “**Representation Certificate**”), substantially in the form of Schedule 3 and dated as of such date, addressed to the Agents and signed by the chief executive officer and by the chief financial officer of the Company.

(r) *Disclosure of Shares Sold.* The Company shall disclose in its quarterly reports on Form 10-Q and in its annual report on Form 10-K the number of the Shares sold through the Agents under this Agreement, the net proceeds to the Company and the compensation paid by the Company with respect to sales of the Shares pursuant to this Agreement during the relevant quarter.

(s) *Continued Listing of Shares.* The Company shall use its commercially reasonable efforts to maintain the listing of the Common Shares on the Exchange and the TSX.

(t) *Canadian Securities Laws.* The Company will use commercially reasonable efforts to comply with all requirements imposed upon it by the Canadian securities laws as from time to time in force, so far as necessary to permit the continuance of sales of, or dealings in, the Shares as contemplated by the provisions hereof and the Prospectus.

(u) *Notice of Changes.* At any time during the term of this Agreement, as supplemented from time to time, the Company shall advise the Agents immediately after it shall have received notice or obtain knowledge thereof, of any information or fact that would alter or

affect any opinion, certificate, letter and other document provided to the Agents pursuant to this Section 3.

(v) *Maximum Amount.* The Company will not instruct the Agents to sell or otherwise attempt to sell Shares in excess of the Maximum Amount.

4. *Conditions of Agents' Obligations.* The obligations of the Agents hereunder are subject to (i) the accuracy, as of the Effective Time, each Representation Date, each Time of Sale, and each Filing Date (in each case, as if made at such date) of and compliance with all representations, warranties and agreements of the Company contained herein, (ii) the performance by the Company of its obligations hereunder and (iii) the following additional conditions:

(a) *Continuing Amendments; No Stop Order.* If filing of the Prospectus, or any amendment or supplement thereto, or any Permitted Free Writing Prospectus, is required under the Securities Act, the Company shall have filed the Prospectus (or such amendment or supplement) or such Permitted Free Writing Prospectus with the Commission in the manner and within the time period so required (without reliance on Rule 424(b)(8) or Rule 164(b)); the Registration Statement shall be effective; no stop order suspending the effectiveness of the Registration Statement or any part thereof, any Rule 462(b) Registration Statement, or any amendment thereof, nor suspending or preventing the use of the Prospectus shall have been issued; no proceedings for the issuance of such an order shall have been initiated or threatened; and any request of the Commission for additional information (to be included in the Registration Statement, the Prospectus or otherwise) shall have been complied with to the Agents' satisfaction.

(b) *Absence of Certain Events.* None of the following events shall have occurred and be continuing: (i) receipt by the Company or any of its Subsidiaries of any request for additional information from the Commission or any other federal or state governmental authority during the period of effectiveness of the Registration Statement, the response to which would require any post-effective amendments or supplements to the Registration Statement or the Prospectus; (ii) the issuance by the Commission or any other federal or state governmental authority of any stop order suspending the effectiveness of the Registration Statement or the initiation of any proceedings for that purpose; (iii) receipt by the Company of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Shares for sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose; (iv) the occurrence of any event that makes any material statement made in the Registration Statement or the Prospectus or any material document incorporated or deemed to be incorporated therein by reference untrue in any material respect or that requires the making of any changes in the Registration Statement, related Prospectus or such documents so that, in the case of the Registration Statement, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading and, that in the case of the Prospectus, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(c) *No Material Misstatement or Omission.* The Agents shall not have advised the Company that the Registration Statement or any the Prospectus, contains an untrue statement of fact which, in the Agents' opinion, is material, or omits to state a fact which, in the Agents' opinion, is material and is required to be stated therein or necessary to make the statements therein not misleading.

(d) *No Adverse Changes.* Except as contemplated in the Prospectus, subsequent to the respective dates as of which information is given in the Prospectus, neither the Company nor any of its Subsidiaries shall have incurred any material liabilities or obligations, direct or contingent, or entered into any material transactions, or declared or paid any dividends or made any distribution of any kind with respect to its capital stock; and there shall not have been any change in the capital stock (other than a change in the number of outstanding Common Shares due to the issuance of shares upon the exercise of outstanding options or warrants), or any material change in the short-term or long-term debt of the Company, or any issuance of options, warrants, convertible securities or other rights to purchase the capital stock of the Company or any of its Subsidiaries, or any development involving a prospective Material Adverse Effect (whether or not arising in the ordinary course of business), or any loss by strike, fire, flood, earthquake, accident or other calamity, whether or not covered by insurance, incurred by the Company or any Subsidiary, the effect of which, in any such case described above, in the Agents' judgment, makes it impractical or inadvisable to offer or deliver the Shares on the terms and in the manner contemplated in the Prospectus.

(e) *Compliance with Certain Obligations.* The Company shall have performed each of its obligations under Sections 3(o) – 3(q).

(f) *Opinion of Agents Counsel.* On each Representation Date to which a waiver does not apply, there shall have been furnished to the Agents the opinion and negative assurance letter of Goodwin Procter LLP, counsel for the Agents, dated as of such Representation Date and addressed to Agents, in a form reasonably satisfactory to the Agents, and such counsel shall have received such papers and information as they request to enable them to pass upon such matters; provided however, the opinion of Goodwin Procter LLP shall only be required prior to the first Placement Notice, and thereafter, only a negative assurance letter of such counsel shall be required for each subsequent Representation Date.

(g) *Representation Certificate.* On or prior to the first Placement Notice, the Agents shall have received the Representation Certificate in form and substance satisfactory to the Agents and their counsel.

(h) *No Objection by FINRA.* The Financial Industry Regulatory Authority, Inc. shall have raised no objection to the fairness and reasonableness of the underwriting terms and arrangements.

(i) *Timely Filing of Prospectus and Prospectus Supplement.* All filings with the Commission required by Rule 424 under the Securities Act to have been filed by the Settlement Date, as the case may be, shall have been made within the applicable time period prescribed for such filing by Rule 424.

(j) *Additional Documents and Certificates.* The Company shall have furnished to Agents and the Agents' counsel such additional documents, certificates and evidence as they may have reasonably requested.

All opinions, certificates, letters and other documents described in this Section 4 will be in compliance with the provisions hereof only if they are satisfactory in form and substance to Agents and the Agents' counsel. The Company will furnish Agents with such conformed copies of such opinions, certificates, letters and other documents as Agents shall reasonably request.

5. *Indemnification and Contribution.*

(a) *Company Indemnification.* The Company agrees to indemnify and hold harmless the Agents, its affiliates, directors, officers and employees, and each person, if any, who controls the either Agent within the meaning of Section 15 of the Act or Section 20 of the Exchange Act against any losses, claims, damages or liabilities, joint or several, to which either Agent may become subject, under the Securities Act or otherwise (including in settlement of any litigation), insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon, in whole or in part:

(i) an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, including the 430B Information and at any subsequent time pursuant to Rules 430A and 430B promulgated under the Securities Act, and any other information deemed to be part of the Registration Statement at the time of effectiveness, and at any subsequent time pursuant to the Securities Act or the Exchange Act, and the Prospectus, or any amendment or supplement thereto (including any documents filed under the Exchange Act and deemed to be incorporated by reference into the Prospectus), any Permitted Free Writing Prospectus, or any roadshow as defined in Rule 433(h) under the Act (a "*road show*"), or an omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading,

(ii) any inaccuracy in the representations and warranties of the Company contained herein;

(i) any investigation or proceeding by any governmental authority, commenced or threatened (whether or not the Agents are a target of or party to such investigation or proceeding);

(ii) any failure of the Company to perform its respective obligations hereunder or under law;

and will reimburse the Agents for any legal or other expenses reasonably incurred by it in connection with investigating or defending against such loss, claim, damage, liability or action; *provided, however,* that the Company shall not be liable in any such case of (i) through (iv) to the extent that any such loss, claim, damage, liability or action arises out of or is based upon an untrue statement or alleged untrue statement or omission or alleged omission made in the Registration Statement, the Prospectus, or any such amendment or supplement, in reliance upon

and in conformity with written information furnished to the Company by Agents specifically for use in the preparation thereof. “**Rule 430B Information**,” as used herein, means information with respect to the Shares and the offering thereof permitted to be omitted from the Registration Statement when it becomes effective pursuant to Rule 430B.

In addition to its other obligations under this Section 5(a), the Company agrees that, as an interim measure during the pendency of any claim, action, investigation, inquiry or other proceeding arising out of or based upon any statement or omission, or any alleged statement or omission, described in this Section 5(a), it will reimburse the Agents on a monthly basis for all reasonable legal fees or other expenses incurred in connection with investigating or defending any such claim, action, investigation, inquiry or other proceeding, notwithstanding the absence of a judicial determination as to the propriety and enforceability of the Company’s obligation to reimburse the Agents for such expenses and the possibility that such payments might later be held to have been improper by a court of competent jurisdiction. Any such interim reimbursement payments which are not made to the Agents within 30 days of a request for reimbursement shall bear interest at the WSJ Prime Rate (as published from time to time by the Wall Street Journal).

(b) *Agents Indemnification.* The Agents, severally and not jointly, will indemnify and hold harmless the Company against any losses, claims, damages or liabilities to which the Company may become subject, under the Securities Act or otherwise (including in settlement of any litigation, if such settlement is effected with the written consent of the Agents), but only insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, the Prospectus, any amendment or supplement thereto, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was made in conformity with written information furnished to the Company by the Agents specifically for use in the preparation thereof, it being understood and agreed that the only information furnished by the Agents for use in the Registration Statement or the Prospectus consists of the statements set forth in the last sentence of the second paragraph, the fourth paragraph and the fifth paragraph under the caption “Plan of Distribution” in the Prospectus, and will reimburse the Company for any legal or other expenses reasonably incurred by the Company in connection with investigating or defending against any such loss, claim, damage, liability or action.

(c) *Notice and Procedures.* Promptly after receipt by an indemnified party under subsection (a) or (b) above of notice of the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such subsection, notify the indemnifying party in writing of the commencement thereof; but the omission so to notify the indemnifying party shall not relieve the indemnifying party from any liability that it may have to any indemnified party except to the extent such indemnifying party has been materially prejudiced by such failure. In case any such action shall be brought against any indemnified party, and it shall notify the indemnifying party of the commencement thereof, the indemnifying party shall be entitled to participate in, and, to the extent that it shall wish, jointly with any other indemnifying party similarly notified, to assume the defense thereof, with counsel reasonably

satisfactory to such indemnified party, and after notice from the indemnifying party to such indemnified party of the indemnifying party's election so to assume the defense thereof, the indemnifying party shall not be liable to such indemnified party under such subsection for any legal or other expenses subsequently incurred by such indemnified party in connection with the defense thereof other than reasonable costs of investigation; *provided, however*, that if, in the sole judgment of the Agents, it is advisable for the Agents to be represented by separate counsel, the Agents shall have the right to employ a single counsel to represent the Agents, in which event the reasonable fees and expenses of such separate counsel shall be borne by the indemnifying party or parties and reimbursed to the Agents as incurred (in accordance with the provisions of the second paragraph in subsection (a) above).

The indemnifying party under this Section 5 shall not be liable for any settlement of any proceeding effected without its written consent, but if settled with such consent or if there be a final judgment for the plaintiff, the indemnifying party agrees to indemnify the indemnified party against any loss, claim, damage, liability or expense by reason of such settlement or judgment. Notwithstanding the foregoing sentence, if at any time an indemnified party shall have requested an indemnifying party to reimburse the indemnified party for fees and expenses of counsel as contemplated by this Section 5, the indemnifying party agrees that it shall be liable for any settlement of any proceeding effected without its written consent if (i) such settlement is entered into more than 30 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 the indemnified party in accordance with such request prior to the date of such settlement. No indemnifying party shall, without the prior written consent of the indemnified party, effect any settlement, compromise or consent to the entry of judgment in any pending or threatened action, suit or proceeding in respect of which any indemnified party is or could have been a party and indemnity was or could have been sought hereunder by such indemnified party, unless such settlement, compromise or consent (a) includes an unconditional release of such indemnified party from all liability on claims that are the subject matter of such action, suit or proceeding and (b) 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.

(d) *Contribution; Limitations on Liability; Non-Exclusive Remedy.* If the indemnification provided for in this Section 5 is unavailable or insufficient to hold harmless an indemnified party under subsection (a) or (b) above, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party as a result of the losses, claims, damages or liabilities referred to in subsection (a) or (b) above, (i) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Agents on the other from the offering of the Shares, or (ii) if the allocation provided by clause (i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) above but also the relative fault of the Company on the one hand and the Agents on the other in connection with the statements or omissions that resulted in such losses, claims, damages or liabilities, as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Agents 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 commissions received by the Agents (before deducting

expenses) from the sale of the Shares. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company or the Agents, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. The Company and the Agents agree that it would not be just and equitable if contributions pursuant to this subsection (d) were to be determined by pro rata allocation or by any other method of allocation which does not take account of the equitable considerations referred to in this subsection (d). The amount paid or payable by an indemnified party as a result of the losses, claims, damages or liabilities referred to in this subsection (d) shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending against any action or claim which is the subject of this subsection (d). Notwithstanding the provisions of this subsection (d), the Agents shall not be required to contribute any amount in excess of the commissions received by it under this Agreement. No person 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.

6. Representations and Agreements to Survive Delivery. All representations, warranties, and agreements of the Company herein or in certificates delivered pursuant hereto, including but not limited to the agreements of the Agents and the Company contained in Section 5 hereof, shall remain operative and in full force and effect regardless of any investigation made by or on behalf of the Agents or any controlling person thereof, or the Company or any of its officers, directors, or controlling persons, and shall survive delivery of, and payment for, the Shares to and by the Agents hereunder.

7. Termination of this Agreement.

(a) The Company shall have the right, by giving ten (10) days' written notice as hereinafter specified, to terminate the provisions of this Agreement relating to the solicitation of offers to purchase the Shares in its sole discretion at any time. Any such termination shall be without liability of any party to any other party except that (i) with respect to any pending sale, through the Agents for the Company, the obligations of the Company, including in respect of compensation of the Agents, shall remain in full force and effect notwithstanding the termination and (ii) the provisions of Section 3(g), Section 5 and Section 6 of this Agreement shall remain in full force and effect notwithstanding such termination.

(b) Either Agent shall have the right, by giving written notice as hereinafter specified, to terminate the provisions of this Agreement solely with respect to such agent relating to the solicitation of offers to purchase the Shares in its sole discretion at any time. Any such termination shall be without liability of any party to any other party except that the provisions of Section 3(g), Section 5 and Section 6 of this Agreement shall remain in full force and effect notwithstanding such termination.

(c) Unless earlier terminated pursuant to this Section 7, this Agreement shall automatically terminate upon the earlier to occur of the issuance and sale of all of the Shares through the Agents on the terms and subject to the conditions set forth herein, except that the

provisions of Section 3(g), Section 5 and Section 6 of this Agreement shall remain in full force and effect notwithstanding such termination.

(d) This Agreement shall remain in full force and effect unless terminated pursuant to Sections 7(a), (b) or (c) above or otherwise by mutual agreement of the parties; provided that any such termination by mutual agreement shall in all cases be deemed to provide that Section 3(g), Section 5 and Section 6 shall remain in full force and effect.

(e) Any termination of this Agreement shall be effective on the date specified in such notice of termination; provided that such termination shall not be effective until the close of business on the date of receipt of such notice by the Agents or the Company, as the case may be. If such termination shall occur prior to the Settlement Date for any sale of the Shares, such sale shall settle in accordance with the provisions of Section 2(a)(vii) of this Agreement.

8. Default by the Company. If the Company shall fail at any Settlement Date to sell and deliver the number of Shares which it is obligated to sell hereunder, then this Agreement shall terminate without any liability on the part of the Agents or, except as provided in Section 3(g) hereof, any non-defaulting party. No action taken pursuant to this Section shall relieve the Company from liability, if any, in respect of such default, and the Company shall (A) hold the Agents harmless against any loss, claim or damage arising from or as a result of such default by the Company and (B) pay the Agents any commission to which it would otherwise be entitled absent such default.

9. Notices. Except as otherwise provided herein, all communications under this Agreement shall be in writing and, if to the Agents, shall be delivered via overnight delivery services to (i) Piper Jaffray & Co., U.S. Bancorp Center, 800 Nicollet Mall, Minneapolis, Minnesota 55402, Attention: Equity Capital Markets, with a copy to Piper Jaffray General Counsel at 800 Nicollet Mall, Minneapolis, MN 55402 and LegalCapMarkets@pjc.com; and Canaccord Genuity LLC, 535 Madison Avenue 2nd Floor, New York, New York 10022, Attention: General Counsel; and (ii) the Company at 251 Consumers Road, Suite 1105, Toronto A6 M2J 4R3, Attention: Chief Financial Officer; or in each case to such other address as the person to be notified may have requested in writing. Any 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.

10. Persons Entitled to Benefit of Agreement. This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns and the controlling persons, officers and directors referred to in Section **Error! Reference source not found.** Nothing in this Agreement is intended or shall be construed to give to any other person, firm or corporation any legal or equitable remedy or claim under or in respect of this Agreement or any provision herein contained. The term “successors and assigns” as herein used shall not include any purchaser, as such purchaser, of any of the Shares from the Agents.

11. Absence of Fiduciary Relationship. The Company, having been advised by counsel, acknowledges and agrees that: (a) the Agents have been retained solely to act as a sales agent in connection with the sale of the Shares and that no fiduciary, advisory or agency

relationship between the Company (including any of the Company's affiliates (including directors), equity holders, creditors, employees or agents, hereafter, "**Company Representatives**"), on the one hand, and the Agents on the other, has been created or will be created in respect of any of the transactions contemplated by this Agreement, irrespective of whether the Agents have advised or is advising the Company on other matters and irrespective of the use of the defined term "Agent;" (b) neither of the Agents nor any of their respective affiliates (including directors), equity holders, creditors, employees or agents, hereafter, "**Agent Representatives**") shall have any duty or obligation to the Company or any Company Representative except as set forth in this Agreement; (b) the price and other terms of any Placement executed pursuant to this Agreement, as well as the terms of this Agreement, are deemed acceptable to the Company and its counsel, following discussions and arms-length negotiations with the Agents; (c) the Company is capable of evaluating and understanding, and in fact has evaluated, understands and accepts the terms, risks and conditions of any Placement to be executed pursuant to this Agreement, and any other transactions contemplated by this Agreement; (c) the Company has been advised that the Agents and the Agent Representatives are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that the Agents and the Agent Representatives have no obligation to disclose any such interests and transactions to the Company by virtue of any fiduciary, advisory or agency relationship, or otherwise; (d) the Company has been advised that the Agents are acting, in respect of any Placement and the transactions contemplated by this Agreement, solely for the benefit of the Agents, and not on behalf of the Company; and (e) the Company and the Company Representatives waive, to the fullest extent permitted by law, any claims that they may have against the Agents or any of the Agent Representatives for breach of fiduciary duty or alleged breach of fiduciary duty in respect of any Placement or any of the transactions contemplated by this Agreement and agree that the Agents and the Agent Representatives shall have no liability (whether direct or indirect, in contract, tort or otherwise) to the Company or any of the Company Representatives in respect of any person asserting any claim of breach of any fiduciary duty on behalf of or in right of the Company or any of the Company Representatives.

12. Governing Law and Waiver of Jury Trial. This Agreement shall be governed by and construed in accordance with the laws of the State of New York. THE COMPANY (ON ITS OWN BEHALF AND ON BEHALF OF ITS STOCKHOLDERS AND AFFILIATES) 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.

13. Submission to Jurisdiction, Etc. Each party hereby submits to the exclusive jurisdiction of the U.S. federal and New York state courts sitting in the Borough of Manhattan, City of New York, in any suit or proceeding arising out of or relating to this Agreement or the transactions contemplated hereby. The parties hereby irrevocably and unconditionally waive any objection to the laying of venue of any lawsuit, action or other proceeding in such courts, and hereby further irrevocably and unconditionally waive and agree not to plead or claim in any such court that any such lawsuit, action or other proceeding brought in any such court has been brought in an inconvenient forum. The Company irrevocably designates and appoints Aptose Biosciences U.S. Inc. located at Unit 120, 12770 High Bluff Drive, San Diego, California 92130,

as its authorized agent in the United States upon which process may be served in any such suit or proceeding, and agrees that service of process upon such authorized agent be certified or registered mail, or by personal delivery by Federal Express, to such authorized agent shall be deemed in every respect effective service of process upon the Company in any such suit or proceeding. The Company further agrees to take any and all actions as may be necessary to maintain such designation and appointment of such agent in full force and effect for a period of five years from the date of this Agreement.

14. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument.

15. Construction. The section and exhibit headings herein are for convenience only and shall not affect the construction hereof. 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

[Signature Page Follows]

Please sign and return to the Company the enclosed duplicates of this letter whereupon this letter will become a binding agreement between the Company and the Agents in accordance with its terms.

Very truly yours,

APTOSE BIOSCIENCES INC.

By: (s) Greg Chow
Name: Greg Chow
Title: Senior Vice President, CFO

Confirmed as of the date first above mentioned.

PIPER JAFFRAY & CO.

By: (s) Neil Riley
Name: Neil Riley
Title: Managing Director

CANACCORD GENUITY LLC

By: (s) Jennifer Pardi
Name: Jennifer Pardi
Title: Sr. Managing Director

SCHEDULE 1

FORM OF PLACEMENT NOTICE

No Facsimile and No Voicemail

From: Aptose Biosciences Inc.

To:
Attention:

Date: [●], 20[●]

Subject: Equity Distribution Agreement – Placement Notice

Gentlemen:

Pursuant to the terms and subject to the conditions contained in the Equity Distribution Agreement between Aptose Biosciences Inc. (“**Company**”), and Piper Jaffray & Co. and Canaccord Genuity LLC (each an “**Agent**”) dated May [●], 2019 [(the “**Agreement**”), the Company hereby requests that Agent sell up to [●] shares of the Company’s common shares, no par value per share, at a minimum market price of \$[●] per share. Sales should begin on the date of this Placement Notice and shall continue until [●] / [all shares are sold].

SCHEDULE 2
NOTICE PARTIES

Aptose Biosciences Inc.

William G. Rice
wrice@aptose.com

Gregory K. Chow
gchow@aptose.com

Piper Jaffray & Co.

Neil A. Riley
Neil.A.Riley@pjc.com

Connor N. Anderson
Connor.N.Anderson@pjc.com

Tom Wright
Thomas.E.Wright@pjc.com

Jay A. Hershey
Jay.A.Hershey@pjc.com

Canaccord Genuity LLC

Brian O'Connor
bonnor@cgr.com

Tara Hartigan
thartigan@cgf.com

Michael Wright
mmwright@cgf.com

SCHEDULE 3

FORM OF REPRESENTATION CERTIFICATE PURSUANT TO SECTION 3(Q) OF THE AGREEMENT

Piper Jaffray & Co.
800 Nicollet Mall
Minneapolis, MN 55402

Canaccord Genuity LLC
535 Madison Avenue, 2nd Floor
New York, New York 10022

Sir:

The undersigned, the duly qualified and elected [•], of Aptose Biosciences Inc., a company incorporated under the Canada Business Corporations Act (the “**Company**”), does hereby certify in such capacity and on behalf of the Company, pursuant to Section 3(q) of the Equity Distribution Agreement, dated May [●], 2019 (the “**Equity Distribution Agreement**”), among the Company and Piper Jaffray & Co. and Canaccord Genuity LLC, that to the best of the knowledge of the undersigned:

- (i) The representations and warranties of the Company in this Agreement are true and correct, in all material respects, as if made at and as of the date of the certificate, and the Company has complied with all the agreements and satisfied all the conditions on its part to be performed or satisfied at or prior to the date of the certificate;
- (ii) No stop order or other order suspending the effectiveness of the Registration Statement or any part thereof or any amendment thereof or the qualification of the Shares for Registration Statement, nor suspending or preventing the use of the base prospectus, the Prospectus or any Permitted Free Writing Prospectus, has been issued, and no proceeding for that purpose has been instituted or, to the best of the Company’s knowledge, is contemplated by the Commission or any state or regulatory body;
- (iii) The Shares have been duly and validly authorized by the Company and that all corporate action required to be taken for the authorization, issuance and sale of the Shares has been validly and sufficiently taken;
- (iv) The signers of this certificate have carefully examined the Registration Statement, the base prospectus, the Prospectus and any Permitted Free Writing Prospectus, and any amendments thereof or supplements thereto (including any documents filed under the Exchange Act and deemed to be incorporated by reference into the base prospectus, the Prospectus and any Permitted Free Writing Prospectus),

(A) each part of the Registration Statement and the Prospectus, and any amendments thereof or supplements thereto (including any documents filed under the Exchange Act and deemed to be incorporated by reference into the Prospectus) contain, and contained when such part of the Registration Statement (or such amendment) became effective, all statements and information required to be included therein, each part of the Registration Statement, or any amendment thereof, does not contain, and did not contain, when such part of the Registration Statement (or such amendment) became effective, any untrue statement of a material fact or omit to state, and did not omit to state when such part of the Registration Statement (or such amendment) became effective, any material fact required to be stated therein or necessary to make the statements therein not misleading, and the Prospectus, as amended or supplemented, does not include and did not include as of its date, or the time of first use within the meaning of the Securities Act Regulations, any untrue statement of a material fact or omit to state and did not omit to state as of its date, or the time of first use within the meaning of the Securities Act Regulations, a material fact necessary to make the statements therein, in light of the circumstances under which they were made, not misleading,

(B) at no time during the period that begins on the earlier of the date of such base prospectus, Prospectus, or Permitted Free Writing Prospectus and the date such base prospectus, Prospectus, or Permitted Free Writing Prospectus was filed with the Commission and ends on the date of this certificate did such base prospectus, Prospectus, or Permitted Free Writing Prospectus, as then amended or supplemented, include an untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading,

(C) since the date of the Equity Distribution Agreement, there has occurred no event required to be set forth in an amended or supplemented prospectus which has not been so set forth, and there has been no document required to be filed under the Exchange Act that upon such filing would be deemed to be incorporated by reference into the base prospectus, the Prospectus or any Permitted Free Writing Prospectus that has not been so filed,

(D) except as stated in the Prospectus or any Permitted Free Writing Prospectus, the Company has not incurred any material liabilities or obligations, direct or contingent, or entered into any material transactions, not in the ordinary course of business, or declared or paid any dividends or made any distribution of any kind with respect to its capital stock, and except as disclosed in the base prospectus, the Prospectus, and any Permitted Free Writing Prospectus, there has not been any change in the capital stock (other than a change in the number of outstanding Common Shares due to sales of Shares pursuant to the Equity Distribution Agreement and the issuance of Common Shares upon the exercise of equity awards or warrants), or any material change in the short term or long term debt, or any Material Adverse Effect or any development involving a prospective Material Adverse Effect (whether or not arising in the ordinary course of business), or any loss by strike, fire, flood, earthquake, accident or other calamity, whether or not covered by insurance, incurred by the Company, and

(E) except as stated in the base prospectus, the Prospectus, and any Permitted Free Writing Prospectus, there is not pending, or, to the knowledge of the Company, threatened or contemplated, any action, suit or proceeding to which the Company is a party before or by any

court or governmental agency, authority or body, or any arbitrator, which might result in a Material Adverse Effect.

Capitalized terms used herein without definition shall have the meanings given to such terms in the Equity Distribution Agreement.

APTOSE BIOSCIENCES INC.

By: _____

Name: _____

Title: _____

SCHEDULE 4

SUBSIDIARIES

Name

State/Jurisdiction of Incorporation

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

Delaware
Ontario, Canada

EXHIBIT A

FORM OF COMPANY CANADIAN COUNSEL OPINION

EXHIBIT B

FORM OF COMPANY U.S. COUNSEL OPINION

EXHIBIT C

FORM OF COMPANY IP COUNSEL OPINION