UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 20-F

☐ **Registration Statement Pursuant to Section 12(b) or 12(g) of The Securities Exchange Act of 1934**

OR

X Annual Report Pursuant to Section 13 or 15(d) of The Securities Exchange Act of 1934 for the fiscal year ended December 31, 2021

OR

☐ **Transition Report Pursuant to Section 13 or 15(d) of The Securities Exchange Act of 1934**

OR

☐ **Shell Company Report Pursuant to Section 13 or 15(d) of The Securities Exchange Act of 1934**

Commission file number 001-38064

AETERNA ZENTARIS INC.
(Exact Name of Registrant as Specified in its Charter)

Not Applicable
(Translation of Registrant's Name into English)

Canada
(Jurisdiction of Incorporation)

c/o Norton Rose Fulbright Canada, LLP, 222 Bay Street, Suite 3000, PO Box 53, Toronto ON M5K 1E7
(Address of Principal Executive Offices)

Klaus Paulini
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Weismüllerstr. 50
Frankfurt am Main, Germany
D-60314
(Name, Telephone, E-mail and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common Shares	NASDAQ Capital Market Toronto Stock Exchange

Securities registered or to be registered pursuant to Section 12(g) of the Act: **NONE**

Securities for which there is a reporting obligation pursuant to Section 15(d) of the ACT: **NONE**

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as at the close of the period covered by the annual report: 121,397,007 Common Shares as at December 31, 2021.

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No : X

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes ☐ No X

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes X No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes X No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company. See definitions of "accelerated filer," "large accelerated filer," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ☐ Accelerated filer ☐ Non-accelerated filer X Emerging growth company ☐

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards† provided pursuant to Section 13(a) of the Exchange Act.

† The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

US GAAP ☐ International Financial Reporting Standards as issued by the Other ☐

International Accounting Standards Board X

If "other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow. Item 17 ☐ Item 18 ☐

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No X

Basis of Presentation

General

Except where the context otherwise requires, all references in this Annual Report on Form 20-F to the "Company", "Aeterna Zentaris", "Aeterna", "we", "us", "our" or similar words or phrases are to Aeterna Zentaris Inc. and its subsidiaries, taken together. In this Annual Report on Form 20-F, references to "$" and "U.S.$" are to United States (" **U.S.**") dollars, references to "CAN$" are to Canadian dollars and references to "EUR" and "€" are to euros, and references to "£" are to British Pounds. Unless otherwise indicated, all information contained in this Annual Report on Form 20-F are presented as of December 31, 2021.

This Annual Report on Form 20-F also contains certain information regarding products or product candidates that may potentially compete with our products and product candidates, and such information has been primarily derived from information made publicly available by the companies developing such potentially competing products and product candidates and has not been independently verified by Aeterna Zentaris.

Special Note on Forward-Looking Statements

This Annual Report on Form 20-F and the documents incorporated herein by reference contain "forward-looking statements" made pursuant to the safe-harbor provision of the U.S. Private Securities Litigation Reform Act of 1995, which reflect our current expectations regarding future events. All statements other than statements of historical facts included in or incorporated by reference into this Annual Report on Form 20-F, under the caption "Key Information—Risk Factors" filed with the relevant Canadian securities regulatory authorities in lieu of an annual information form and with the U.S. Securities and Exchange Commission ("**SEC**") that address activities, events or developments that we expect, believe or anticipate will or may occur in the future are forward-looking statements. Our forward-looking statements may relate to the Company's future outlook and anticipated events or results, and may include statements regarding the financial position, business strategy, growth strategy, budgets, operations, financial results, taxes, dividends, plans and objectives of the Company. Particularly, statements regarding future results, performance, achievements, prospects or opportunities of the Company are forward-looking statements. In some cases, forward-looking statements can be identified by the use of forward-looking terminology such as "plans", "expects" or "does not expect", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate" or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might", "will" or "will be taken", "occur" or "be achieved".or the negative of these words or other words and terms of similar meaning.

Certain forward-looking statements contained herein about prospective results of operations, financial position or cash flows may constitute a financial outlook. Such statements are based on assumptions about future events, are given as at the date hereof and are based on economic conditions, proposed courses of action and management's assessment of the relevant information currently available. Management of the Company has approved the financial outlook as of the date hereof. Readers are cautioned that such financial outlook information contained herein should not be used for purposes other than for which it is disclosed herein.

Forward-looking statements are based on the opinions and estimates of the Company as of the date of this Annual Report, and they are subject to known and unknown risks, uncertainties, assumptions and other factors that may cause the actual results, level of activity, performance or achievements to be materially different from those expressed or implied by such forward-looking statements, including but not limited to the factors described in "*Risk Factors*" and those relating to: Aeterna's expectations with respect to the DETECT-trial (including regarding the enrollment of subjects in the DETECT-trial, the application of the macimorelin growth hormone stimulation tests and the completion of the DETECT-trial); Aeterna's expectations regarding conducting pre-clinical research to identify and characterize an AIM Biologicals-based development candidate for the treatment of NMOSD as well as Parkinson's disease, and developing a manufacturing process for selected candidates; Aeterna's expectations regarding conducting assessments in relevant Parkinson's disease models; The University of Queensland undertaking a subsequent investigator initiated clinical trial evaluating macimorelin as a potential therapeutic for the treatment of ALS and Aeterna formulating a pre-clinical development plan for same; the commencement of Aeterna's formal pre-clinical development of AEZS-150 in preparation for a potential IND filing for conducting the first in-human clinical study of AEZS-150; Aeterna's plans to perform challenge experiments, select a development candidate, start clinical development and establish a manufacturing process for the orally active COVID-19 (SARS-CoV-2) and *Chlamydia* live-attenuated bacterial vaccine.

Forward-looking statements involve known and unknown risks and uncertainties, and other factors which may cause the actual results, performance or achievements stated herein to be materially different from any future results, performance or achievements expressed or implied by the forward-looking information. Such risks and uncertainties include, among others, our reliance on the success of the pediatric clinical trial in the European Union and U.S. for Macrilen™ (macimorelin); the commencement of the DETECT-trial may be delayed or we may not obtain regulatory approval to initiate that study; we may be unable to enroll the expected number of subjects in the DETECT-trial and the result of the DETECT-trial may not support receipt of regulatory approval in CGHD; the coronavirus vaccine platform technology (and any vaccine candidates using that technology) licensed from the University of Wuerzburg has never been tested in humans and so further pre-clinical or clinical studies of that technology and any vaccine developed using that technology may not be effective as a vaccine against COVID-19 (SARS-CoV-2) or any other coronavirus disease; the timeline to develop a vaccine may be longer than expected; such technology or vaccines may not be capable of being used orally, may not have the same characteristics as vaccines previously approved using the Salmonella Typhi Ty21a carrier strain; results from ongoing or planned pre-clinical studies of macimorelin by the University of Queensland or for our other products under development may not be successful or may not support advancing the product to human clinical trials; our ability to raise capital and obtain financing to continue our currently planned operations; our now heavy dependence on the success of Macrilen™ (macimorelin) and related out-licensing arrangements and the continued availability of funds and resources to successfully commercialize the product, including our heavy reliance on the success of the license agreement and the amended license agreement (collectively the Novo Amended License Agreement); the global instability due to the global pandemic of COVID-19, and its unknown potential effect on our planned operations; our ability to enter into out-licensing, development, manufacturing, marketing and distribution agreements with other pharmaceutical companies and keep such agreements in effect; and our ability to continue to list our common shares on the NASDAQ Capital Market ("**NASDAQ**") or the Toronto Stock Exchange ("**TSX**").

These risk factors are not intended to represent a complete list of the risk factors that could affect the Company. These factors and assumptions, however, should be considered carefully. More detailed information about these and other factors is included under "Risk Factors" in this Annual Report on Form 20-F and in other documents incorporated herein by reference.

However, we advise you to review any further disclosures we make on related subjects in our reports on Form 6-K filed or furnished to the SEC and in our other public disclosure

filed under our profile on SEDAR at www.sedar.com.

Although the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking statements, there may be other factors that cause results not to be as anticipated, estimated or intended. Many of these factors are beyond our control. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements, particularly in light of the ongoing and developing COVID-19 pandemic and its impact on the global economy and its uncertain impact on the Company's business. Accordingly, readers should not place undue reliance on forward-looking statements. The Company does not undertake to update any forward-looking statements contained herein, except as required by applicable securities laws. New factors emerge from time to time, and it is not possible for the Company to predict all of these factors, or to assess in advance the impact of each such factor on the Company's business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statement.

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GENERAL INFORMATION

PART I

Item 1. Identity of Directors, Senior Management and Advisers

A. Directors and senior management

Not applicable.

B. Advisers

Not applicable.

C. Auditors

Not applicable.

Item 2. Offer Statistics and Expected Timetable

A. Offer statistics

Not applicable.

B. Method and expected timetable

Not applicable.

Item 3. Key Information

A. (Reserved)

B. Capitalization and indebtedness

Not applicable.

C. Reasons for the offer and use of proceeds

Not applicable.

D. Risk factors

An investment in our securities involves a high degree of risk. You should carefully consider the risks described below, together with all of the other information included in this Annual Report, before making an investment decision. If any of the following risks actually occur, our business, prospects, financial condition or results of operations could be materially, adversely affected by any of these risks. Additional risks not presently known to us or that we currently deem immaterial may also impair our business operations. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment. This Annual Report also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks mentioned below. Forward-looking statements included in this Annual Report are based on information available to us on the date hereof, and all forward-looking statements in the documents incorporated by reference are based on information available to us as of the date of each such document. We disavow and are under no obligation to update or alter such forward-looking statements whether as a result of new information, future events or otherwise, other than as required by applicable securities legislation.

Risks Relating to Us and Our Business

Our Common Shares may be delisted from the NASDAQ or the TSX, which could affect their market price and liquidity. If our Common Shares were to be delisted, investors

may have difficulty in disposing their Common Shares.

Our Common Shares are currently listed on both the NASDAQ and the TSX under the symbol "AEZS". We must meet continuing listing requirements to maintain the listing of our Common Shares on the NASDAQ and the TSX. For continued listing, the NASDAQ requires, among other things, that listed securities maintain a minimum closing bid price of not less than $1.00 per share. On July 28, 2021, we received a letter from the Listing Qualifications Staff of the NASDAQ (the "**Staff**"), notifying us that for the last 30 consecutive business days prior to the date of the letter, the closing bid price of our common shares was below $1.00 per share and, therefore, we did not meet the requirement for continued listing on Nasdaq as required by Nasdaq Listing Rule 5550(a)(2) (the "**Bid Price Rule**"). In accordance with Nasdaq Listing Rule 5810(c)(3)(A), we were granted a grace period of 180 calendar days, through January 24, 2022, and on January 26, 2022, we were granted a subsequent 180 calendar day extension, through July 26, 2022, to evidence compliance with the Bid Price Rule. If at any time before July 26, 2022, the bid price for the Company's common shares closes at or above US$1.00 per share for a minimum of 10 consecutive business days (and generally not more than 20 consecutive business days, in NASDAQ's discretion), it is expected that NASDAQ would provide formal notice that the Company has regained compliance with the bid price requirement. The Company may choose to implement a reverse stock split before July 26, 2022 in order to regain compliance. In the event the Company does not evidence compliance with the minimum bid price requirement during the 180-day grace period, it is expected that Nasdaq would notify the Company that its shares are subject to delisting. At such time, the Company may appeal such determination to a Nasdaq Hearings Panel (the "Panel") and it is expected that the Company's securities would continue to be listed and available to trade on Nasdaq at least pending the completion of the appeal process. There can be no assurance that any such appeal would be successful or that the Company would be able to evidence compliance with the terms of any extension that may be granted by the Panel. The NASDAQ notification letter does not impact the Company's compliance or listing status on the Toronto Stock Exchange.

On July 27, 2020, we received a letter from the Staff notifying us that for the last thirty (30) consecutive business days prior to the date of the letter, the closing bid price of our Common Shares was below $1.00 per share and, therefore, we did not meet the requirement for continued listing on the NASDAQ as required the Bid Price Rule. In accordance with NASDAQ Listing Rule 5810(c)(3)(A), we were granted a grace period of one hundred and eighty (180) calendar days, through January 25, 2021, and on January 26, 2021, we were granted a subsequent 180 calendar day extension, through July 26, 2021, to evidence compliance with the Bid Price Rule. On March 22, 2021, the Company received confirmation that it had regained compliance with the Bid Price Rule and NASDAQ advised us that this matter was then closed.

In addition to the minimum bid price requirement, the continued listing rules of the NASDAQ require us to meet at least one of the following listing standards: (i) stockholders' equity of at least $2.5 million, (ii) market value of listed securities (calculated by multiplying the daily closing bid price of our securities by our total outstanding securities) of at least $35 million or (iii) net income from continuing operations (in the latest fiscal year or in two of the last three fiscal years) of at least $500,000.

It is possible that we may be a passive foreign investment company, which could result in adverse tax consequences to U.S. investors.

Adverse U.S. federal income tax rules apply to "U.S. Holders" who directly or indirectly hold stock of a passive foreign investment company ("**PFIC**"). We would be classified as a PFIC for U.S. federal income tax purposes for a taxable year if (i) at least 75% of our gross income is "passive income" or (ii) at least 50% of the average value of our assets, including goodwill (based on annual quarterly average), is attributable to assets which produce passive income or are held for the production of passive income.

The determination of whether we are, or will be, a PFIC for a taxable year depends, in part, on the application of complex U.S. federal income tax rules, which are subject to various interpretations. Although the matter is not free from doubt, we believe that we were not a PFIC during our 2020 taxable year and will not likely be a PFIC during our 2021 taxable year. Because PFIC status is based on our income, assets and activities for the entire taxable year, and our market capitalization, it is not possible to determine whether we will be characterized as a PFIC for the 2021 taxable year until after the close of the taxable year. The tests for determining PFIC status are subject to a number of uncertainties. These tests are applied annually, and it is difficult to accurately predict future income, assets and activities relevant to this determination. In addition, because the market price of our Common Shares is likely to fluctuate, the market price may affect the determination of whether we will be considered a PFIC. There can be no assurance that we will not be considered a PFIC for any taxable year (including our 2021 taxable year).

If we are a PFIC for any taxable year during which a U.S. Holder holds Common Shares, we generally would continue to be treated as a PFIC with respect to that U.S. Holder for all succeeding years during which the U.S. Holder holds such Common Shares, even if we ceased to meet the threshold requirements for PFIC status. Accordingly, no assurance can be given that we will not constitute a PFIC in the current (or any future) tax year or that the Internal Revenue Service (the "**IRS**") will not challenge any determination made by us concerning our PFIC status. PFIC characterization could result in adverse U.S. federal income tax consequences to U.S. Holders. In particular, absent certain elections, a U.S. Holder would generally be subject to U.S. federal income tax at ordinary income tax rates, plus a possible interest charge, in respect of a gain derived from a disposition of our Common Shares, as well as certain distributions by us. If we are treated as a PFIC for any taxable year, a U.S. Holder may be able to make an election to "mark-to-market" Common Shares each taxable year and recognize ordinary income pursuant to such election based upon increases in the value of the Common Shares.

In addition, U.S. Holders may mitigate the adverse tax consequences of the PFIC rules by making a "qualified electing fund" ("**QEF**") election; however, there can be no assurance that we will satisfy the record keeping requirements applicable to a QEF or that we will provide the information regarding our income that would be necessary for a U.S. Holder to make a QEF election.

If the Company is a PFIC, U.S. Holders will generally be required to file an annual information return with the IRS (on IRS Form 8621 *Information Return by a Shareholder of a Passive Foreign Investment Company or Qualified Electing Fund*, which PFIC shareholders will be required to file with their U.S. federal income tax or information returns) relating to their ownership of Common Shares. This filing requirement is in addition to any pre-existing reporting requirements that apply to a U.S. Holder's interest in a PFIC (which this requirement does not affect).

Our net operating losses may be limited for U.S. federal income tax purposes under Section 382 of the Internal Revenue Code.

If a corporation with net operating losses ("**NOLs**") undergoes an "ownership change" within the meaning of Section 382 of the United States Internal Revenue Code of 1986, as amended (the "**Code**"), then such corporation's use of such "pre-change" NOLs to offset income incurred following such ownership change may be limited. Such limitation also may apply to certain losses or deductions that are "built-in" (i.e., attributable to periods prior to the ownership change, but not yet taken into account for tax purposes) as of the date of the ownership change that are subsequently recognized. An ownership change generally occurs when there is either (i) a shift in ownership involving one or more "5% shareholders," or (ii) an "equity structure shift" and, as a result, the percentage of stock of the corporation owned by one or more 5% shareholders (based on value) has increased by more than 50 percentage points over the lowest percentage of stock of the corporation owned by such shareholders during the "testing period" (generally the 3 years preceding the testing date). In general, if such change occurs, the corporation's ability to utilize its NOL carry-forwards and certain other tax attributes would be subject to an annual limitation, as described below. The unused portion of any such NOL carry-forwards or tax attributes each year is carried forward, subject to the same limitation in future years. The impact of an ownership change on state NOL carry forwards may vary from state to state. Due to previous ownership changes, or if we undergo an ownership change in connection with or after this offering, our ability to use our NOLs could be limited by Section 382 of the Code. Future changes to our stock ownership, some of which are outside of our control, could result in an ownership change under Section 382 of the Code. Recent legislation added several limitations to the ability to claim deductions for NOLs in future years, particularly for tax years beginning after December 31, 2020, including a deduction limit equal to 80% of taxable income and a restriction on NOL carryback deductions. For these reasons, we may not be able to use a material portion of the NOLs, even if we attain profitability.

Prevention of Transactions Involving a Change of Control of the Company

Effective May 8, 2019, the shareholders re-approved our Rights Plan that provides the Board and the Company's shareholders with additional time to assess any unsolicited take-over bid for the Company and, where appropriate, to pursue other alternatives for maximizing shareholder value. Under the Rights Plan, one right has been issued for each currently issued Common Share, and one right will be issued with each additional Common Share that may be issued from time to time. The Rights Plan may have a significant anti-takeover effect. The Rights Plan has the potential to significantly dilute the ownership interests of an acquiror of our shares, and therefore may have the effect of delaying, deterring or preventing a change in control of the Company.

The economic effects of a pandemic, epidemic or outbreak of an infectious disease could adversely affect our operations or the market price of our Common Shares.

Public health crises such as pandemics, epidemics or similar outbreaks could adversely impact our operations or the market price of our Common Shares. Specifically, the global pandemic declared regarding the novel strain of coronavirus ("**COVID-19**") in 2020 and 2021 that adversely impacted global markets is abating, but currently ongoing. The extent to which the COVID-19 impacts our operations or market price of our Common Shares will depend on future developments, which are highly uncertain and cannot be predicted with confidence, either internationally or within the U.S., Canada or Germany, including the duration of the outbreak, new information that may emerge concerning the severity of the COVID-19, and the actions to contain the virus or treat its impact, among others. COVID-19, however, has already resulted in significant volatility in the world and the national trading markets.

The spread of COVID-19 may impact our operations, including the potential interruption of our clinical trial activities and our supply chain. For example, the rise in the Omicron variant in the COVID-19 pandemic has caused delays in site initiation and patient enrollment in our Phase 3 DETECT clinical trial for diagnostic use in childhood-onset growth hormone deficiency. As well, sales activities for Macrilen™ in the US by Novo Nordisk may be impacted due to delays of diagnostic activities on adult growth hormone deficiency ("AGHD") in the U.S. In addition, the COVID-19 pandemic may also cause some patients to be unwilling to enroll in our trials or be unable to comply with clinical trial protocols if quarantines impede patient movement or interrupt healthcare services, which would delay our ability to conduct clinical trials or release clinical trial results on a timely basis and could delay our ability to obtain regulatory approval and commercialize our product candidates. The spread of an infectious disease, including COVID-19, may also result in the inability of our suppliers to deliver components or raw materials on a timely basis or at all. In addition, hospitals may reduce staffing and reduce or postpone certain treatments in response to the spread of an infectious disease. Such events may result in a period of business disruption and, in reduced operations, doctors or medical providers may be unwilling to participate in our clinical trials, any of which could materially affect our business, financial condition or results of operations. The significant spread of COVID-19 within the U.S., Canada or Germany resulted in a widespread health crisis and has had adverse effect on the national economies generally, the markets that we serve, our operations and the market price of our Common Shares.

Investments in biopharmaceutical companies are generally considered to be speculative in nature.

The prospects for companies operating in the biopharmaceutical industry are uncertain, given the very nature of the industry, in which companies often experience lengthy development time, extensive capital requirements, rapid technological developments and a high degree of competition based primarily on scientific and technological factors. These factors include the availability to obtain patent and other protection for technology and products, the ability to commercialize technological developments and the ability to obtain government approval for testing, manufacturing and marketing. Accordingly, investments in biopharmaceutical companies should be considered to be speculative assets.
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If we are unable to successfully commercialize or out-license Macrilen™ (macimorelin), or if we experience significant delays in doing so, our business would be materially harmed, and the future and viability of the Company could be imperiled.

Our lead product, Macrilen™ (macimorelin), is the first and only U.S. Food and Drug Administration and European Commission approved oral test indicated for the diagnosis of patients with AGHD and we currently do not have any other products. We are focused on opportunistically utilizing our network with universities in Europe and the U.S., which we believe will provide vital access to innovative development candidates in different indications, with a focus on rare or orphan indications and potential for pediatric use. To date, we have signed agreements to establish this growing pipeline across a number of indications, including neuromyelitis optica spectrum disorder ("NMOSD") and Parkinson's disease ("PD"), primary hypoparathyroidism and amyotrophic lateral sclerosis ("ALS", or Lou Gehrig's disease). Additionally, we are developing oral prophylactic bacterial vaccines against each form of SARS-CoV-2, the virus that causes COVID-19, and chlamydia.

We are a party to license agreements to carry out development, manufacturing, registration and commercialization of Macrilen™ (macimorelin) in the U.S., Canada, the European Economic Area, the United Kingdom, and the Republic of Korea. We are party to a distribution agreement for the commercialization of Macrilen™ (macimorelin) in Israel and the Palestinian Authority, Turkey and some non-European Union Balkan countries. We continue to explore licensing and distribution opportunities worldwide.

The commercial success of Macrilen™ (macimorelin) depends on several factors, including, but not limited to, the following:

- receipt of approvals from foreign regulatory authorities;
- successfully negotiating pricing and reimbursement in key markets in the EU for Macrilen™ (macimorelin);
- successfully contracting with qualified third-party suppliers to manufacture Macrilen™ (macimorelin);
- developing appropriate distribution and marketing infrastructure and arrangements for our product;
- launching and growing commercial sales of the product;
- out-licensing Macrilen™ (macimorelin) to third parties; and
- acceptance of the product in the medical community, among patients and with third-party payers.

If we are unable to successfully achieve any of these factors, our business, financial condition and results of operations may be materially, adversely affected.

Our revenues and expenses may fluctuate significantly, and any failure to meet financial expectations may disappoint securities analysts or investors and result in a decline in the price or the value of our Common Shares or other securities.

We have a history of operating losses. Our revenues and expenses have fluctuated in the past and may continue to do so in the future. These fluctuations could cause our share price of Common Shares or the value of our other securities to decline. Some of the factors that could cause our revenues and expenses to fluctuate include, but are not limited to, the following:

- the timing and willingness of any current or future collaborators to invest the resources necessary to commercialize Macrilen™ (macimorelin);
- not obtaining necessary regulatory approvals from the United States Food & Drug Administration ("FDA"), the European Medicines Agency ("EMA"), the European Commission ("EC") or other agencies that may delay or prevent us from obtaining approval of a pediatric indication for Macrilen™ (macimorelin), which may affect the share price of our Common Shares;

- the timing of regulatory submissions and approvals;
- the nature and timing of licensing fee revenues;
- the outcome of future litigation;
- foreign currency fluctuations;
- the effects of the recent outbreak of COVID-19, including the effects of intensified efforts to contain the spread of the virus, which has, to date, included, among other things, quarantines and travel restrictions;
- the timing of the achievement and the receipt of milestone payments from current or future licensing partners; and
- failure to enter into new or the expiration or termination of current agreements with suppliers who manufacture Macrilen™ (macimorelin).

Due to fluctuations in our revenues and expenses, we believe that period-to-period comparisons of our results of operations are not necessarily indicative of our future performance. It is possible that in some future periods, our revenues and expenses will be above or below the expectations of securities analysts or investors. In this case, the share price of our Common Shares and the value of our other securities could fluctuate significantly or decline.

If we are unable to successfully complete the pediatric clinical trial program for Macrilen™ (macimorelin), or if such clinical trial takes longer to complete than we project, our ability to execute any related business strategy will be adversely affected.

If we experience delays in identifying and contracting with sites and/or in-patient enrollment in our pediatric clinical trial program for Macrilen™ (macimorelin), we may incur additional costs and delays in our development programs, and may not be able to complete our clinical trials on a cost-effective or timely basis. In addition, conducting multi-national studies adds another level of complexity and risk as we are subject to events affecting countries other than the U.S. and Canada. Moreover, negative or inconclusive results from the clinical trials we conduct or adverse medical events could cause us to have to repeat or terminate the clinical trials. Furthermore, children have different metabolic issues than adults. Accordingly, we may not be able to complete the pediatric clinical trial within an acceptable time-frame, if at all. If we or our Contract Research Organizations ("CRO") have difficulty enrolling a sufficient number of patients to conduct our clinical trials as planned, we may need to delay or terminate ongoing clinical trials.

Clinical trials are subject to continuing oversight by governmental regulatory authorities and institutional review boards and must, among other requirements:

- meet the requirements of these authorities from multiple countries and jurisdictions and their related statutes, regulations and guidance;
- meet the requirements for informed consent;
- meet the requirements for institutional review boards; and
- meet the requirements for good clinical practices.

We are currently dependent on certain strategic relationships with third parties for the development, manufacturing and licensing of Macrilen™ (macimorelin) and we may enter into future collaborations for the development, manufacturing and licensing of Macrilen™ (macimorelin).

Our arrangements with third parties may not provide us with the benefits we expect and may expose us to a number of risks.

Currently, we are dependent on various partners to commercialize macimorelin in the U.S. and Canada, the U.K. and EU and the Republic of Korea. Most of our potential revenue consists of contingent payments, including milestones and royalties on the sale of Macrilen™ (macimorelin). The milestone and royalty revenue that we may receive under this collaboration will depend upon these parties' ability to successfully introduce, market and sell Macrilen™ (macimorelin). If they do not devote sufficient time and resources to their respective collaboration arrangements with us, we may not realize the potential commercial benefits of the arrangement, and our results of operations may be materially, adversely affected.

Our reliance on these relationships and other potential third parties poses a number of risks. We may not realize the contemplated benefits of such agreements nor can we be certain that any of these parties will fulfill their obligations in a manner which maximizes our revenue. These arrangements may also require us to transfer certain material rights to third parties. These agreements create certain additional risks. The occurrence of any of the following or other events may delay or impair commercialization of Macrilen™ (macimorelin):

- in certain circumstances, third parties may assign their rights and obligations under these agreements to other third parties without our consent or approval;
- the third parties may cease to conduct business for financial or other reasons;
- we may not be able to renew such agreements;
- the third parties may not properly maintain or defend certain intellectual property rights that may be important to the commercialization of Macrilen™ (macimorelin);
- the third parties may encounter conflicts of interest, changes in business strategy or other issues which could adversely affect their willingness or ability to fulfill their obligations to us (for example, pharmaceutical companies historically have re-evaluated their priorities following mergers and consolidations, which have been common in this industry);
- delays in, or failures to achieve, scale-up to commercial quantities, or changes to current raw material suppliers or product manufacturers (whether the change is attributable to us or the supplier or manufacturer) could delay clinical studies, regulatory submissions and commercialization of Macrilen™ (macimorelin); and
- disputes may arise between us and the third parties that could result in the delay or termination of the manufacturing or commercialization of Macrilen™ (macimorelin), resulting in litigation or arbitration that could be time-consuming and expensive, or causing the third parties to act in their own self-interest and not in our interest or those of our shareholders.

In addition, the third parties can terminate our agreements with them for a number of reasons based on the terms of the individual agreements that we have entered into with them. If one or more of these agreements were to be terminated, we would be required to devote additional resources to manufacturing and commercializing Macrilen™ (macimorelin).

We may be unsuccessful in consummating further out-licensing arrangements for Macrilen™ (macimorelin) on favorable terms and conditions, or we may be significantly delayed in doing so.

As part of our product development and commercialization strategy, we are evaluating out-licensing opportunities for Macrilen™ (macimorelin) in addition to existing License Agreements signed with Novo Nordisk, Consilient Health and NK MEDITECH Ltd. by the end of 2021. If we elect to collaborate with third parties in respect of macimorelin, we may not be able to negotiate a collaborative arrangement for macimorelin on favorable terms and conditions, if at all. Should any partner fail to successfully commercialize macimorelin, our business, financial condition and results of operations may be adversely affected.

We have initiated significant early-stage pre-clinical programs

Over the course of 2021, we in-licensed six new pre-clinical development programs, four potential therapeutics and two potential vaccines, all of which were added to our development pipeline based on their potential to represent significant individual market opportunities. These pre-clinical development programs are at an early stage of development and none of these potential products has obtained regulatory approval for commercial use and sale in any country and, as such, no revenues have resulted from product sales. Significant additional investment will be necessary to complete the development of any of our product candidates. Pre-clinical and clinical trial work must be completed before our potential products could be ready for use within the markets that we have identified. We may fail to develop any products, obtain regulatory approvals, enter clinical trials or commercialize any products. We do not know whether any of our potential product development efforts will prove to be effective, meet applicable regulatory standards, obtain the requisite regulatory approvals, be capable of being manufactured at a reasonable cost or be accepted in the marketplace. We also do not know whether sales, license fees or related royalties will allow us to recoup any investment we make in the commercialization of our products. The product candidates we are currently developing are not expected to be commercially viable for at least the next several years and we may encounter unforeseen difficulties or delays in commercializing our product candidates. In addition, our potential products may not be effective or may cause undesirable side effects.

Our product candidates require significant funding to reach regulatory approval assuming positive clinical results. Such funding for our product candidates may be difficult, or impossible to raise in the public or private markets or through partnerships. If funding or partnerships are not readily attainable, the development of our product candidates may be significantly delayed or stopped altogether. The announcement of a delay or discontinuation of development would likely have a negative impact on our share price.

We may require significant additional financing, and we may not have access to sufficient capital.

We may require significant additional capital to fund our commercialization efforts and may require additional capital to pursue planned clinical trials and regulatory approvals. Although we have capital from the License Agreement, we do not anticipate generating significant revenues from operations in the near future other than from the License Agreement. Moreover, we currently have no committed sources of capital.

We may attempt to raise additional funds through public or private financings, collaborations with other pharmaceutical companies or from other sources, including, without limitation, through at-the-market offerings and issuances of securities. Additional funding may not be available on terms that are acceptable to us. If adequate funding is not available to us on reasonable terms, we may need to delay, reduce or eliminate our product development programs or obtain funds on terms less favorable than we would otherwise accept. To the extent that additional capital is raised through the sale of equity securities or securities convertible into or exchangeable or exercisable for equity securities, the issuance of those securities would result in dilution to our shareholders. Moreover, the incurrence of debt financing or the issuance of dividend-paying preferred shares, could result in a substantial portion of our future operating cash flow, if any, being dedicated to the payment of principal and interest on such indebtedness or the payment of dividends on such preferred shares and could impose restrictions on our operations and on our ability to make certain expenditures and/or to incur additional indebtedness, which could render us more vulnerable to competitive pressures and economic downturns.

Our future capital requirements are substantial and may increase beyond our current expectations depending on many factors, including, but not limited to, the following:

- the duration of changes to and results of our clinical trials for any future products going forward;
- unexpected delays or developments in seeking regulatory approvals;
- the time and cost involved in preparing, filing, prosecuting, maintaining and enforcing patent claims;
- unexpected developments encountered in implementing our business development and commercialization strategies;
- the potential addition of commercialized products to our portfolio;
- the outcome of future litigation; and
- further arrangements, if any, with collaborators.

In addition, global economic and market conditions, as well as future developments in the credit and capital markets, may make it even more difficult for us to raise additional financing in the future.

We are and will be subject to stringent ongoing government regulation for our products and our product candidates, even if we obtain regulatory approvals for the latter.

The manufacturing, marketing and sale of Macrilen™ (macimorelin) and our product candidates are and will be subject to strict and ongoing regulation, even with marketing approval by the FDA and the EC for Macrilen™ (macimorelin). Compliance with such regulation will be expensive and consume substantial financial and management resources. For example, the EC approval for macimorelin was conditioned on our agreement to conduct post-marketing follow-up studies to monitor the safety or efficacy of the product. In addition, as clinical experience with a drug expands after approval because the drug is used by a greater number and more diverse group of patients than during clinical trials, side effects or other problems may be observed after approval that were not observed or anticipated during pre-approval clinical trials. In such a case, a regulatory authority could restrict the indications for which the product may be sold or revoke the product's regulatory approval.

We and our contract manufacturers will be required to comply with applicable current Good Manufacturing Practice ("**GMP**") regulations for the manufacture of our current or future products and other regulations. These regulations include requirements relating to quality assurance, as well as the corresponding maintenance of rigorous records and documentation. Manufacturing facilities must be approved before we can use them in the commercial manufacturing of a product and are subject to subsequent periodic inspection by regulatory authorities. In addition, material changes in the methods of manufacturing or changes in the suppliers of raw materials are subject to further regulatory review and approval.

If we, or if any future marketing collaborators or contract manufacturers, fail to comply with applicable regulatory requirements, we may be subject to sanctions including fines, product recalls or seizures and related publicity requirements, injunctions, total or partial suspension of production, civil penalties, suspension or withdrawals of previously

granted regulatory approvals, warning or untitled letters, refusal to approve pending applications for marketing approval of new products or of supplements to approved applications, complete withdrawal of a marketing application, exclusion from government healthcare programs, import or export bans or restrictions, and/or criminal prosecution and penalties. Any of these penalties could delay or prevent the promotion, marketing or sale of a product.

Even with marketing approval for Macrilen™ (macimorelin), such product approval could be subject to restrictions or withdrawals. Regulatory requirements are subject to change.

On December 20, 2017, the FDA granted marketing approval in the U.S. for Macrilen™ (macimorelin) to be used in the diagnosis of patients with AGHD, and on January 16, 2019, the EC granted marketing approval in Europe for macimorelin for the diagnosis of AGHD. Regulatory authorities generally approve products for specified indications. If an approval is for a limited indication, this limitation reduces the size of the potential market for that product. Product approvals, once granted, are subject to continual review and periodic inspections by regulatory authorities. Our operations and practices are subject to regulation and scrutiny by the U.S. government, as well as governments of any other countries in which we do business or conduct activities. Later discovery of previously unknown problems or safety issues and/or failure to comply with domestic or foreign laws, knowingly or unknowingly, can result in various adverse consequences, including, among other things, a possible delay in the approval or refusal to approve a product, warning or untitled letters, fines, injunctions, civil penalties, recalls or seizures of products and related publicity requirements, total or partial suspension of production, import or export bans or restrictions, refusal of the government to renew marketing applications, complete withdrawal of a marketing application, criminal prosecution and penalties, suspension or withdrawals of previously granted regulatory approvals, withdrawal of an approved product from the market and/or exclusion from government healthcare programs. Such regulatory enforcement could have a direct and negative impact on the product for which approval is granted, but also could have a negative impact on the approval of any pending applications for marketing approval of new drugs or supplements to approved applications.

Because we operate in a highly regulated industry, regulatory authorities could take enforcement action against us in connection with our licensees' or collaborators' businesses or marketing activities for various reasons.

From time to time, new legislation is passed into law that could significantly change the statutory provisions governing the approval, manufacturing and marketing of products regulated by the FDA, the EC and other health authorities. In addition, regulations and guidance are often revised or reinterpreted by health agencies in ways that may significantly affect our business. It is impossible to predict whether further legislative changes will be enacted, or whether regulations, guidance, or interpretations will change, and what the impact of such changes, if any, may be.

Healthcare reform measures could hinder or prevent the commercial success of a product and adversely affect our business.

The business prospects and financial condition of pharmaceutical and biotechnology companies are affected by the efforts of governmental and third-party payers to contain or reduce the costs of healthcare. The U.S. government and other governments have shown significant interest in pursuing healthcare reform and reducing healthcare costs. Any government-adopted reform measures could cause significant pressure on the pricing of healthcare products and services, including Macrilen™ (macimorelin), both in the U.S. and internationally, as well as the amount of reimbursement available from governmental agencies and other third-party payers. If reimbursement for Macrilen™ (macimorelin) is substantially less than we expect, our revenue prospects could be materially and adversely impacted.

In the U.S. and in other jurisdictions there have been, and we expect that there will continue to be, a number of legislative and regulatory proposals aimed at changing the healthcare system, such as proposals relating to the pricing of healthcare products and services in the U.S. or internationally, the reimportation of drugs into the U.S. from other countries (where they are then sold at a lower price), and the amount of reimbursement available from governmental agencies or other third-party payers. Furthermore, the pricing of pharmaceutical products, in general, and specialty drugs, in particular, has been a topic of concern in the U.S. Congress, where hearings on the topic have been held, and has been a topic of speeches given by political figures, including the President of the U.S. Additionally, in the U.S., individual states have also passed legislation and proposed bills that are aimed at drug pricing transparency, which will likely impact drug pricing. There can be no assurance as to how this scrutiny on pricing of pharmaceutical products will impact future pricing of Macrilen™ (macimorelin).

The *Patient Protection and Affordable Care Act and the Healthcare and Education Affordability Reconciliation Act of 2010* (collectively, the "**ACA**") has had far-reaching consequences for most healthcare companies, including specialty biopharmaceutical companies like us. The future of the ACA is, however, uncertain as there have been executive, judicial and congressional challenges to certain aspects of the ACA. In June 2021, the United States Supreme Court dismissed a challenge to the ACA on the grounds the plaintiffs did not have standing to attack as unconstitutional the ACA's minimum essential coverage provision because they had not shown they had suffered damages from the defendants' conduct in enforcing the ACA." Change the last sentence to: "It is unclear how other such litigation and the healthcare reform efforts of the Biden administration will impact the ACA and our business. It is unclear how the Supreme Court ruling, other such litigation and the healthcare reform efforts of the Biden administration will impact the ACA and our business.

In addition, the *Food and Drug Administration Amendments Act of 2007* gives the FDA enhanced post-market authority, including the authority to require post-marketing studies and clinical trials, labeling changes based on new safety information, and compliance with risk evaluations and mitigation strategies approved by the FDA. The FDA's exercise of this authority may result in delays or increased costs during the period of product development, clinical trials and regulatory review and approval, which may also increase costs related to complying with new post-approval regulatory requirements, and increase potential FDA restrictions on the sale or distribution of approved products.

If we or our licensees market products or interact with health care practitioners in a manner that violates healthcare fraud or abuse laws, we or our licensees may be subject to civil or criminal penalties, including exclusion from participation in government healthcare programs.

As a pharmaceutical company, even though we do not provide healthcare services or receive payments directly from or bill directly to Medicare, Medicaid or other national or third-party payers for our current product, U.S. federal and state healthcare laws and regulations, as well as certain EU regulatory and government agencies, pertaining to fraud or abuse are and will be applicable to our business. We, and our licensees, are subject to healthcare fraud and abuse regulation by EU regulatory and government agencies in the countries where we may seek marketing access, and the U.S. federal government and the states in which we conduct our business.

The laws that may affect us or affect our licensee's ability to operate include the federal healthcare program anti-kickback statute, which prohibits, among other things, knowingly and willfully offering, paying, soliciting, or receiving remuneration to induce, or in return for, the purchase, lease or order, or arrangement for the purchase, lease or order of any healthcare item or service reimbursable under Medicare, Medicaid or other federally financed healthcare programs. This statute applies to arrangements between pharmaceutical manufacturers and prescribers, purchasers and formulary managers. Although there are a number of statutory exceptions and regulatory safe harbors protecting certain common activities, the exceptions and safe harbors are drawn narrowly, and practices that involve remuneration intended to induce prescribing, purchases or recommendations may be subject to scrutiny if they do not qualify for an exception or a safe harbor.

Federal false claims laws prohibit any person from knowingly presenting, or causing to be presented, a false claim for payment to the federal government, or knowingly making, or causing to be made, a false statement to get a false claim paid. Pharmaceutical companies have been prosecuted under these laws for a variety of alleged promotional and marketing activities, such as providing free product to customers with the expectation that the customers would bill federal programs for the product, reporting to pricing services inflated average wholesale prices that were then used by federal programs to set reimbursement rates, engaging in off-label promotion that caused claims to be submitted to Medicaid for non-covered off-label uses, and submitting inflated best price information to the Medicaid Drug Rebate Program.

The *Health Insurance Portability and Accountability Act of 1996* also created prohibitions against healthcare fraud and false statements relating to healthcare matters. The healthcare fraud statute prohibits knowingly and willfully executing a scheme to defraud any healthcare benefit program, including private payers. The false statements statute immediately noted above prohibits knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services.

In addition, there has been a recent trend of increased federal and state regulation of payments made to physicians. The ACA, through the Physician Payment Sunshine Act of 2010, imposed new requirements on manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to the Centers for Medicare and Medicaid Services ("**CMS**"), information related to payments or other "transfers of value" made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, and applicable manufacturers and group purchasing organizations to report annually to CMS ownership and investment interests held by physicians (as defined above) and their immediate family members and payments or other "transfers of value" to such physician owners and their immediate family members. Manufacturers are required to report such data to the government by the 90th calendar day of each year.

The majority of states also have statutes or regulations similar to these federal laws, which apply to items and services reimbursed under Medicaid and other state programs, or, in several states, apply regardless of the payer. In addition, some states have laws that require pharmaceutical companies to adopt comprehensive compliance programs. For example, under California law, pharmaceutical companies must comply with both the April 2003 Office of Inspector General Compliance Program Guidance for Pharmaceutical Manufacturers and the PhRMA Code on Interactions with Healthcare Professionals, as amended. Certain states also mandate the tracking and reporting of gifts, compensation, and other remuneration paid by us to physicians and other healthcare providers.

Although compliance programs can mitigate the risk of investigation and prosecution for violations of these laws, the risks cannot be entirely eliminated. Any action against us or our licensees for violation of these laws, even if we successfully defend against it, could cause us to incur significant legal expenses, cause reputational harm and divert our management's attention from the operation of our business. Moreover, achieving and sustaining compliance with EU government and regulatory agencies and applicable U.S. federal and state laws may prove costly.

Because of the breadth of these laws and the narrowness of the safe harbors, it is possible that some of our business activities could be subject to challenge under one or more of such laws. The ACA also made several important changes to the federal anti-kickback statute, false claims laws and healthcare fraud statute by weakening the intent requirement under the anti-kickback and healthcare fraud statutes that may make it easier for the government or whistleblowers to charge such fraud and abuse violations. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. In addition, the ACA provides that the government may assert that a claim including items or services resulting from a violation of the federal anti-kickback statute constitutes a false or fraudulent claim for purposes of the false claims statutes. In addition, the ACA increases penalties for fraud and abuse violations. If our past, present or future operations are found to be in violation of any of the laws described above or other similar governmental regulations to which we are subject, we may be subject to significant civil, criminal and administrative penalties, damages, fines, imprisonment, exclusion from government funded healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and negatively impact our financial results.

If Macrilen™ (macimorelin) does not gain market acceptance, we may be unable to generate significant revenues.

Market acceptance of Macrilen™ (macimorelin) depends on a number of factors, including, but not limited to, the following:

- demonstration of clinical efficacy and safety;
- the prevalence and severity of any adverse side effects;
- limitations or warnings contained in the product's approved labeling;
- availability of alternative treatments or tests for the indications we target;
- the advantages and disadvantages of Macrilen™ (macimorelin) relative to current or alternative treatments and tests;
- the classification and description of Macrilen™ (macimorelin) in relevant guidelines;
- the availability of acceptable pricing and adequate third-party reimbursement; and
- the effectiveness of marketing and distribution methods for Macrilen™ (macimorelin).

If Macrilen™ (macimorelin) does not gain market acceptance among physicians, patients, healthcare payers and others in the medical community, who may not accept or utilize Macrilen™ (macimorelin), our ability to generate significant revenues from Macrilen™ (macimorelin) would be limited, and our financial condition could be materially, adversely affected. In addition, if we fail to further penetrate our core markets and existing geographic markets or to successfully expand our business into new markets, the growth in sales of Macrilen™ (macimorelin), along with our operating results, could be negatively impacted.

Our ability to further penetrate our core markets and existing geographic markets in which we compete or to successfully expand our business into additional countries in Europe, Asia or elsewhere is subject to numerous factors, many of which are beyond our control. Macrilen™ (macimorelin), if successfully commercialized, may compete with a number of drugs, therapies, products and tests currently manufactured and marketed by major pharmaceutical and other biotechnology companies. Macrilen™ (macimorelin) may also compete with new products currently under development by others or with products which may be less expensive than Macrilen™ (macimorelin). There can be no assurance that our efforts to increase market penetration in our core markets and existing geographic markets will be successful. Our failure to do so could have an adverse effect on our operating results and would likely cause a drop in the share price of our Common Shares.

We may expend our limited resources to pursue a particular product or indication and fail to capitalize on other products or indications for which there may be a greater likelihood of success.

We are currently focusing our efforts on Macrilen™ (macimorelin) for specific indications and for the six pre-clinical programs announced in 2021. As a result, we may forego or delay pursuit of opportunities for other potential indications for Macrilen™ (macimorelin), which there may be a greater likelihood of success or may prove to have greater commercial potential. Research programs to identify new product candidates or pursue alternative indications for Macrilen™ (macimorelin) require substantial technical, financial and human resources. These activities – if pursued – may initially show promise in identifying potential product candidates or indications, yet fail to yield product candidates or indications for further clinical development.

We may not achieve our projected development goals in the time-frames we announce and expect.

We may set goals and make public statements regarding the timing of the accomplishment of objectives material to our success, such as the commencement, enrollment and anticipated completion of clinical trials, anticipated regulatory submission and approval dates and time of product launch. The actual timing of these events can vary dramatically

due to factors such as delays or failures in any clinical trials, the uncertainties inherent in the regulatory approval process and delays in achieving manufacturing or marketing arrangements sufficient to commercialize any of our products or product candidates. There can be no assurance that we will make regulatory submissions or receive regulatory approvals as planned or that we will be able to adhere to our schedule for launching of Macrilen™ (macimorelin) or any of our future product candidates. If we fail to achieve one or more of these milestones as planned, the share price of our Common Shares may decline.

If we fail to obtain acceptable prices or adequate reimbursement for Macrilen™ (macimorelin), our ability to generate revenues will be diminished.

Our ability or that of our licensee(s) to successfully commercialize Macrilen™ (macimorelin) will depend significantly on our or their ability to obtain acceptable prices and the availability of reimbursement to the patient from third-party payers, such as governmental and private insurance plans. These third-party payers frequently require companies to provide predetermined discounts from list prices, and they are increasingly challenging the prices charged for pharmaceuticals and other medical products. Macrilen™ (macimorelin) may not be considered cost-effective, and reimbursement to the patient may not be available or sufficient to allow us or our licensee(s) to sell our products on a competitive basis. It may not be possible to negotiate favorable reimbursement rates for Macrilen™ (macimorelin). Adverse pricing and reimbursement conditions would also likely diminish our ability to induce third parties to in-license Macrilen™ (macimorelin).

In addition, the continuing efforts of third-party payers to contain or reduce the costs of healthcare through various means may limit our commercial opportunity and reduce any associated revenue and profits. We expect that proposals to implement similar government controls will continue. The pricing of pharmaceutical products, in general, and specialty drugs, in particular, has been a topic of concern in the U.S. Congress, where hearings on the topic have been held, and has been a topic of speeches given by political figures, including the President of the U.S. Specifically, there have been several recent U.S. Congressional inquiries and proposed bills designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drugs. Furthermore, there is drug pricing reform taking place at the state level in the U.S. that will impact how pharmaceutical companies can market and sell drug products and at what price. Additionally, third-party payers are increasingly challenging the price, examining the medical necessity, and reviewing the cost-effectiveness of medical drug products and medical services, in addition to questioning their safety and efficacy. There can be no assurance as to how this scrutiny on pricing of pharmaceutical products will impact future pricing of a product or orphan drugs or pharmaceutical products generally. In addition, increasing emphasis on managed care will continue to put pressure on the pricing of pharmaceutical and biopharmaceutical products. Cost control initiatives could decrease the price that we or any current or potential collaborators could receive a product and could adversely affect our profitability. In addition, in the U.S., Canada and many other countries, pricing and/or profitability of some or all prescription pharmaceuticals and biopharmaceuticals are subject to government control.

If we or our licensee(s) fail to obtain acceptable prices or an adequate level of reimbursement for Macrilen™ (macimorelin), the sales of Macrilen™ (macimorelin) would be adversely affected or there may be no commercially viable market for Macrilen™ (macimorelin).

Competition in our targeted markets is intense, and development by other companies could render Macrilen™ (macimorelin), or any of our future products, non-competitive.

The biopharmaceutical field is highly competitive. New products developed by other companies in the industry could render Macrilen™ (macimorelin) or any of our future products uncompetitive or significantly less competitive. Competitors are developing and testing products and technologies that would compete with Macrilen™ (macimorelin) or any of our future products. Some of these competitive products may be more effective or have an entirely different approach or means of accomplishing the desired effect than Macrilen™ (macimorelin) or any of our future products. We expect competition from pharmaceutical and biopharmaceutical companies and academic research institutions to continue to increase over time. Many of our competitors and potential competitors have substantially greater product development capabilities and financial, scientific, marketing and human resources than we do.

We may not obtain adequate protection for Macrilen™ (macimorelin) through our intellectual property.

We rely heavily on our proprietary information in developing and manufacturing Macrilen™ (macimorelin). Our success depends, in large part, on our ability to protect our competitive position through patents, trade secrets, trademarks and other intellectual property rights. We have filed and are pursuing applications for patents and trademarks in many countries. Pending patent applications may not result in the issuance of patents, and we may not be able to obtain additional issued patents relating to Macrilen™ (macimorelin).

The laws of some countries do not protect intellectual property rights to the same extent as the laws of the U.S. and Canada. Many companies have encountered significant problems in protecting and defending such rights in foreign jurisdictions. Many countries, including certain countries in Europe, have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In addition, many countries limit the enforceability of patents against government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of the patent. Moreover, the legal systems of certain countries, particularly certain developing countries, do not favor the aggressive enforcement of patent and other intellectual property protection, which makes it difficult to stop and prevent infringement.

Our patents may be challenged, narrowed, invalidated, held to be unenforceable or circumvented, which could limit our ability to stop competitors from marketing similar products or limit the length of term of patent protection we may have for Macrilen™ (macimorelin). Changes in either patent laws or in interpretations of patent laws in the U.S. and other countries may diminish the value of our intellectual property or narrow the scope of our patent protection for Macrilen™ (macimorelin). The patents issued or to be issued to us for Macrilen™ (macimorelin) may not provide us with any competitive advantage or protect us against competitors with similar technology. In addition, it is possible that third parties with products that are very similar to ours will circumvent our patents by means of alternate designs or processes. We may have to rely on method-of-use, methods of manufacture and/or new-formulation protection for our compounds in development, and any resulting products, which may not confer the same protection as claims to compounds *per se*.

In addition, our patents may be challenged by third parties in patent litigation, which is becoming widespread in the biopharmaceutical industry. There may be prior art of which we are not aware that may affect the validity or enforceability of a patent claim. There may also be prior art of which we are aware, but which we do not believe affects the validity or enforceability of a claim, which may, nonetheless, ultimately be found to affect the validity or enforceability of a claim. No assurance can be given that our patents would, if challenged, be held by a court to be valid or enforceable, or that a competitor's technology or product would be found by a court to infringe our patents. Our granted patents could also be challenged and revoked in U.S. post-grant proceedings as well as in opposition or nullity proceedings in certain countries outside the U.S. In addition, we may be required to disclaim part of the term of certain patents. The costs of these proceedings could be substantial, and it is possible that our efforts could be unsuccessful, resulting in a loss of our U.S. patent position.

We also rely on trade secrets and proprietary know-how to protect our intellectual property. If we are unable to protect the confidentiality of our proprietary information and know-how, the value of our technology and products could be adversely affected. We seek to protect our unpatented proprietary information in part by requiring our employees, consultants, outside scientific collaborators, and sponsored researchers and other advisors to enter into confidentiality agreements. These agreements provide that all confidential information developed or made known to the individual during the course of the individual's relationship with us is to be kept confidential and not disclosed to third parties except in specific circumstances. In the case of our employees, the agreements provide that all of the technology that is conceived by the individual during the course of employment is our exclusive property. These agreements may not provide meaningful protection or adequate remedies in the event of unauthorized use or disclosure of our proprietary information. In addition, it is possible that third parties could independently develop proprietary information and techniques substantially similar to ours or otherwise gain access to our trade secrets. If we are unable to protect the confidentiality of our proprietary information and know-how, competitors may be able to use this information to develop

products that compete with our products and technologies, which could adversely impact our business.

We currently have the right to use certain patents and technologies under license agreements with third parties. Our failure to comply with the requirements of one or more of our license agreements could result in the termination of such agreements, which could cause us to terminate the related development program and cause a complete loss of our investment in that program or given market. Inventions claimed in certain in-licensed patents may have been made with funding from the U.S. government and may be subject to the rights of the U.S. government, and we may be subject to additional requirements in the event we seek to commercialize or manufacture product candidates incorporating such in-licensed technology.

As a result of the foregoing factors, we may not be able to rely on our intellectual property to protect Macrilen™ (macimorelin) in the marketplace.

We may infringe the intellectual property rights of others.

Our commercial success depends significantly on our ability to operate without infringing the patents and other intellectual property rights of third parties. There could be issued patents of which we are not aware that our products or methods may be found to infringe, or patents of which we are aware and believe we do not infringe, but which we may ultimately be found to infringe. Moreover, patent applications and their underlying discoveries are in some cases maintained in secrecy until patents are issued. Because patents can take many years to issue, there may be currently pending applications of which we are unaware that may later result in issued patents that our products or technologies are found to infringe. Moreover, there may be published pending applications that do not currently include a claim covering our products or technologies, but, which nonetheless, provide support for a later drafted claim that, if issued, our products or technologies could be found to infringe.

If we infringe or are alleged to infringe intellectual property rights of third parties, it will adversely affect our business. Third parties may own or control these patents or patent applications in the U.S. and abroad. These third parties could bring claims against us or our collaborators that would cause us to incur substantial expenses and, if successful against us, could cause us to pay substantial damages. Further, if a patent infringement suit were brought against us or our collaborators, we or they could be forced to stop or delay research, development, manufacturing or sales of the product or product candidate that is the subject of the suit.

The biopharmaceutical industry has produced a proliferation of patents, and it is not always clear to industry participants, including us, which patents cover various types of products. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform. In the event of infringement or violation of another party's patent or other intellectual property rights, we may not be able to enter into licensing arrangements or make other arrangements at a reasonable cost. Any inability to secure licenses or alternative technology could result in delays in the introduction of our products or lead to prohibition of the manufacture or sale of products by us or our partners and collaborators.

Patent litigation is costly and time consuming and may subject us to liabilities.

If we become involved in any patent litigation, interference, opposition, re-examination or other administrative proceedings, we will likely incur substantial expenses in connection therewith, and the efforts of our technical and management personnel will be significantly diverted. In addition, an adverse determination in litigation could subject us to significant liabilities.

We may not obtain trademark registrations for our current or future products.

We have filed applications for trademark registrations, including Macrilen™ (macimorelin), in various jurisdictions, including the U.S. We may file applications for other possible trademarks for macimorelin. No assurance can be given that any of our trademarks will be registered elsewhere, or that the use of any registered or unregistered trademarks will confer a competitive advantage in the marketplace.

We rely on third parties to conduct, supervise and monitor our clinical trials, and those third parties may not perform satisfactorily.

We rely on third parties such as CROs, medical institutions and clinical investigators to enroll qualified patients and to conduct, supervise and monitor our clinical trials. Our reliance on these third parties for clinical development activities reduces our control over these activities. Our reliance on these third parties, however, does not relieve us of our regulatory responsibilities, including ensuring that our clinical trials are conducted in accordance with GCP guidelines and the investigational plan and protocols contained in an IND application to the FDA, or a comparable foreign regulatory submission. Furthermore, these third parties may also have relationships with other entities, some of which may be our competitors. In addition, they may not complete activities on schedule, or may not conduct our preclinical studies or clinical trials in accordance with regulatory requirements or our trial design. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, our efforts to obtain regulatory approvals for, and to commercialize, our products may be delayed or prevented.

We are dependent on, and rely upon, third parties to perform various functions related to our business, including, but not limited to, development of some of our product candidates. Our reliance on these relationships poses a number of risks.

Any difficulties or delays in the commencement or completion, or termination or suspension, of our ongoing or planned clinical trials could result in increased costs to us, delay or limit our ability to generate revenue and adversely affect our commercial prospects.

Before we can initiate clinical trials for our product candidates, we must submit the results of preclinical studies to the FDA or comparable foreign regulatory authorities along with other information, including information about product candidate chemistry, manufacturing and controls and our proposed clinical trial protocol, as part of an IND or similar regulatory filing required for authorization to proceed with clinical development. The FDA or comparable foreign regulatory authorities may require us to conduct additional preclinical studies for any product candidate before it allows us to initiate clinical trials under any IND or similar regulatory filing, which may lead to delays and increase the costs of our preclinical development programs. Any such delays in the commencement or completion of the DETECT-trial evaluating macimorelin for the diagnosis of CGHD, or any other product candidate, could significantly affect our product development costs.

Further, conducting clinical trials in foreign countries, as in our ongoing DETECT-trial, presents additional risks that may delay completion of our clinical trials. These risks include the failure of enrolled patients in foreign countries to adhere to clinical protocol as a result of differences in healthcare services or cultural customs, managing additional administrative burdens associated with foreign regulatory schemes, as well as political and economic risks, including war, relevant to such foreign countries. For example, we have engaged a CRO to conduct the DETECT-trial outside the United States, including in Russia and Ukraine and clinical trial sites in those countries are being halted due to the conflict in Ukraine. To date, no patients have been enrolled in these clinical trials. Russia's invasion of Ukraine in February 2022 may impact our ability to conduct certain of our trials in the region. This could hinder the completion of our clinical trials and/or analyses of clinical results, which could materially harm our business.

We are conducting our DETECT-trial of macimorelin globally and may conduct future clinical trials outside the United States. However, the FDA and other foreign equivalents may not accept data from such trials, in which case our development plans will be delayed, which could materially harm our business.

In particular, we have engaged a CRO to conduct our DETECT-trial outside of the United States, including in Russia and Ukraine. As a result of Russia's invasion of Ukraine in February 2022, clinical trial sites in Ukraine and the surrounding region are being halted.Furthermore, the United States and its European allies have imposed significant new sanctions against Russia, including regional embargoes, full blocking sanctions, and other restrictions targeting major Russian financial institutions. Our ability to conduct clinical trials in Russia, parts of Ukraine and elsewhere in the region may become restricted under applicable sanctions laws, which would require us to identify alternative trial sites, which may increase our development costs and delay the clinical development of our product candidates. All of the foregoing could impede the execution of our clinical development plans, which could materially harm our business.

In carrying out our operations, we are dependent on a stable and consistent supply of ingredients and raw materials.

There can be no assurance that we, our contract manufacturers or our licensees, will be able, in the future, to continue to purchase products from our current suppliers or any other supplier on terms that are favorable or similar to current terms or at all. An interruption in the availability of certain raw materials or ingredients, or significant increases in the prices we pay for them, could have a material adverse effect on our business, financial condition, liquidity and operating results.

The failure to perform satisfactorily by third parties upon which we expect to rely to manufacture and supply products may lead to supply shortfalls.

We rely on third parties to manufacture and supply Macrilen™ (macimorelin). We also have or may have certain supply obligations *vis-à-vis* our existing and potential licensees, who are or will be responsible for the marketing of Macrilen™ (macimorelin). To be successful, Macrilen™ (macimorelin) has to be manufactured in commercial quantities in compliance with quality controls and regulatory requirements. Even though it is our objective to minimize such risk by introducing alternative suppliers to ensure a constant supply at all times, there are a limited number of contract manufacturers or suppliers that are capable of manufacturing Macrilen™ (macimorelin) or the materials used in its manufacture. If we are unable to do so ourselves or to arrange for third-party manufacturing or supply of Macrilen™ (macimorelin) or materials, or to do so on commercially reasonable terms, we may not be able to commercialize Macrilen™ (macimorelin) through our licensees. Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured products ourselves, including reliance on the third party for regulatory compliance, the possibility of breach of the manufacturing agreement by the third party because of factors beyond our control, and the possibility of termination or non-renewal of the agreement by the third party, based on its own business priorities, at a time that is costly or inconvenient for us.

We are subject to intense competition for our skilled personnel, and the loss of key personnel or the inability to attract additional personnel could impair our ability to conduct our operations.

We are highly dependent on our management and our clinical, regulatory and scientific staff, the loss of whose services might adversely impact our ability to achieve our objectives. Recruiting and retaining qualified management and clinical, scientific and regulatory personnel is critical to our success. Reductions in our staffing levels have eliminated redundancies in key capabilities and skill sets among our full-time staff, and required us to rely more heavily on outside consultants and third parties. We have been unable to increase the compensation of our associates to the extent required to remain fully competitive for their services, which increased our employee retention risk. The competition for qualified personnel in the biopharmaceutical field is intense, and if we are not able to continue to retain qualified personnel and/or maintain positive relationships with our outside consultants, we may not be able to achieve our strategic and operational objectives.

We may be subject to litigation in the future.

We may, from time to time, be a party to litigation in the normal course of business. Monitoring and defending against legal actions, whether meritorious, is time-consuming for our management and detracts from our ability to fully focus our internal resources on our business activities. In addition, legal fees and costs incurred in connection with such activities may be significant and we could, in the future, be subject to judgments or enter into settlements of claims for significant monetary damages. A decision adverse to our interests could result in the payment of substantial damages and could have a material adverse effect on our cash flow, results of operations and financial position.

With respect to any litigation, our insurance may not reimburse us, or may not be sufficient to reimburse us, for the expenses or losses we may suffer in contesting and concluding such lawsuit. Substantial litigation costs, including the substantial self-insured retention that we are required to satisfy before any insurance applies to a claim, unreimbursed legal fees or an adverse result in any litigation may adversely impact our business, operating results or financial condition.

We are subject to the risk of product liability claims, for which we may not have or may not be able to obtain adequate insurance coverage.

The sale and use of Macrilen™ (macimorelin) will involve the risk of product liability claims and associated adverse publicity. Product liability claims might be made against us directly by patients, healthcare providers or pharmaceutical companies, or others selling, buying or using our products. We attempt to manage our liability risks by means of insurance. We maintain insurance covering our liability for our preclinical and clinical studies as well as products liability insurance. However, we may not have or be able to obtain or maintain sufficient and affordable insurance coverage, including coverage for potentially very significant legal expenses, and without sufficient coverage any claim brought against us could have a materially adverse effect on our business, financial condition or results of operations.

We are a holding company, and claims of creditors of our subsidiaries will generally have priority as to the assets of such subsidiaries over our claims and those of our creditors and shareholders. In addition, our principal operating subsidiary, AEZS Germany, may become subject to insolvency proceedings if it is illiquid or "over-indebted" in accordance with German law.

Aeterna Zentaris is a holding company and a substantial portion of our non-cash assets is the share capital of our subsidiaries. AEZS Germany, our principal operating subsidiary, based in Frankfurt, Germany, holds most of our intellectual property rights. Because Aeterna Zentaris is a holding company, our obligations to our creditors are structurally subordinated to all existing and future liabilities of our subsidiaries, which may incur additional or other liabilities and/or obligations. As a result, our rights and the rights of our creditors to participate in any distribution of the assets of any subsidiary in the event that such subsidiary were to be liquidated or reorganized or in the event of any bankruptcy or insolvency proceeding relating to or involving such subsidiary, and, therefore, the rights of the holders of our securities to participate in those assets, are subject to the prior claims of such subsidiary's creditors. To the extent that we may be a creditor with recognized claims against any such subsidiary, our claims would still be subject to the prior claims of our subsidiary's creditors to the extent that they are secured or senior to those held by us.

Holders of our securities are not creditors of our subsidiaries. Claims to the assets of our subsidiaries will derive from our own ownership interest in those operating subsidiaries. Claims of our subsidiaries' creditors will generally have priority as to the assets of such subsidiaries over our own ownership interest claims and, therefore, will have priority over the holders of our securities. Our subsidiaries' creditors may from time to time include general creditors, trade creditors, employees, secured creditors, taxing authorities and creditors holding guarantees. Accordingly, in the event of any foreclosure, dissolution, winding-up, liquidation or reorganization, or a bankruptcy, insolvency or creditor protection proceeding relating to us or our property, or any subsidiary, there can be no assurance as to the value, if any, that would be available to holders of our securities. In addition, any distributions to us by our subsidiaries could be subject to monetary transfer restrictions in the jurisdictions in which our subsidiaries operate.

German law, which governs our principal operating subsidiary AEZS Germany, imposes an obligation on the managing director(s) of AEZS Germany to institute insolvency proceedings of that subsidiary if the managing director(s) concludes that AEZS Germany is insolvent because it is either illiquid or "over-indebted" in accordance with the provisions of German law.

It may be difficult for U.S. investors to obtain and enforce judgments against us because of our Canadian incorporation and German presence.

We are a company existing under the laws of Canada. A number of our directors and officers are residents of Canada or otherwise reside outside the U.S., and all or a substantial portion of their assets, and a substantial portion of our assets, are located outside the U.S. Consequently, although we have appointed an agent for service of process in the U.S., it may be difficult for investors in the U.S. to bring an action against such directors or officers or to enforce against those persons or us a judgment obtained in a U.S. court predicated upon the civil liability provisions of federal securities laws or other laws of the U.S. Investors should not assume that foreign courts (i) would enforce judgments of U.S. courts obtained in actions against us or such directors, officers or experts predicated upon the civil liability provisions of the U.S. federal securities laws or the securities or "blue sky" laws of any state within the U.S. or (ii) would enforce, in original actions, liabilities against us or such directors, officers or experts predicated upon the U.S. federal securities laws or any such state securities or "blue sky" laws.

We are subject to various internal control reporting requirements under applicable Canadian securities laws and the Sarbanes-Oxley Act in the U.S. We can provide no assurance that we will, at all times in the future, be able to report that our internal controls over financial reporting are effective.

As a public company, we are required to comply with Section 404 of the U.S. *Sarbanes-Oxley Act of 2002* ("**Section 404**") and National Instrument 52-109 - *Certification of Disclosure in Issuers' Annual and Interim Filings* of the Canadian securities administrators. In any given year, we cannot be certain as to the time of completion of our internal control evaluation, testing and remediation actions or of their impact on our operations. Upon completion of this process, we may identify control deficiencies of varying degrees of severity under applicable SEC and Public Company Accounting Oversight Board (U.S.) rules and regulations. As a public company, we are required to report, among other things, control deficiencies that constitute material weaknesses or changes in internal controls that, or that are reasonably likely to, materially affect internal controls over financial reporting. A "material weakness" is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim consolidated financial statements will not be prevented or detected on a timely basis. If we fail to comply with the requirements of Section 404 or similar Canadian requirements, or if we report a material weakness, we might be subject to regulatory sanction and investors may lose confidence in our consolidated financial statements, which may be inaccurate if we fail to remedy such material weakness.

We have identified a material weakness in our internal control over financial reporting as of December 31, 2021. If we fail to fully remediate this weakness and maintain proper and effective internal controls, our ability to produce accurate and timely consolidated financial statements could be impaired, which could harm our operating results and our ability to operate our business or investors' views of us and could have a material adverse effect on the price of our common stock.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2021, and based on our assessment using criteria established in *Internal Control — Integrated Framework: 2013*, issued by the Committee of Sponsoring Organizations of the Treadway Commission, management concluded that our internal control over financial reporting was not effective as of December 31, 2021. Management identified a control deficiency that constitutes a material weakness. The material weakness resulted from a failure in the design and implementation of review controls over the accounting for under license and collaboration agreements under IFRS and the related revenue recognition. This resulted in a restatement of our previously issued condensed interim consolidated financial statements as at and for the quarters and year-to-date periods ended March 31, 2021, June 30, 2021 and September 30, 2021, with respect to revenue recognition on one agreement.

We have developed and commenced implementation of a remediation plan for this material weakness. While we intend to remediate this material weakness, we have not completed the implementation of this plan, and we can give no assurance that our current and planned implementation will remediate this deficiency in our internal control or that additional material weaknesses or significant deficiencies in our internal control over financial reporting will not be identified in the future. Our failure to implement and maintain effective internal control over financial reporting could result in errors in our consolidated financial statements that could result in a restatement of our consolidated financial statements and cause us to fail to meet our reporting obligations. If we cannot in the future favorably assess the effectiveness of our internal control over financial reporting, investor confidence in the reliability of our financial reports may be adversely affected, which could have a material adverse effect on the trading price of our common stock.

We are subject to a broad range of environmental laws and regulations and may be subject to environmental remediation obligations under such safety and related laws and regulations. The impact of these obligations and the Company's ability to respond effectively to them may have a material adverse effect on our business, financial condition, cash flows and results of operations and could cause the market value of our Common Shares to decline.

We are subject to a broad range of federal, state, provincial and local environmental laws and regulations in the U.S., Canada and Germany concerning the environment, safety matters, regulation of chemicals and product safety in the countries where we manufacture and sell our products or otherwise operate our business. These requirements include, among other matters, regulation of the handling, manufacture, transportation, storage, use and disposal of materials, including the discharge of pollutants, hazardous substances and waste into the environment. In the normal course of our business, such substances and waste may be released into the environment, which could cause environmental or property damage or personal injuries, and which could subject us to remediation obligations regarding contaminated soil and groundwater, potential liability for damage claims or to social or reputational harm and other similar adverse impacts. Under certain laws, we may be required to remediate contamination at certain of our properties regardless of whether the contamination was caused by us or by previous occupants of the property, or by others and at third-party sites where we send waste.

In recent years, the operations of all companies have become subject to increasingly stringent legislation and regulation related to environmental protection. Such legislation and regulations are complex and constantly changing. Future events, such as changes in existing laws or regulations or the enforcement thereof, or the discovery of contamination at our facilities may, among other things, require us to install additional controls for certain of our emission sources, undertake changes in our manufacturing processes, remediate soil or groundwater contamination at facilities where such cleanup is not currently required, or to take action to address social expectations or concerns arising from or relating to such changes and our response to such changes. The cost of such additional compliance or remediation obligations or responding to such social expectations or concerns may be significant and could have a material adverse effect on our business, financial condition, cash flows and results of operations and could cause the market value of our Common Shares and/or debt securities to decline.

We may incur losses associated with foreign currency fluctuations.

Our operations are, in many instances, conducted in currencies other than our functional currency or the functional currencies of our subsidiaries. Fluctuations in the value of currencies could cause us to incur currency exchange losses. We do not currently employ a hedging strategy against exchange rate risk. We cannot assert with any assurance that we will not suffer losses as a result of unfavorable fluctuations in the exchange rates between the U.S. dollar, the euro, the Canadian dollar and other currencies.

Legislative actions, new accounting pronouncements and higher insurance costs may adversely impact our future financial position or results of operations.

Changes in financial accounting standards or implementation of accounting standards may cause adverse, unexpected revenue or expense fluctuations and affect our financial position or results of operations. New pronouncements and varying interpretations of pronouncements have occurred with greater frequency and are expected to occur in the future, and we may make or be required to make changes in our accounting policies in the future. Compliance with changing regulations of corporate governance and public disclosure, notably with respect to internal controls over financial reporting, may result in additional expenses. Changing laws, regulations and standards relating to corporate governance and public disclosure are creating uncertainty for companies such as ours, and insurance costs are increasing as a result of this uncertainty.

Data security breaches may disrupt our operations and adversely affect our operating results.

Our network security and data recovery measures and those of third parties with which we contract, may not be adequate to protect against computer viruses, cyber-attacks, breaches, and similar disruptions from unauthorized tampering with our computer systems. The misappropriation, theft, sabotage or any other type of security breach with respect to any of our proprietary and confidential information that is electronically stored, including research or clinical data, could cause interruptions in our operations, could result in a material disruption of our clinical activities and business operations and could expose us to third-party legal claims. Furthermore, we could be required to make substantial expenditures of resources to remedy the cause of cyber-attacks or break-ins. This disruption could have a material adverse impact on our business, operating results and financial condition. Additionally, any break-in or trespass of our facilities that results in the misappropriation, theft, sabotage or any other type of security breach with respect to our proprietary and confidential information, including research or clinical data, or that results in damage to our research and development equipment and assets could have a material adverse impact on our business, operating results and financial condition.

Our business processes personal information, both in connection with clinical activities and our employees. The use of this information is critical to our operations and innovation, including the development of our products, as well as management of our employees. New and evolving regulations, such as the European Union General Data Protection Regulation, could bring increased scrutiny of our data management in the future. Any cyber-attacks or other failure to protect critical and sensitive systems and information could damage our reputation, prompt litigation or lead to regulatory sanctions, all of which could materially affect our financial condition and results of operation.

Risks Relating to our Common Shares

Our share price is volatile, which may result from factors outside of our control.

Our valuation and share price since the beginning of trading after our initial listings, first in Canada and then in the U.S., have had no meaningful relationship to current or historical financial results, asset values, book value or many other criteria based on conventional measures of the value of shares.

Between January 1, 2021 and December 31, 2021, the closing price of our Common Shares ranged from $0.36 to $3.34 per share on the NASDAQ and from C$0.64 to C$4.25 per share on the TSX. As of March 24, 2022, the price of our Common Shares on the NASDAQ was $0.375 and C$0.47 on the TSX. Our share price may be affected by developments directly affecting our business and by developments out of our control or unrelated to us. The stock market generally, and the biopharmaceutical sector in particular, are vulnerable to abrupt changes in investor sentiment. Prices of shares and trading volume of companies in the biopharmaceutical industry can swing dramatically in ways unrelated to, or that bear a disproportionate relationship to, operating performance. Our share price and trading volume may fluctuate based on a number of factors including, but not limited to, the following:

- developments regarding current or future third-party suppliers and licensee(s);
- clinical trial and regulatory developments regarding Macrilen™ (macimorelin);
- delays in our anticipated clinical trial development or commercialization timelines;
- announcements by us regarding technological, regulatory or other matters;
- arrivals or departures of key personnel;
- governmental or regulatory action affecting our product candidates and our competitors' products in the U.S., Canada and other countries;
- developments or disputes concerning patent or proprietary rights;
- actual or anticipated fluctuations in our revenues or expenses;
- general market conditions and fluctuations for the emerging growth and biopharmaceutical market sectors; and
- economic conditions in the U.S. or abroad, including the instability due to COVID-19.

Our listing on both the NASDAQ and the TSX may increase price volatility due to various factors, including different ability to buy or sell our Common Shares, different market conditions in different capital markets, and different trading volumes. In addition, low trading volume may increase the price volatility of our Common Shares. A thin trading market could cause the share price of our Common Shares to fluctuate significantly more than the stock market as a whole.

We do not intend to pay dividends in the near future.

To date, we have not declared or paid any dividends on our Common Shares. As a result, the return on an investment in our Common Shares, or any of our other securities, will depend upon any future appreciation in value. There is no guarantee that our Common Shares or any of our other securities will appreciate in value or even maintain the price at which shareholders have purchased them.

Future issuances of securities and hedging activities may depress the trading price of our Common Shares.

Any additional or future issuance of securities or convertible securities, including the issuance of securities upon the exercise of stock options and upon the exercise of warrants or other convertible securities or securities pursuant to which Common Shares are issuable, could dilute the interests of our existing shareholders, and could substantially decrease the trading share price of our Common Shares.

We may issue equity securities in the future for a number of reasons, including to finance our operations and business strategy, to satisfy our obligations upon the exercise of options or warrants, or for other reasons. Our stock option plans generally permit us to have outstanding, at any given time, stock options that are exercisable for a maximum number of Common Shares equal to 11.4% of all then issued and outstanding Common Shares.

In addition, the share price of our Common Shares could also be affected by possible sales of securities by investors who view other investment vehicles as more attractive means of equity participation in us and by hedging or arbitrage trading activity that may develop involving our securities. This hedging or arbitrage could, in turn, affect the trading share price of our Common Shares.

In the event we were to lose our foreign private issuer status as of June 30 of a given financial year, we would be required to comply with the Securities Exchange Act of 1934 domestic reporting regime, which could cause us to incur additional legal, accounting and other expenses.

In order to maintain our current status as a foreign private issuer, either (1) a majority of our Common Shares must not be either directly or indirectly owned of record by residents of the U.S. or (2) (a) a majority of our executive officers and of our directors must not be U.S. citizens or residents, (b) more than 50 percent of our assets cannot be located in the U.S. and (c) our business must be administered principally outside the U.S.

In 2021, our management conducted its annual assessment of the various facts and circumstances underlying the determination of our status as a foreign private issuer and, based on the foregoing, our management has determined that, as of the date of such determination and as of June 30, 2021, we continued to be a foreign private issuer.

There can be no assurance, however, that we will remain a foreign private issuer either in 2022 or in future financial years.

If we were to lose our foreign private issuer status as of June 30 of any given financial year, we would be required to comply with the Securities Exchange Act of 1934 reporting and other requirements applicable to U.S. domestic issuers, which are more detailed and extensive than the requirements for foreign private issuers. We may also be required to make changes in our corporate governance practices in accordance with various SEC rules and the NASDAQ listing standards. The regulatory and compliance costs to us of complying with the reporting requirements applicable to a U.S. domestic issuer under U.S. securities laws may be higher than the cost we have historically incurred as a foreign private issuer. As a result, we would expect that a potential loss of foreign private issuer status at some future point in time could increase our legal, financial reporting and accounting compliance costs, and it is difficult at this time to estimate by how much our legal, financial reporting and accounting compliance costs may increase in such eventuality.

Our articles of incorporation contain "blank check" preferred share provisions, which could delay or impede an acquisition of our company.

Our articles of incorporation, as amended, authorize the issuance of an unlimited number of "blank check" preferred shares, which could be issued by our Board without shareholder approval and which may contain liquidation, dividend and other rights equivalent or superior to our Common Shares. In addition, we have implemented in our constating documents an advance notice procedure for shareholder approvals to be brought before an annual meeting of our shareholders, including proposed nominations of persons for election to our Board. These provisions, among others, whether alone or together, could delay or impede hostile takeovers and changes in control or changes in our management. Any provision of our constating documents that has the effect of delaying or deterring a change in control could limit the opportunity for our shareholders to receive a premium for their Common Shares and could also affect the price that some investors are willing to pay for our Common Shares.

Our business could be negatively affected as a result of the actions of activist shareholders.

Proxy contests have been waged against many companies in the biopharmaceutical industry over the last few years. If faced with a proxy contest, we may not be able to successfully respond to the contest, which would be disruptive to our business. Even if we are successful, our business could be adversely affected by a proxy contest because:

- responding to proxy contests and other actions by activist shareholders may be costly and time-consuming, and may disrupt our operations and divert the attention of management and our employees;
- perceived uncertainties as to the potential outcome of any proxy contest may result in our inability to consummate potential acquisitions, collaborations or in-licensing opportunities and may make it more difficult to attract and retain qualified personnel and business partners; and
- if individuals that have a specific agenda different from that of our management, or other members of our board of directors are elected to our Board as a result of any proxy contest, such an election may adversely affect our ability to effectively and timely implement our strategic plan and to create value for our shareholders.

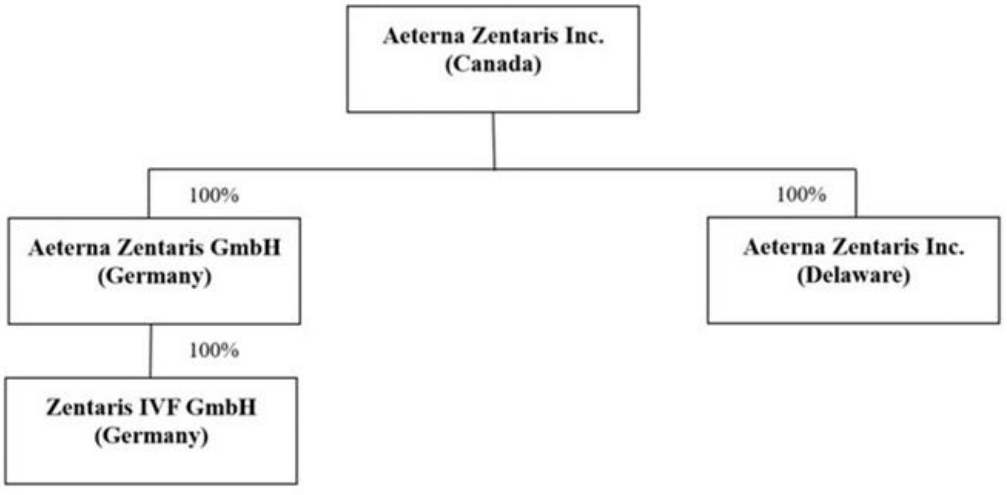
Item 4. Information on the Company

A. History and development of the Company

Aeterna Zentaris Inc. was incorporated on September 12, 1990 under the *Canada Business Corporations Act* (the "**CBCA**") and continues to be governed by the CBCA. Our registered address is located at 222 Bay St., Suite 3000, Toronto, Ontario, Canada M5K 1E7 c/o Norton Rose Fulbright Canada LLP and we operate another office located at 315 Sigma Drive, Summerville, South Carolina 29486; our telephone number is (843) 900-3223 and our website is www.zentaris.com.

In May 2004, we changed our name to Aeterna Zentaris Inc. and on November 17, 2015, we completed 100-to-1 Share Consolidation (reverse stock split). Our Common Shares commenced trading on a consolidated and adjusted basis on both the NASDAQ and the TSX on November 20, 2015.

We currently have three wholly-owned direct and indirect subsidiaries: Aeterna Zentaris GmbH ("AEZS Germany"), based in Frankfurt am Main, Germany and incorporated under the laws of Germany; Zentaris IVF GmbH, a direct wholly-owned subsidiary of AEZS Germany based in Frankfurt am Main, Germany and incorporated under the laws of Germany; and Aeterna Zentaris, Inc., an entity incorporated in the State of Delaware with an office in the Charleston, South Carolina area in the U.S.



Our Common Shares are listed for trading on both the NASDAQ and the TSX under the trading symbol "AEZS".

Our agent for service of process and SEC matters in the U.S. is our wholly-owned subsidiary, Aeterna Zentaris, Inc., located at 315 Sigma Drive, Summerville, South Carolina 29486.

Recent Developments

For a complete description of our recent corporate and pipeline developments, refer to "Item 5. - Operating and Financial Review and Prospects - Key Developments".

B. Business overview

Aeterna Zentaris is a specialty biopharmaceutical company commercializing and developing therapeutics and diagnostic tests. The Company's lead product, Macrilen™ (macimorelin), is the first and only U.S. Food and Drug Administration and European Commission approved oral test indicated for the diagnosis of patients with AGHD. Macimorelin is currently marketed in the U.S. under the tradename Macrilen™ through the license agreement and the amended license agreement (collectively the "Novo Amendment") with Novo Nordisk Healthcare AG ("Novo Nordisk" or "Novo") under which Aeterna Zentaris receives royalties on net sales. According to a commercialization and supply agreement, MegaPharm Ltd. is seeking regulatory approval and plans to subsequently commercialize macimorelin in Israel and the Palestinian Authority. Additionally, upon receipt of pricing and reimbursement approvals, Aeterna Zentaris expects that macimorelin will be marketed in Europe and the United Kingdom as GHRYVELIN™ through a recently established license agreement with Consilient Health Ltd. ("Consilient Health") under which Aeterna Zentaris will receive regulatory milestone payments related to agreed-upon pricing and reimbursement parameters; net sales milestone payments; and royalties, ranging from 10%-20% of net sales, subject to reduction in certain cases, or sublicense income recorded by Consilient Health. The Company is also leveraging the clinical success and compelling safety profile of macimorelin to develop it for the diagnosis of childhood-onset growth hormone deficiency ("CGHD"), an area of significant unmet need. The Company is actively pursuing business development opportunities for the commercialization of macimorelin in Asia and the rest of the world. We entered into license and supply agreements with NK Meditech Ltd. ("NK"), a subsidiary of PharmBio Korea, effective November 30, 2021, and a distribution and commercialization agreement with ER Kim Pharmaceuticals Bulgaria Food ("ER-Kim"), effective February 1, 2022. The agreements with NK are related to the development and commercialization of macimorelin for the diagnosis of AGHD and CGHD in the Republic of Korea, while the agreement with ER-Kim is related to the commercialization of macimorelin for the diagnosis of growth hormone deficiency in children and adults in Turkey and some non-European Union Balkan countries.

The Company is dedicated to the development of therapeutic assets and has recently taken steps to establish a pre-clinical pipeline to potentially address unmet medical needs across a number of indications with a focus on rare or orphan indications and with the potential for pediatric use. To date, we have signed agreements to establish this growing pipeline across a number of indications, including neuromyelitis optica spectrum disorder (NMOSD), Parkinson's disease (PD), primary hypoparathyroidism and amyotrophic lateral sclerosis (ALS, Lou Gehrig's disease). Additionally, the Company is developing oral prophylactic bacterial vaccines against each of SARS-CoV-2, the virus that causes COVID-19, and Chlamydia Trachomatis.

Macrilen™ (macimorelin)

Macrilen™ (macimorelin) is a novel orally available peptidomimetic ghrelin receptor agonist that stimulates the secretion of growth hormone by binding to the ghrelin receptor (GHSR-1a) and has potential uses in both endocrinology and oncology indications. Macrilen™ (macimorelin) was granted orphan-drug designation by the FDA for use in the diagnosis of growth hormone deficiency ("**GHD**").

Competitors for Macrilen™ (macimorelin) as a product for the diagnosis of AGHD are principally the diagnostic tests currently performed by endocrinologists, although none of these tests are approved by the FDA for this purpose. The most commonly used diagnostic tests for GHD are:

- The Insulin Tolerance Test ("**ITT**"), which has historically been considered the gold standard for the evaluation of AGHD because of its high sensitivity and specificity. However, the ITT is inconvenient to both patients and physicians, administered intravenously ("**IV**"), and contra-indicated in certain patients, such as patients with coronary heart disease or seizure disorder, because it requires the patient to experience hypoglycemia to obtain an accurate result. Some physicians will not induce full hypoglycemia, intentionally compromising accuracy to increase safety and comfort for the patient. Furthermore, administration of the ITT includes additional costs associated with the patient being closely monitored by a physician for the two- to four-hour duration of the test, and the test must be administered in a setting where emergency equipment is available and where the patient can be quickly hospitalized. The ITT is not used for patients with co-morbidities, such as cardiovascular disease, seizure disorder or a history of brain cancer, or for patients who are elderly and frail, due to safety concerns.

- The Glucagon Stimulation Test ("**GST**") is considered relatively safe by endocrinologists. The mechanism of action for this test is unclear. Also, this test takes up to three to four hours. It produces side effects in up to one-third of the patients with the most common being nausea during and after the test. This test is administered intramuscularly ("**IM**").

- The growth hormone releasing hormone-arginine stimulation test ("GHRH + ARG") is an easier test to perform in an office setting and has a good safety profile, but is considered to be costly to administer compared to the ITT and the GST. GHRH + ARG has been proposed to be the best alternative to ITT, but GHRH + ARG is no longer available in the U.S. This test is administered through an IV.

Oral administration of Macrilen™ (macimorelin) offers convenience and simplicity over the current GHD tests used, all of which require either IV or IM administration. Additionally, Macrilen™ (macimorelin) may demonstrate a more favorable safety profile than existing diagnostic tests, some of which may be inappropriate for certain patient populations (e.g. patients with diabetes mellitus or coronary heart disease) and have demonstrated a variety of side effects, which Macrilen™ (macimorelin) has not thus far. These factors may be limiting the use of GHD testing and may potentially enable Macrilen™ (macimorelin) to become the product of choice in evaluating AGHD. We believe that Macrilen™ (macimorelin) is well-positioned to displace the ITT as the preferred means by endocrinologists of evaluating AGHD for the following reasons:

- it is safer and more convenient than the ITT because it does not require the patient to become hypoglycemic;
- Macrilen™ (macimorelin) is administered orally, while the ITT requires an intravenous injection of insulin;
- Macrilen™ (macimorelin) is a more robust test than the ITT leading to evaluable test results;
- Macrilen™ (macimorelin) results are highly reproducible;
- the evaluation of AGHD using Macrilen™ (macimorelin) is less time-consuming and labor-intensive than the ITT; and
- the evaluation can be conducted in the physician's office rather than in a hospital-like setting.

We believe that approximately 15,000 – 20,000 AGHD tests will be conducted annually, in the U.S., after full market introduction of Macrilen™ (macimorelin). In addition, based on published information from the U.S. Centers for Disease Control and Prevention, different scientific publications, Huron, TVG and Navigant Research, we estimate that the total potential U.S. market for AGHD evaluation is in the range of 28,000 to 43,000 tests per year, excluding the evaluation of patients who have suffered a traumatic brain injury ("**TBI**").

In patients with a TBI, GHD is frequent and may contribute to cognitive sequelae and reduction in quality of life. GHD may develop in approximately 10% to 35% of TBI victims according to published study results. These data support a large upside potential for GHD testing.

Macimorelin Development History

The following is a summary of the history of our development of Macrilen™ (macimorelin):

2017 - present

- On January 4, 2017, we announced that, based on an analysis of top-line data, the confirmatory Phase 3 clinical trial of Macrilen™ (macimorelin) failed to achieve one of its co-primary endpoints. Under the study protocol, the evaluation of AGHD with Macrilen™ (macimorelin) would be considered successful, if the lower bound of the two-sided 95% confidence interval for the primary efficacy variables was 75% or higher for "percent negative agreement" with the ITT, and 70% or higher for the "percent positive agreement" with the ITT. While the estimated percent negative agreement met the success criteria, the estimated percent positive agreement did not reach the criteria for a successful outcome. Therefore, the results did not meet the pre-defined equivalence criteria which required success for both the percent negative agreement and the percent positive agreement.

- On February 13, 2017, we announced that, after reviewing the raw data on which the top-line data were based, we had concluded that Macrilen™ (macimorelin) had demonstrated performance supportive of achieving FDA registration and that we intended to pursue registration. The announcement set forth the facts on which our conclusion was based. The Company met with the FDA at the end of March 2017 to discuss this position.

- On March 7, 2017, we announced that the Pediatric Committee ("PDCO") EMA agreed to the Company's Pediatric Investigation Plan ("PIP") for Macrilen™ (macimorelin) and agreed that the Company may defer conducting the PIP until after it files a Marketing Authorization Application ("MAA") seeking marketing authorization for the use of Macrilen™ (macimorelin) for the evaluation of AGHD.

- On July 18, 2017, we were provided a Prescription Drug User Fee Amendment date of December 30, 2017 by the FDA.

- On November 27, 2017, the EMA accepted our MAA submission for Macrilen™ (macimorelin).

- On December 20, 2017, the FDA approved the market authorization for Macrilen™ (macimorelin), to be used in the diagnosis of patients with AGHD.

- On January 16, 2018, the Company, through AEZS Germany, entered into a License Agreement to carry out development, manufacturing, registration, regulatory and supply chain services for the commercialization of Macrilen™ (macimorelin) in the U.S. and Canada as further described below.

- In the August 2018, Volume 103, Issue 8 edition of *The Journal of Clinical Endocrinology and Metabolism*, the pivotal Phase 3 data from the Macrilen™ (macimorelin) confirmatory trial was published by Jose M. Garcia, MD, PhD, et al., titled 'Macimorelin as a Diagnostic Test for Adult GH Deficiency'.

- On November 19, 2018, we announced the Committee for Medicinal Products for Human Use ("CHMP") of the EMA adopted a positive opinion recommending a marketing authorization for macimorelin.

- On January 16, 2019, we announced that the EC granted marketing authorization for macimorelin.

- On December 18, 2019, we announced that the American Association of Clinical Endocrinologists ("AACE") and the American College of Endocrinology ("ACE") published new "Guidelines for Management of Growth Hormone Deficiency in Adults and Patients Transitioning from Pediatric to Adult Care" ("Guidelines"). Theses AACE/ACE 2019 Guidelines identify macimorelin as a "shorter and simpler alternative" compared to the traditionally available GHST.

Macrilen™ (macimorelin) Clinical Program

On January 28, 2020, we announced the successful completion of patient recruitment for the first pediatric study of macimorelin as a growth hormone stimulation test for the evaluation of GHD in children. This study, AEZS-130-P01 ("**Study P01**"), was the first of two studies as agreed with the EMA in our Pediatric Investigation Plan (the "**PIP**") for macimorelin as a GHD diagnostic. Macimorelin, a ghrelin agonist, is an orally active small molecule that stimulates the secretion of growth hormone from the pituitary gland into the circulatory system. The goal of Study P01 was to establish a dose that can both be safely administered to pediatric patients and cause a clear rise in growth hormone concentration in subjects ultimately diagnosed as not having GHD. The recommended dose derived from Study P01 will be evaluated in the pivotal second study, Study P02, on diagnostic efficacy and safety. Study P01 was an international, multicenter study, which was conducted in Hungary, Poland, Ukraine, Serbia, Belarus and Russia. Study P01 was an open label, group comparison, dose escalation trial designed to investigate the safety, tolerability, and pharmacokinetic/pharmacodynamic ("**PK/PD**") of macimorelin acetate after ascending single oral doses of macimorelin at 0.25, 0.5, and 1.0 milligram per kilogram body weight in pediatric patients from two to less than 18 years of age with suspected CGHD. We enrolled a total of 24 pediatric patients across the three cohorts of the study. Per study protocol, all enrolled patients completed four study visits after successful completion of the screening period. At Visit 1 and Visit 3, a provocative growth hormone stimulation test was conducted according to the study sites' local practices. At Visit 2, the macimorelin test was performed, and following the oral administration of the macimorelin solution, blood samples were taken at predefined times for PK/PD assessment. Visit 4 was a safety follow-up visit at study end.

The final study results from Study P01 were published in the second quarter of 2020 indicating positive safety and tolerability data for use of macimorelin in CGHD, as well as PK/PD data observed in a range as expected from the adult studies.

On April 7, 2020 the Company announced the decision of the EMA to accept our modification request of our PIP as originally approved in March 2017, which covered the conduct of two pediatric studies and defined relevant key elements in the outline of these studies. We believe this EMA decision supports the development of one globally harmonized study protocol for test validation, specifically Study P02, which we expect to be accepted both in Europe and the U.S.

In late 2020, Aeterna entered into the start-up phase for the clinical safety and efficacy study, AEZS-130-P02 ("Study P02" or ""DETECT-trial"), evaluating macimorelin for the diagnosis of CGHD. The DETECT-trial is an open-label, single dose, multicenter and multinational study expected to enroll approximately 100 subjects worldwide, with at least 40 pre-pubertal and 40 pubertal subjects, and a minimum of 25 subjects expected to be enrolled in the U.S. The study design is expected to be suitable to support a claim for potential stand-alone testing, if successful. In addition, under the Novo Amendment, Novo and Aeterna agreed that the percentage of DETECT-trial clinical trial costs that Novo is required to reimburse to Aeterna was adjusted from 70% to 100% of costs up to $11 million (€9 million), and includes reimbursement of Aeterna's budgeted internal labor costs. Any additional external jointly approved DETECT-trial costs incurred over $11 million (€9 million) will be shared equally between Novo and Aeterna. On April 22, 2021, the U.S. FDA Investigational New Drug Application associated with this clinical trial became active, see: https://clinicaltrials.gov/ct2/show/NCT04786873 and on May 13, 2021, we announced the opening of the first clinical site in the U.S. On January 26, 2022, the Company announced that it had experienced unavoidable delays in site initiation and patient enrollment due to rise of the Omicron variant in the COVID-19 pandemic. Further delays may be experienced as a result of the invasion into Ukraine by Russia which may cause volatility, disruption and instability in general economic conditions and international relations.

Macimorelin Pre-clinical Program

On January 13, 2021, we entered into a material transfer agreement with Queensland University to provide macimorelin for the conduct of preclinical and clinical studies evaluating macimorelin as a therapeutic for the treatment of amyotrophic lateral sclerosis ("ALS" and commonly known as Lou Gehrig's disease). Queensland University researchers have filed funding applications to dedicated organizations in Australia to finance parts of the abbreviated preclinical development program and to conduct a subsequent investigator-initiated clinical trial to evaluate the safety, tolerability and efficacy of macimorelin as a potential new treatment option for ALS patients. The Company expects to continue work with Queensland University to conduct proof-of-concept studies with macimorelin in disease specific animal models, assess alternative formulations and formalize a preclinical development plan. The Company plans to evaluate the development of additional alternative formulations or administration routes with the goal of ensuring sufficient bioavailability and expects to provide updates on its progress as results become available.

Macimorelin Commercialization Program

On June 25, 2020, we announced that we entered into an exclusive distribution and related quality agreement with MegaPharm Ltd., a leading Israel-based biopharmaceutical company, for the commercialization in Israel and in the Palestinian Authority of macimorelin, to be used in the diagnosis of patients with AGHD and in clinical development for the diagnosis of CGHD.

Under the terms of the agreement, MegaPharm Ltd. will be responsible for obtaining registration to market macimorelin in Israel and the Palestinian Authority, while the Company will be responsible for manufacturing, product supply, quality assurance and control, regulatory support, and maintenance of the relevant intellectual property. In June 2021, MegaPharm Ltd. filed an application to the Ministry of Health of Israel for regulatory approval of macimorelin in Israel.

On November 16, 2020, the Company announced that it had entered into the Novo Amendment related to the development and commercialization of macimorelin. Novo is currently marketing macimorelin in the U.S. under the tradename Macrilen™ for the diagnosis of AGHD. Aeterna, in collaboration with Novo, is currently developing the expanded use of macimorelin for the diagnosis of CGHD, an area of significant unmet need.

Pursuant to the Novo Amendment, the Company agreed to grant to Novo additional rights with respect to ownership of the Aeterna Patent Rights and Trademarks, as defined, and to amend certain responsibilities between Aeterna and Novo with respect to the ongoing development initiatives for the use of Macrilen™ as a diagnostic in the pediatric indication (the "Pediatric Indication"). Additionally, the Novo Amendment: reflected the existence of a supply agreement; established total consideration to be provided by Novo as reimbursements for costs incurred in connection with the development activities related to the Pediatric Indication; provided for a non-refundable upfront payment of $6.1 million (€5.0 million) to be made by Novo to the Company; and modified future payment obligations, including a reduction of royalty rates and a waiver by the Company with respect to the $5 million pediatric milestone from the original agreement with Novo.

Per the Novo Amendment, total consideration to be payable by Novo to the Company as reimbursement for Pediatric Indication development-related costs was established at approximately $11 million (€9 million) plus 50% of any excess over this amount, limited specifically to clinical trial expenses, which were estimated to total $11.7 million (€9.9 million) (the "Pediatric Development Consideration"). The Pediatric Development Consideration was derived from development forecasts that were approved by both the Company and Novo.

As for the reduction in royalties, the Company agreed to reduce the Net Sales Royalties from 15% to 8.5% for annual net sales of Macrilen™ up to $40 million and to establish a royalty of 15% for annual net sales of Macrilen™ over $40 million.

On December 7, 2020, the Company entered into an exclusive licensing agreement with Consilient Health Limited ("**CH**") for the commercialization of macimorelin as GHRYVELIN™ in the European Economic Area and the United Kingdom (the "**CH License Agreement**").

Under the terms of the CH License Agreement, CH agreed to make a non-refundable, non-creditable upfront payment to the Company of $1.2 million (€1.0 million), which the Company received in January 2021. The Company also is eligible to receive additional consideration, including: regulatory milestones related to agreed-upon pricing and reimbursement parameters; net sales milestones; and royalties, ranging from 10%-20% of net sales of macmorelin, subject to reduction in certain cases, or sublicense income recorded by CH.

Also on December 7, 2020, the Company and CH entered into an exclusive supply agreement, pursuant to which the Company agreed to provide the Licensed Product to CH, with such Licensed Product to be manufactured by third-party manufacturers for a period of ten years, subject to renewal (the "**CH Supply Agreement**"). In December 2021, the Department of Health and Social Care in the United Kingdom approved a list price which triggered a $226 (€0.2 million) pricing milestone payment from CH to the Company.

We entered into license and supply agreements with NK Meditech Ltd. ("**NK**"), a subsidiary of PharmBio Korea, effective November 30, 2021, and a distribution and commercialization agreement with ER Kim Pharmaceuticals Bulgaria Food ("**ER-Kim**"), effective February 1, 2022. The agreements with NK are related to the development and commercialization of macimorelin for the diagnosis of AGHD and CGHD in the Republic of Korea, while the agreement with ER-Kim is related to the commercialization of macimorelin for the diagnosis of growth hormone deficiency in children and adults in Turkey and some non-European Union Balkan countries.

Pipeline Expansion Opportunities

Bacterial Vaccine Platform: Orally active, live-attenuated bacterial vaccine platform with potential application against viruses and bacteria, such as coronaviruses and chlamydia bacteria

On February 2, 2021, the Company announced that it had entered into an exclusive option agreement to evaluate a preclinical potential COVID-19 vaccine developed at the University of Wuerzburg. On March 14, 2021, the Company exercised the option to enter into a license agreement with the University. Pursuant to the terms of the University License Agreement, the Company has been granted an exclusive, world-wide, license to certain patent applications and know-how owned by the University to research and develop, manufacture, and sell a potential COVID-19 vaccine using the University's bacterial vaccine platform technology. The Company has paid an up-front payment under the University License Agreement and will conduct milestones payments upon achievement of certain development, regulatory, and sales milestones, as well as a percentage of any sub-licensing revenue received by the Company as well as royalty payments on net sales of the licensed vaccine products (including for by the Company or its sub-licensees). Pursuant to the University License Agreement, the University granted the Company an exclusive option for the exclusive use of the Licensed Rights in an undisclosed field. In September 2021, the Company exercised this option and disclosed the field to be chlamydia. Additionally, the Company has entered into the Research Agreement under which the Company has engaged the University on a fee-for-service basis to conduct supplementary research activities and preclinical development studies on the potential vaccines.

The vaccine technology developed at the University is based on the active live-attenuated bacterial typhoid fever vaccine *Salmonella Typhi Ty21a* with an excellent safety profile, as a carrier strain. Our vaccines have the potential to be administered orally, induce mucosal immunity, induce a response to more than one antigen, and be stored and distributed at 2 to 8°C. We believe that, if there is sufficient data to advance into human clinical trials, the development program for these vaccines is expected to be abbreviated, as clinical safety data and manufacturing technology is already available for the underlying vaccine strain.

The Coronavirus outbreak began in the end of 2019 and in early 2022 was reaching its fourth infection peak worldwide with vaccinated people getting infected and with booster vaccinations being needed. As of January 12, 2022, there were three vaccines approved in US, and five in EU. At that time, over 9.5 billion doses had been administered, 59% of the world population had received at least one dose, and 35 million doses were being administered every day. The competition is large with 11 vaccines currently being in clinical studies only in Europe. Our COVID-19 vaccine candidate is unique in stimulating the mucosal immune system giving the potential to eliminate the virus when it enters the body, before an infection can occur, and drastically reducing the risk of vaccinated people getting infected and spreading the virus. In addition, the oral application and its storage stability greatly facilitates distribution and administration. Our next development steps include evaluating the administration route, dose and immunization scheme; initiating *in-vivo* immunology experiments with antigen variant candidates in relevant mice models; conducting virus challenge experiments in immunized transgenic animals; starting the manufacturing process assessment / development; and conducting pre-clinical safety and toxicology assessments.

Chlamydia trachomatis is a sexually transmitted bacterium infecting over 130 million subjects annually. In US, the prevalence 2.4 million per year, the incidence is 4 million per year, and the associated yearly health cost $691 million. The disease can spread to the reproductive tract eventually inducing infertility, miscarriage, or ectopic pregnancy, which is a life-threatening condition. Additionally, ocular infections can lead to inclusion conjunctivitis or trachoma, which is the primary source of visual impairment or infectious blindness. While diagnosed infections can be treated with antibiotics, three quarters of all infections are asymptomatic and currently no vaccine exists to protect against chlamydia. The potential strengths of our Chlamydia vaccine candidate are the mucosal immunity, oral administration, good stability, and inexpensive production. Our next development steps include designing and preparing candidate vaccine strains; evaluating administration route, dose and immunization scheme; and initiating *in-vivo* immunology experiments with candidate strains in relevant mouse models.

Delayed Clearance Parathyroid Hormone ("DC-PTH") Fusion Polypeptides: Potential treatment for chronic hypoparathyroidism

On March 11, 2021, the Company entered into an exclusive license agreement with The University of Sheffield, United Kingdom, for the intellectual property relating to parathyroid hormone ("**PTH**") fusion polypeptides covering the field of human use, which will initially be studied by Aeterna for the potential therapeutic treatment of chronic hypoparathyroidism ("**HypoPT**"). Under the terms of the exclusive patent and know-how license agreement entered into with the University of Sheffield, Aeterna obtained worldwide rights to develop, manufacture and commercialize PTH fusion polypeptides covered by the licensed patent applications for all human uses for an up-front cash payment, and milestone payments to be paid upon the achievement of certain development, regulatory and sales milestones, as well as low single digit royalty payments on net sales of those products and certain fees payable in connection with sublicensing. Aeterna will be responsible for the further development, manufacturing, approval, and commercialization of the licensed products. Aeterna has also engaged the University of Sheffield under a research contract to conduct certain research activities to be funded by Aeterna, the results of which will be included within the scope of the license granted to Aeterna.

The researchers at the University of Sheffield have developed a method to increase the serum clearance time of peptides, which the Company is applying to the development of a treatment for HypoPT. HypoPT is an orphan disease where the PTH level is abnormally low or absent, with a prevalence per 100 000 of 37 in US, 22 in Denmark, 9.4 in Norway, and 5.3 to 27 in Italy. Standard treatment is calcium and vitamin D supplementation. The only approved hormone replacement therapy, Natpar/Natpara, is sold by Takedo Pharmaceuticals. It is approved when standard treatment is insufficient and is administered by daily subcutaneous injections. Longer-acting PTH formulations are expected to give a more natural PTH level and a better treatment and quality of life for patients with HypoPT. Three competitors working on long-acting PTH formulations have their products in clinical trials. Ascendis Pharma develops TransCon PTH for daily injections and currently perform phase III trials. Amolyt Pharma develops their PTH hybrid AZP-3601 for daily injections and completed phase I trials in October 2021. Extend Biosciences develops their candidate EXT608 for weekly injections and foresee phase I trials starting in Q4 2021. Entera Bio has an orally administered PTH variant EB612 tested in a phase II study completed in 2015 and is currently evaluating further formulations for their next clinical trials. In consultation with The University of Sheffield, Aeterna has selected AEZS-150 as the lead candidate in its DC-PTH program. AEZS-150 is developed to provide a weekly treatment option of chronic hypoparathyroidism in adults. The delayed clearance time of AEZS-150 is achieved by transposing a principle successfully demonstrated by the University of Sheffield for the human growth hormone.

AIM Biologicals: Targeted, highly specific autoimmunity modifying therapeutics for the potential treatment of neuromyelitis optica spectrum disorder and Parkinson's disease

In January 2021, Aeterna entered into an exclusive patent license and research agreement with the University of Wuerzburg, Germany, for worldwide rights to develop, manufacture, and commercialize AIM Biologicals for the potential treatment of neuromyelitis optica spectrum disorder ("**NMOSD**"). Additionally, the Company has engaged Prof. Dr. Joerg Wischhusen from the University Hospital in Wuerzburg as well as neuro-immunologist Dr. Michael Levy from the Massachusetts General Hospital in Boston as consultants for scientific support and advice in the field of inflammatory CNS disorders, autoimmune diseases of the nervous system, and NMOSD. In September 2021, the Company entered into an additional exclusive license with the University of Wuerzburg for early pre-clinical development towards the potential treatment of Parkinson's disease ("**PD**").

AIM Biologicals is based on a natural process during pregnancy, which induces immunogenic tolerance of the maternal immune system to the partially foreign fetal antigens. Fetal proteins are processed and presented on certain immunosuppressive MHC class I molecules to induce this tolerance. In an autoimmune disease is the immune system misdirected and targets the body's own protein. With AIM Biologicals, we aim to restore the tolerance against such proteins to treat autoimmune diseases.

NMOSD is an autoimmune disease targeting the protein aquaporin 4 ("**AQP4**"), primarily found in optic nerves and the spinal cord. The disease leading to blindness and paralysis has a prevalence of 0.7-10 in 100 000, more common in persons with Asian or African compared to European ancestors, and 9 times more prevalent among women compared to men. NMOSD progresses in often life-threatening relapses, which are aggressively treated with high-dose steroids and plasmapheresis.

Until 2019, there was no FDA approved medication so the prevention of relapses and disease progression were treated by off-label use of immunosuppressive medication such as rituximab, azathioprine and mycophenolate mofetil. More recently three monoclonal antibodies were approved; soliris inhibiting cleavage of complement protein C5, uplizna depleting B lymphocytes through binding to C19, and enspryng blocking interleukin-6-mediated inflammatory cascades. Additionally, ultomiris, a long-acting variant of soliris, is currently in phase III trials for NMOSD.

In addition, other immunosuppressive medications are in clinical trials for this disease. In 2016, TG Therapeutics announced the development of the antibody ublituximab (TG-1101) for the treatment of NMOSD, although it currently is in phase III trials for relapsing multiple sclerosis. Lundbeck is also investigating related indications and is performing phase I trials with Lu AG06466. And finally, Aquaporumab has demonstrated its ability to block the interaction between the autoimmune antibody and AQP4 in preclinical studies.

With AIM Biologicals, we have the potential to specifically suppress the autoimmune response against aquaporin-4 and thereby treating NMOSD without suppressing the immune defense against pathogens in general.

Parkinson's disease is a neurological disease commonly associated with motoric problems with a slow and fast progression form. It is the second most common neurodegenerative disease affecting 10 million people worldwide. In US, there are almost 1 million people living with PD and this is predicted to increase to 1.2 million by 2030. In addition, 60 000 people are diagnosed with PD each year, with the direct and indirect costs estimated at over $50 billion per year. The hallmark of PD is the neuronal inclusion of mainly α-synuclein protein (αSyn) associated with the death of dopamine-producing cells. Dopaminergic medication is the mainstay treatment of PD symptoms, but currently there is no pharmacological therapy to prevent or delay disease progression leading to alternate treatments, such as deep brain stimulation with short electric bursts, being investigated for the treatment of symptoms.

A survey of clinical trials under development for PD include: Anavex Life Sciences which is testing their Sigma-1 receptor agonist blarcamesine in related indications in phase I to III and are planning phase II trials to treat PD; stem-cell therapies are investigated for the regeneration of damaged neurons by several groups, and International Stem Cell Corporation currently performing a phase I trial. Since αSyn aggregation has a crucial part in the propagation of PD between cells, Prothena Biosciences and Roche are investigating their αSyn antibody Prasinemuzab in phase II clinical trials, while AFFiRiS have completed phase I studies with their candidate PD01 stimulating the immune system to produce such antibodies. With AIM Biologicals we want to induce tolerance for αSyn to stop or slow down the progression of this degenerative disease.

Macimorelin Therapeutic: Ghrelin agonist in development for the treatment of amyotrophic lateral sclerosis (Lou Gehrig's disease)

In January 2021, the Company entered into a material transfer agreement with the University of Queensland, Australia, to provide macimorelin for the conduct of pre-clinical and subsequent clinical studies, evaluating macimorelin as a potential therapeutic for the treatment of amyotrophic lateral sclerosis (ALS or Lou Gehrig's disease). The University of Queensland researchers have filed for supportive grants to conduct such clinical studies. AEZS and the University are currently in the final steps of negotiating a research agreement.

ALS is a rare progressive neurological disease primarily affecting the neurons controlling voluntary movement, leading to the disability to control movements such as walking, talking, and chewing. Most people with ALS die from respiratory failure, usually between 3-5 years after diagnosis. ALS has a prevalence per 100 000 persons and an incidence per 100,000 person-years of 6.22 and 2.31 in Europe, 5.20 and 2.35 in North America, 3.41 and 1.25 in Latin America, 3.01 and 0.93 in Asian countries excluding Japan, and 7.96 and 1.76 in Japan, respectively.

Currently there is no cure for ALS and no effective treatment to halt or reverse the progression of the disease. Riluzole was the first treatment for ALS, it was approved by FDA in 1995, reduces the amount of the neurotransmitter glutamate, is taken orally, and increases life expectance with 2-3 months. Edaravone is available in Japan since 2016 and in US since 2018, but not marketed in EMA. It is an intravenous mediation aimed at reducing the progression of ALS with 30% for a specific patient group. The developer Mitsubishi Tanabe Pharma has recently presented promising 24 weeks results for their oral formulation of edaravone (MT-1186) in a 48-weeks phase III trial. These are the two only FDA approved treatments of ALS, but various additional drug and non-drug therapies are used to relieve symptoms and improve quality of life.

There is a great need of further treatment options of ALS and many candidates with various modes of action are being investigated. Advanced clinical phase treatments include antisense medicine targeting different proteins investigated by Ionis in phase III, Ionis/Biogen in phase III and II, and Wave Life Sciences/Takeda in phase I/II. Biohaven Pharmaceuticas is investigating verdiperstat, an orally administered irreversible myeloperoxidase inhibitor, in phase II/III trial. Brainstorm Cell Therapeutics have a cell therapy in phase III trials, where they are collecting autologous mesenchymal stem cells from the patient, inducing them to secrete growth factors, and injecting them into the cerebrospinal fluid where they slow down disease progression. Cytokinetics has phase III trials for reldesemtiv, a fast skeletal muscle troponin activator, expected to lead to increased muscle contractility. The gene therapy, engensis (WM202), from Helixmith induces expression of the hepatocyte growth factor, which may stimulate nerve regeneration and is currently in phase II trials for ALS and in phase I to III for further indications. Masitinib is a tyrosine kinase inhibitor being investigated by AB Science which demonstrated 27% decreased disease progression in a phase IIB/III trial, and is currently in a phase III confirmatory trial. Zilucoplan is an investigational macrocyclic peptide inhibitor of complement component 5 from UCB currently in phase III trials. Clene Nanomedicine has demonstrated the potential of their orally administered gold nanocrystals CNM-Au8 to reverse neuronal damage, improve energy production, decrease reactive oxygen species, through the execution of its phase III trials which are expected to be completed in the second half of 2022. Another potential cure is under development by researchers at the Northwestern University in USA, NU-9 demonstrated in mouse models potential to decrease misfolding of superoxide dismutase and regeneration of upper motor neurons.

Ghrelin is a hormone with wide-ranging biological actions, most known for stimulating growth hormone release, which is demonstrating emerging evidence as therapeutic for ALS. Macimorelin (AEZS-130) is our small molecule ghrelin agonist approved for clinical tests of growth hormone deficiency. As a ghrelin agonist AEZS-130 has the potential as a treatment for ALS, which is evaluated in this research collaboration.

Geographic Areas

A description of the principal geographic areas in which we compete, including a geographical and categorical breakdown of our revenues in the past three years, is presented in note 25 (Segment information) to our consolidated financial statements included in this Annual Report on Form 20-F at Item 17.

Seasonality

As a specialty biopharmaceutical company, the Company does not consider any of its products or services to be seasonal.

Raw Materials

Raw materials and supplies are generally available in quantities adequate to meet the needs of our business. We will be dependent on third-party manufacturers for the pharmaceutical products that we or our licensees will market. An interruption in the availability of certain raw materials or ingredients, or significant increases in the prices paid by us for them, could have a material adverse effect on our business, financial condition, liquidity and operating results.

Regulation of Drug Development

Generally. Governmental authorities in the U.S., Canada, Europe, and other countries extensively regulate the preclinical and clinical testing, manufacturing, labeling, storage, record keeping, advertising, promotion, export, marketing, and distribution, among other things, of pharmaceuticals. Under the laws of the U.S., the countries of the EU, and other countries, we are subject to obligations to ensure that our clinical trials are conducted in accordance with Good Clinical Practice ("**GCP**") guidelines and the investigational plan and protocols contained in an Investigational New Drug ("**IND**") application, or comparable foreign regulatory submission. Set forth below is a brief summary of the material governmental regulations affecting us in the major markets in which we intend to market our products and/or promote products that we acquire or in-license or to which we obtain promotional rights.

The United States. In the U.S., the FDA's Center for Drug Evaluation and Research ("**CDER**") under the Federal Food, Drug and Cosmetic Act of 1938, as amended (the "**FDCA**"), the Public Health Service Act and other federal statutes and regulations, subjects pharmaceutical products to rigorous review. In order to market and sell a new drug product in the U.S., we must first test it and send CDER evidence from these tests to prove that the drug is safe and effective for its intended use. In most cases, these tests include extensive preclinical, clinical, and laboratory tests. A team of CDER physicians, statisticians, chemists, pharmacologists, and other scientists review the company's data and proposed labeling. If this independent and unbiased review establishes that a drug's health benefits outweigh its known risks, the drug is approved for sale. CDER does not test the drug itself, but it does conduct limited research in the areas of drug quality, safety, and effectiveness standards. Before approving a new drug or marketing application, the FDA may conduct pre-approval inspections of the developer of the drug (the "**sponsor**"), its CRO and/or its clinical trial sites to ensure that clinical, safety, quality control, and other regulated activities are compliant with GCP, or Good Laboratory Practices ("**GLP**"), for specific non-clinical toxicology studies. The manufacturing process, which must be compliant with GMP, and the manufacturing facilities used to produce a product are also subject to ongoing inspection by the FDA. The FDA may also require confirmatory trials, post-marketing testing, and/or extra surveillance to monitor the effects of approved products, or place conditions on any approvals that could restrict the commercial applications of a product. Once approved, the labeling, advertising, promotion, marketing, and distribution of a drug or biologic product must be in compliance with FDA regulatory requirements.

The first stage required for ultimate FDA approval of a new biologic or drug involves completion of preclinical studies whereby a sponsor must test new drugs on animals for toxicity. Multiple species are used to gather basic information on the safety and efficacy of the compound being investigated and/or researched. The FDA regulates preclinical studies under a series of regulations called the current GLP regulations as well as regulatory requirements found in Part 21 subchapter D of the Code of Federal Regulations. If the sponsor violates these regulations, the FDA may require that the sponsor replicates those studies or can subject the sponsor to enforcement actions or penalties as described further below. The sponsor then submits to the FDA an IND application based on the results from the initial testing that include the drug's composition and manufacturing, along with a plan for testing the drug on humans. The FDA reviews the IND to ensure that the proposed studies (clinical trials) do not place human subjects at unreasonable risk of harm. FDA also verifies that there are adequate informed consent and human subject protections in place.

After a sponsor submits an IND application, it must wait thirty (30) days before starting a clinical trial to allow the FDA time to review the prospective study. If the FDA finds a problem, it can order a clinical hold to delay an investigation, or interrupt a clinical trial if problems occur during the study. After the IND application is in effect, a sponsor may commence human clinical trials. The sponsor typically conducts human clinical trials in three sequential phases, but the phases may overlap. In Phase 1 trials, the sponsor tests the product in a small number of patients or healthy volunteers (typically 20-80 healthy volunteers), primarily for safety at one or more doses. The goal in this phase is to determine what the drug's most frequent side effects are and, often, how the drug is metabolized and excreted. Phase 2 studies begin if Phase 1 studies do not reveal unacceptable toxicity. In Phase 2, in addition to safety, the sponsor evaluates the efficacy of the product in a patient population somewhat larger than Phase 1 trials. The number of subjects in Phase 2 studies typically ranges from a few dozen to about 300. This phase aims to obtain preliminary data on whether a drug works in people who have a certain disease or condition. At the end of Phase 2, the FDA and sponsor try to come to an agreement on how large-scale studies in Phase 3 should be done.

Phase 3 studies begin if evidence of effectiveness is shown in Phase 2. Phase 3 trials typically involve additional testing for safety and clinical efficacy in an expanded population (approx. 300-3,000 volunteers who have the disease or condition) at geographically dispersed test sites. The sponsor must submit to the FDA a clinical plan, or "protocol", accompanied by the approval of the institutions participating in the trials, prior to commencement of each clinical trial. The FDA may order the temporary or permanent discontinuation of a clinical trial at any time.

In the case of product candidates for cancer, the initial human testing may be done in patients with the disease rather than in healthy volunteers. Because these patients are already afflicted with the target disease, such studies may provide results traditionally obtained in Phase 2 studies. Accordingly, these studies are often referred to as "Phase 1/2" studies as they combine two phases. Even if patients participate in initial human testing and a Phase 1/2 study is carried out, the sponsor is still responsible for obtaining all the data usually obtained in both Phase 1 and Phase 2 studies.

The sponsor must submit to the FDA the results of the preclinical and clinical testing, together with, among other things, detailed information on the manufacture and composition of the product, in the form of a New Drug Application (an "**NDA**") or, in the case of a biologic, a Biologics License Applications (a "**BLA**"). In a process that can take a year or more, the FDA reviews this application and, when and if it decides that adequate data are available to show that the new compound is both safe and effective for a particular indication and that other applicable requirements have been met, approves the drug or biologic for marketing. The amount of time taken for this approval process is a function of a number of variables, including the quality of the submission and studies presented and the potential contribution that the compound will make in improving the treatment of the disease in question.

FDA provides *incentives*, such as orphan drug designation or pediatric exclusivity. Orphan-drug designation is granted by the FDA Office of Orphan Drug Products to novel drugs or biologics that are intended for the safe and effective treatment, diagnosis or prevention of rare diseases or disorders that affect fewer than 200,000 people in the U.S., or that affect more than 200,000 people but are not expected to recover the costs of developing and marketing a treatment drug. The designation provides the sponsor with a seven-year period of U.S. marketing exclusivity if the drug is the first of its type approved for the specified indication, or if it demonstrates superior safety, efficacy, or a major contribution to patient care versus another drug of its type that was previously granted the designation for the same indication. We have been granted orphan drug designations for Macrilen™ (macimorelin) for the evaluation of GHD.

Under the Drug Price Competition and Patent Term Restoration Act of 1984 (the "**Hatch-Waxman Act**"), newly approved drugs and indications may benefit from a statutory period of non-patent data exclusivity. The Hatch-Waxman Act provides five-year data exclusivity to the first applicant to gain approval of an NDA for a new chemical entity (" **NCE**"), meaning that the FDA has not previously approved any other drug containing the same active pharmaceutical ingredient, or active moiety. Although protection under the Hatch-Waxman Act will not prevent the submission or approval of another full NDA, such an NDA applicant would be required to conduct its own preclinical and adequate, well-controlled clinical trials to demonstrate safety and effectiveness.

The Hatch-Waxman Act also provides three years of data exclusivity for the approval of new and supplemental NDAs, including Section 505(b)(2) applications, for, among other things, new indications, dosage forms, routes of administration, or strengths of an existing drug, or for a new use, if new clinical investigations that were conducted or sponsored by the sponsor are determined by the FDA to be essential to the approval of the application. This exclusivity, which is sometimes referred to as clinical investigation exclusivity, would not prevent the approval of another application if the sponsor has conducted its own adequate, well-controlled clinical trials demonstrating safety and efficacy, nor would it prevent approval of a generic product that did not incorporate the exclusivity-protected changes of the approved drug product.

The labeling, advertising, promotion, marketing, and distribution of a drug or biologic product must be in compliance with FDA regulatory requirements. Failure to comply with applicable requirements can lead to the FDA demanding that production and shipment cease and, in some cases, that the manufacturer recall products, or to enforcement actions that can include seizures, injunctions, and criminal prosecution. These failures can also lead to FDA withdrawal of approval to market a product. As long as the requirements are fulfilled and the fees are paid to FDA the product can stay on the market, there is no renewal procedure.

Canada. In Canada, the Therapeutic Products Directorate of Health Canada is the Canadian federal authority that regulates pharmaceutical drugs and medical devices for human use. Prior to being given market authorization, a sponsor must present substantive scientific evidence of a product's safety, efficacy, and quality as required by the Food and Drugs Act and other legislation and regulations. The requirements for the development and sale of pharmaceutical drugs in Canada are substantially similar to those in the U.S., which are described above.

The European Union. Medicines can be authorized in the EU by using either the centralized authorization procedure (CP), or national authorization procedures. The EU has implemented a centralized procedure coordinated by the EMA for the approval of human medicines, which results in a single marketing authorization issued by the EC that is valid across the EU, as well as Iceland, Liechtenstein, and Norway. The centralized procedure is mandatory for human medicinal products containing a new active substance for the treatment of HIV/AIDS, cancer, diabetes, neurodegenerative diseases, autoimmune diseases, other immune dysfunctions, viral diseases, or that are designated as orphan medicinal products. In addition, the CP is required for product types derived, for example, from biotechnological processes or genetic engineering. For medicines that do not fall within these categories, an applicant has the option of submitting an application for a centralized marketing authorization to the EMA, as long as the medicine concerned is a significant therapeutic, scientific or technical innovation, or if its authorization would be in the interest of public health.

There are two national routes to authorize medicinal products in several EU countries, which are available for investigational drug products that fall outside the scope of the centralized procedure and result in a national marketing authorization:

- *Decentralized procedure.* Using the decentralized procedure, a sponsor may apply for simultaneous authorization in more than one EU country of medicinal products that

have not yet been authorized in any EU country and that do not fall within the mandatory scope of the centralized procedure. After mutual approval national authorizations will be granted separately by each member state involved. *Mutual recognition procedure.* In the mutual recognition procedure, a medicine is first authorized in one EU Member State, in accordance with the national procedures of that country. Following this, further marketing authorizations can be sought from other EU countries in a procedure whereby the countries concerned agree to recognize the validity of the original, national marketing authorization.

- *National procedure.* If approval is sought independently in only one country, the application for marketing authorization is addressed directly to the competent authority of the member state.

Similar to the U.S., the EMA provides *incentives* for the development of orphan drugs or for pediatrics. Orphan designation is granted for diseases affecting less than 5 in 10,000 people in the EU. With the designation, the sponsor benefits from prolonged market exclusivity (10 years) and fee reductions.

The pediatric regulation grants pediatric development with a six-month extension of the supplementary protection certificate.

The EU marketing authorization is valid for five years and is renewable upon application by the MAH. After the renewal the approval is permanently valid.

Regulation of Commercial Operations

The marketing, promotional, and pricing practices of human pharmaceutical manufacturers, as well as the manner in which manufacturers interact with purchasers and prescribers, are subject to various U.S. federal and state laws, including the federal anti-kickback statute and the False Claims Act, and state laws governing kickbacks, false claims, unfair trade practices, and consumer protection, and to similar laws in other countries. In the U.S., these laws are administered by, among others, the Department of Justice ("**DOJ**"), the Office of Inspector General of the Department of Health and Human Services, the Federal Trade Commission, the Office of Personnel Management, and state attorneys general. Over the past several years, the FDA, the DOJ and many other agencies have increased their enforcement activities with respect to pharmaceutical companies and increased the inter-agency coordination of enforcement activities.

In the U. S., biopharmaceutical and medical device manufacturers are required to record any transfers of value made to licensed physicians and teaching hospitals and to disclose such data to the Department of Health and Human Services ("**HHS**"). In addition to civil penalties for failure to report transfers of value to physicians or teaching hospitals, there will be criminal penalties if a manufacturer intentionally makes false statements or excludes information in such reports. The payment data across biopharmaceutical and medical device companies is posted by the HHS on a publicly available website. Increased access to such data by fraud and abuse investigators, industry critics and media will draw attention to our collaborations with reported entities and will importantly provide opportunities to underscore the critical nature of our collaborations for developing new medicines and exchanging scientific information. This national payment transparency effort coupled with industry commitment to uphold voluntary codes of conduct (such as the PhRMA Code on Interactions with Healthcare Professionals and PhRMA Guiding Principles Direct to Consumer Advertisements About Prescription Medicines) and rigorous internal training and compliance efforts will complement existing laws and regulations to help ensure ethical collaboration and truthful product communications.

The Canadian Association of Research-Based Pharmaceutical Companies ("**Rx & D**") has adopted "Guidelines for Transparency in Stakeholder Funding" that require member companies to regularly disclose, by means of websites and annual reports, a list of all stakeholders to which they provide direct funding. The term "stakeholder" is defined in Rx & D's Code of Ethical Practices to include "Health Care Professionals". In the EU, the disclosure code of transfers of value to healthcare professionals and organizations adopted by the European Federation of Pharmaceutical Industries and Associations ("**EFPIA**") requires all members of EFPIA to disclose transfers of value to healthcare professionals and healthcare organizations beginning in 2016, covering the relevant transfers in 2015. Each member company will be required to document and disclose: (i) the names of healthcare professionals and associations that have received payments or other transfers of value and (ii) the amounts or value transferred, and the type of relationship.

For more information about the regulatory risks associated with our business operations, see "Item 3D. Risk Factors".

Intellectual Property - Patents

We seek to protect our compounds, manufacturing processes, compositions and methods of medical use for our lead drugs and drug candidates through a combination of patents, trade secrets and know-how. Our patent portfolio consists of approximately six owned and in-licensed patent families (issued, granted or pending in the U.S., Europe and other jurisdictions). The patent positions of companies in the biotechnology and pharmaceutical industries are highly uncertain and involve complex legal and factual questions. Therefore, we cannot predict the breadth of claims, if any, that may be allowed under any of our patent applications, or the enforceability of any of our allowed patents. See "Item 3.D. Risk Factors - We may not obtain adequate protection for our products through our intellectual property."

Patents extend for varying periods according to the date of patent filing or grant and the legal term of patents in the various countries where patent protection is obtained. The actual protection afforded by a patent, which can vary from country to country, depends on the type of patent, the scope of its coverage and the availability of legal remedies in the country. In the U.S., the patent term of a patent that covers an FDA-approved drug may also be eligible for patent term extension, which permits patent term restoration as compensation for the patent term lost during the FDA regulatory review process. The Hatch-Waxman Act permits a patent term extension of up to five years beyond the expiration of the patent, in which the patentee may file an application for yearly interim extensions within five years if the patent will expire and the FDA has not yet approved the NDA. The length of the patent term extension is related to the length of time the drug is under regulatory review. Patent extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only one patent applicable to an approved drug may be extended.

Similar provisions are available in Europe and other foreign jurisdictions to extend the term of a patent that covers an approved drug. In these jurisdictions, however, no interim extensions exist and the marketing approval must be granted before the patent expires. In the future, we expect to apply for patent term extensions on patents covering those products, outside the U.S. While we anticipate that any such applications for patent term extensions will likely be granted, we cannot predict the precise length of time for which such patent terms would be extended in the U.S., Europe or other jurisdictions. If we are not able to secure patent term extensions on patents covering our products for meaningful periods of additional time, we may not achieve or sustain profitability, which would adversely affect our business.

In addition to patent protection, our products may benefit from the market-exclusivity provisions contained in the orphan-drug regulations or the pediatric-exclusivity provisions or other provisions of the FDA Act, such as a NCE exclusivity or new formulation exclusivity. Orphan drug regulations provide incentives to pharmaceutical and biotechnology companies to develop and manufacture drugs for the treatment of rare diseases, currently defined as diseases that exist in fewer than 200,000 individuals in the U.S., or diseases that affect more than 200,000 individuals in the U.S. but that the sponsor does not realistically anticipate will generate a net profit. Under these provisions, a manufacturer of a designated orphan drug can seek tax benefits, and the holder of the first FDA approval of a designated orphan product will be granted a seven-year period of marketing exclusivity for such FDA-approved orphan product. In the U.S., the FDA has the authority to grant additional data protection for approved drugs where the sponsor conducts specified testing in pediatric or adolescent populations. If granted, this pediatric exclusivity provides an additional six months which are added to the term of data protection as well as to the term of any relevant patents, to the extent these protections have not already expired. We may also seek to utilize market exclusivities in other territories, such as in the EU. There can be no assurance that any of our drug candidates will obtain such orphan drug designation, pediatric exclusivity, a NCE exclusivity or any other market exclusivity in the U.S., the EU or any other territory, or that we will be the first to receive the regulatory approval in a given country or territory for such drugs so as to be eligible for any market exclusivity protection.

Macrilen™ (macimorelin):

We hold the worldwide rights to macimorelin pursuant to an exclusive license agreement with the French Centre National de la Recherche Scientifique (CNRS), as licensor, and AEZS Germany, as licensee. The obligation to pay royalties on net sales to CNRS expired in 2021. Macrilen™ is the approved trademark for macimorelin as licensed under the License Agreement for commercialization in the U.S. and Canada.

The following patents and patent applications relate to macimorelin:

- U.S. patent 8,192,719 covers a method of assessing pituitary-related GHD in a human or animal subject comprising an oral administration of the compound macimorelin and determination of the level of growth hormone in the sample and assessing whether the level of growth hormone in the sample is indicative of GHD. This patent expires in October 2027.

- European patent 1 984 744 covers a method of assessing pituitary-related GHD by oral administration of macimorelin. This patent expires in February 2027.

- Japanese patent 4 852 728 covers a method of assessing pituitary-related GHD by oral administration of macimorelin. This patent expires in February 2027.

An invention has been made by inventors of AEZS Germany to use a macimorelin containing composition for the assessment of GHD in adults.

- A related U.S. provisional patent applications Serial No. 62/607,866 was filed on December 19, 2017 and Serial No. 62/609,059 was filed on December 21, 2017. Both are identical and are directed to a method of assessing GHD comprising oral administration of a macimorelin containing composition and collecting one or two post-administration samples.

- The non-provisional U.S. application 15/993,507 was filed on May 30, 2018 drawing the priority of both provisional applications. The related U.S. patent 10,288,629 was granted on May 14, 2019, and will expire on May 30, 2038.A Patent Cooperation Treaty ("**PCT**") PCT/EP/2018/085622 application was filed December 18, 2018 drawing the priority of both provisional U.S. applications. In addition to the method of assessing GHD comprising oral administration of a macimorelin containing composition and collecting one or two post-administration samples, the PCT application also covers a similar method of assessing GHD using three post-administration samples. On February 24, 2022, following examination of European patent application 18827044.1, a European patent with the title "Method of assessing growth hormone deficiency comprising oral administration of a macimorelin containing composition and collecting one or two post-administration samples" has been granted. The patent will be published in European Patent Bulletin on March 23, 2022. The European patent covers the use of macimorelin according to the label approved by EC to diagnose GHD in adults. The European patent will be validated in 41 European countries.

An invention has been made by inventors of AEZS Germany to use a macimorelin containing composition for the assessment of GHD in children. The invention is directed to a method comprises providing at least one blood sample, taken from a subject within a range from about 15 to about 100 minutes following an administration of an sufficient amount of macimorelin to induce growth hormone secretion, measuring the growth hormone level of each blood sample and compare the level with a single threshold value to carry out the diagnosis GHD. The method of the invention is a stand-alone test.

- A related U.S. provisional application Serial No. 63/054,889 was filed July 22, 2020 for the use of macimorelin in assessing growth hormone deficiency in children.

- A non-provisional U.S. application named "Use of macimorelin in assessing growth hormone deficiency in children" with docket number 17/375,709 was filed on July 14, 2021, drawing the priority of the provisional application.

- An international PCT application with docket number PCT/EP2020/070691 was filed on July 22, 2020. Based on the PCT application several national applications have been filed in due time.

Patent applications related to the pipeline expansion opportunities and covered by the individual Patent and License Agreements between AEZS Germany and licensors.

Development of a COVID-19 vaccine based on a modified Salmonella Typhi Ty21a bacterial strain

- Our licensor the University of Wuerzburg has filed a priority patent application at European Patent Office on August 14, 2020, named "Salmonella vaccine for the treatment of coronavirus". The patent application with docket number EP20 191142.7 provides a live-attenuated bacterium of the genus Salmonella comprising a recombinant plasmid encoding a fusion protein, wherein the fusion protein comprises a coronavirus antigen, and an adjuvant peptide. An international PCT application with docket number PCT/EP2021/072624, and a national U.S. application with docket number 17/402,014 was filed August 13, 2021.

Delayed Clearance Parathyroid Hormone (DC-PTH) Fusion Polypeptide for the treatment of hypoparathyroidism in adults

- A priority patent application with docket number GB 1706781.0 has been filed by our licensor The University of Sheffield on April 27, 2017. The patent application provides long-acting parathyroid hormone like fusion polypeptides comprising a receptor polypeptide and its use in the treatment of hypoparathyroidism and osteoporosis. An international PCT application named "Parathyroid Hormone Fusion Polypeptide" with docket number PCT/GB2018/051120 was filed April 27, 2018. A national U.S. application with docket number 16/608,611 has been filed on October 25, 2019 and was published as US 2020/0164033A1 on May 28, 2020.

AIM Biologicals: Targeted, highly specific autoimmunity modifying therapeutics

- Our licensor the University of Wuerzburg has filed a priority patent application with docket number EP 17172444.6 on May 23, 2017. The invention relates to targeted immunomodulatory effects of defined peptides in combination with proteins comprising one or more domains of a non-classical MHC class 1b molecules or in combination with molecules that interfere with the interaction of MHC class 1b molecules and their receptors. An international PCT application named "Combinations of MHC class 1b molecules and peptides for targeted therapeutic immunomodulation" with docket number PCT/EP2018/063100 has been filed on May 18, 2018. The application was published as WO 2018/215340 A1 on November 29, 2018. A national U.S. application with docket number 16/615,188 has been filed on November 20, 2019 and was published as US 2020/0157175A1 on May 21, 2020.

C. Organizational structure

Our corporate structure, the jurisdiction of incorporation of our direct and indirect subsidiaries and the percentage of shares that we held in those subsidiaries as at December 31, 2021 is depicted in the chart set forth under the caption "Item 4.A. History and development of the Company".

D. Property, plant and equipment

Our registered address is located in Toronto, Canada. Our largest office is located in Frankfurt, Germany and we have an additional office in Summerville, South Carolina. We do not own any real property. Effective August 25, 2021, the Company and its landlord mutually agreed to a one year extension to its existing building lease agreement for its German subsidiary, continuing such terms until March 31, 2023.

The following table sets forth information with respect to our main facilities as at December 31, 2021.

Location	Use of space	Square Footage	Type of interest
315 Sigma Drive, Summerville SC 29486	Occupied for administration	168	Leasehold
Weismüllerstr. 50 D-60314 Frankfurt-am-Main, Germany	Occupied for management, R&D, business development and administration	30,343	Leasehold

We believe that our current facilities are adequate to meet our ongoing needs.

Item 4A Unresolved Staff Comments

Not required.

Item 5. Operating and Financial Review and Prospects

Key Developments

Financing activities

During the year ended December 31, 2021, certain warrant holders exercised outstanding warrants to purchase 35,111,187 of our common shares for gross proceeds of approximately $20.1 million (such exercises, the "**2021 Warrant Exercises**").

On February 19, 2021, the Company completed a bought deal public offering of 20,509,746 common shares at $1.45 per common share, resulting in aggregate gross proceeds of $29.7 million, less underwriting discounts, commissions and offering expenses of $2.8 million (the "February 2021 Financing"). The Company also granted to the underwriter and placement agent (the "**Underwriter**"), a 30-day over-allotment option to purchase up to 3,076,461 additional common shares at a price of $1.45 per common share (the "**Underwriter Option**"). In connection with the February 2021 Financing, the Company issued warrants to purchase 1,435,682 common shares to the Underwriter, with each warrant bearing an exercise price of $1.8125 (the "**February 2021 Placement Agent Warrants**"). The February 2021 Placement Agent Warrants expire on February 17, 2026.

On February 22, 2021, the Underwriter exercised the Underwriter Option and received 3,076,461 common shares in exchange for gross proceeds to the Company of $4.5 million. Upon exercise of the Underwriter Option, the Underwriter also received an additional 215,352 February 2021 Placement Agent Warrants.

Aggregate gross proceeds received in connection with the February 2021 Financing totaled $34.2 million, less cash transaction costs of $3.2 million and non-cash transaction costs, which represent the issue-date fair value of the February 2021 Placement Agent Warrants, of $1.9 million.

The Company expects to use the net proceeds from the February 2021 Financing for general corporate purposes, including, to advance, the investigation of further therapeutic uses of Macrilen™ (macimorelin), to expand pipeline development activities, to further expand commercial activities associated with macimorelin in available territories and to fund a potential pediatric clinical trial in the E.U. and U.S. for macimorelin.

Macimorelin Clinical Program

On January 28, 2020, we announced the successful completion of patient recruitment for the first pediatric study of macimorelin as a growth hormone stimulation test for the evaluation of GHD in children. This study, AEZS-130-P01 ("**Study P01**"), was the first of two studies as agreed with the EMA in our Pediatric Investigation Plan (the "**PIP**") for macimorelin as a GHD diagnostic. Macimorelin, a ghrelin agonist, is an orally active small molecule that stimulates the secretion of growth hormone from the pituitary gland into the circulatory system. The goal of Study P01 was to establish a dose that can both be safely administered to pediatric patients and cause a clear rise in growth hormone concentration in subjects ultimately diagnosed as not having GHD. The recommended dose derived from Study P01 will be evaluated in the pivotal second study, Study P02, on diagnostic efficacy and safety. Study P01 was an international, multicenter study, which was conducted in Hungary, Poland, Ukraine, Serbia, Belarus and Russia. Study P01 was an open label, group comparison, dose escalation trial designed to investigate the safety, tolerability, and pharmacokinetic/pharmacodynamic ("**PK/PD**") of macimorelin acetate after ascending single oral doses of macimorelin at 0.25, 0.5, and 1.0 milligram per kilogram body weight in pediatric patients from two to less than 18 years of age with suspected CGHD. We enrolled a total of 24 pediatric patients across the three cohorts of the study. Per study protocol, all enrolled patients completed four study visits after successful completion of the screening period. At Visit 1 and Visit 3, a provocative growth hormone stimulation test was conducted according to the study sites' local practices. At Visit 2, the macimorelin test was performed, and following the oral administration of the macimorelin solution, blood samples were taken at predefined times for PK/PD assessment. Visit 4 was a safety follow-up visit at study end.

The final study results from Study P01 were published in the second quarter of 2020 indicating positive safety and tolerability data for use of macimorelin in CGHD, as well as PK/PD data observed in a range as expected from the adult studies.

On April 7, 2020, the Company announced the decision of the EMA to accept our modification request of our PIP as originally approved in March 2017, which covered the conduct of two pediatric studies and defined relevant key elements in the outline of these studies. We believe this EMA decision supports the development of one globally harmonized study protocol for test validation, specifically Study P02, which we expect to be accepted both in Europe and the U.S.

In late 2020, Aeterna entered into the start-up phase for the clinical safety and efficacy study, AEZS-130-P02 (" **Study P02**" or "**DETECT-trial**"), evaluating macimorelin for the diagnosis of CGHD.The DETECT-trial is an open-label, single dose, multicenter and multinational study expected to enroll approximately 100 subjects worldwide, with at least 40 pre-pubertal and 40 pubertal subjects, and a minimum of 25 subjects expected to be enrolled in the U.S. The study design is expected to be suitable to support a claim for potential stand-alone testing, if successful. In addition, under the Novo Amendment, Novo and Aeterna agreed that the percentage of DETECT-trial clinical trial costs that Novo is required to reimburse to Aeterna was adjusted from 70% to 100% of costs up to $11 million (€9 million), and includes reimbursement of Aeterna's budgeted internal labor costs. Any additional external jointly approved DETECT-trial costs incurred over $11million (€9 million) will be shared equally between Novo and Aeterna. On April 22, 2021, the U.S. FDA Investigational New Drug Application associated with this clinical trial became active, see: https://clinicaltrials.gov/ct2/show/NCT04786873 and on May 13, 2021, we announced the opening of the first clinical site in the U.S. On January 26, 2022, the Company announced that it had experienced unavoidable delays in site initiation and patient enrollment due to rise of the Omicron variant in the COVID-19 pandemic. Our team is diligently working to get more clinical sites up and running with the goal of building momentum and bringing this study across the finish line while navigating as best as possible through this challenge. However, we have engaged a CRO to conduct the DETECT-trial outside the United States, including in Russia and Ukraine and clinical trial sites in those countries are being halted due to the conflict in Ukraine. To date, no patients have been enrolled in these clinical trials. Russia's invasion of Ukraine in February 2022 may also impact our ability to conduct certain of our trials in the region. This could hinder the completion of our clinical trials and/or analyses of clinical results, which could materially harm our business.

Macimorelin Pre-clinical Program

On January 13, 2021, we entered into a material transfer agreement with Queensland University to provide macimorelin for the conduct of preclinical and clinical studies evaluating macimorelin as a therapeutic for the treatment of amyotrophic lateral sclerosis ("ALS" and commonly known as Lou Gehrig's disease). Queensland University researchers have filed funding applications to dedicated organizations in Australia to finance parts of the abbreviated preclinical development program and to conduct a subsequent investigator-initiated clinical trial to evaluate the safety, tolerability and efficacy of macimorelin as a potential new treatment option for ALS patients. The Company expects to continue work with Queensland University to conduct proof-of-concept studies with macimorelin in disease specific animal models, assess alternative formulations and formalize a preclinical development plan. The Company plans to evaluate the development of additional alternative formulations or administration routes with the goal of ensuring sufficient bioavailability and expects to provide updates on its progress as results become available.

Macimorelin Commercialization Program

On June 25, 2020, we announced that we entered into an exclusive distribution and related quality agreement with MegaPharm Ltd., a leading Israel-based biopharmaceutical company, for the commercialization in Israel and in the Palestinian Authority of macimorelin, to be used in the diagnosis of patients with AGHD and in clinical development for the diagnosis of CGHD.

Under the terms of the agreement, MegaPharm Ltd. will be responsible for obtaining registration to market macimorelin in Israel and the Palestinian Authority, while the Company will be responsible for manufacturing, product supply, quality assurance and control, regulatory support, and maintenance of the relevant intellectual property. In June 2021, MegaPharm Ltd. filed an application to the Ministry of Health of Israel for regulatory approval of macimorelin in Israel.

On November 16, 2020, the Company announced that it had entered into the Novo Amendment related to the development and commercialization of macimorelin. Novo is currently marketing macimorelin in the U.S. under the tradename Macrilen™ for the diagnosis of AGHD. Aeterna, in collaboration with Novo, is currently developing the expanded use of macimorelin for the diagnosis of CGHD, an area of significant unmet need.

Pursuant to the Novo Amendment, the Company agreed to grant to Novo additional rights with respect to ownership of the Aeterna Patent Rights and Trademarks, as defined, and to amend certain responsibilities between Aeterna and Novo with respect to the ongoing development initiatives for the use of Macrilen™ as a diagnostic in the pediatric indication (the "Pediatric Indication"). Additionally, the Novo Amendment: reflected the existence of a supply agreement; established total consideration to be provided by Novo as reimbursements for costs incurred in connection with the development activities related to the Pediatric Indication; provided for a non-refundable upfront payment of $6.1 million (€5.0 million) to be made by Novo to the Company; and modified future payment obligations, including a reduction of royalty rates and a waiver by the Company with respect to the $5 million pediatric milestone from the original agreement with Novo.

Per the Novo Amendment, total consideration to be payable by Novo to the Company as reimbursement for Pediatric Indication development-related costs was established at approximately $11.1 million (€9 million) plus 50% of any excess over this amount, limited specifically to clinical trial expenses, which were estimated to total $11.7 million (€9.9 million) (the "Pediatric Development Consideration"). The Pediatric Development Consideration was derived from development forecasts that were approved by both the Company and Novo.

As for the reduction in royalties, the Company agreed to reduce the Net Sales Royalties from 15% to 8.5% for annual net sales of Macrilen™ up to $40 million and to establish a royalty of 15% for annual net sales of Macrilen™ over $40 million.

On December 7, 2020, the Company entered into an exclusive licensing agreement with Consilient Health Limited ("**CH**") for the commercialization of macimorelin (the "Licensed Product") in the European Economic Area and the United Kingdom (the "CH License Agreement").

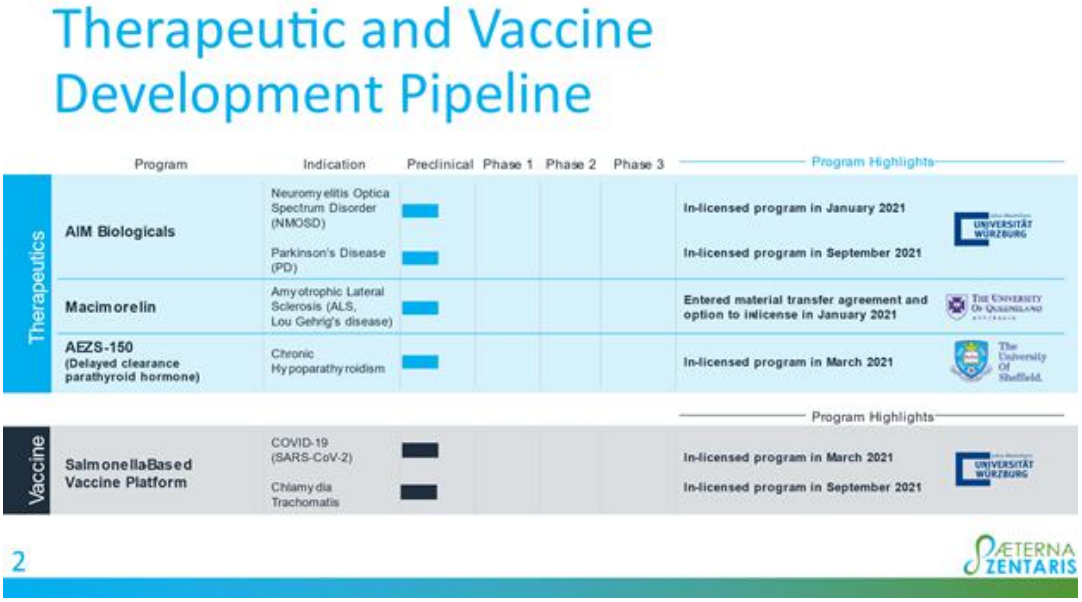
Under the terms of the CH License Agreement, CH agreed to make a non-refundable, non-creditable upfront payment to the Company of $1.2 million (€1.0 million), which the Company received in January 2021. The Company also is eligible to receive additional consideration, including regulatory milestones related to agreed-upon pricing and reimbursement parameters; net sales milestones; and royalties, ranging from 10%-20% of net sales of macimorelin, subject to reduction in certain cases, or sublicense income recorded by CH.

Also on December 7, 2020, the Company and CH entered into an exclusive supply agreement, pursuant to which the Company agreed to provide the Licensed Product to CH, with such Licensed Product to be manufactured by third-party manufacturers for a period of ten years, subject to renewal (the "**CH Supply Agreement**"). In December 2021, the Department of Health and Social Care in the United Kingdom approved a list price which triggered a $226 (€0.2 million) pricing milestone payment from CH to the Company.

We entered into license and supply agreements with NK Meditech Ltd. ("**NK**"), a subsidiary of PharmBio Korea, effective November 30, 2021, and a distribution and commercialization agreement with ER Kim Pharmaceuticals Bulgaria Food ("**ER-Kim**"), effective February 1, 2022. The agreements with NK are related to the development and commercialization of macimorelin for the diagnosis of AGHD and CGHD in the Republic of Korea, while the agreement with ER-Kim is related to the commercialization of

macimorelin for the diagnosis of growth hormone deficiency in children and adults in Turkey and some non-European Union Balkan countries.

Pipeline Expansion Opportunities



Bacterial Vaccine Platform: Orally active, live-attenuated bacterial vaccine platform with potential application against viruses and bacteria, such as coronaviruses and chlamydia bacteria

On February 2, 2021, the Company announced that it had entered into an exclusive option agreement to evaluate a preclinical potential COVID-19 vaccine developed at the University of Wuerzburg. On March 14, 2021, the Company exercised the option to enter into a license agreement with the University. Pursuant to the terms of the University License Agreement, the Company has been granted an exclusive, world-wide, license to certain patent applications and know-how owned by the University to research and develop, manufacture, and sell a potential COVID-19 vaccine using the University's bacterial vaccine platform technology. The Company has paid an up-front payment under the University License Agreement and will conduct milestones payments upon achievement of certain development, regulatory, and sales milestones, as well as a percentage of any sub-licensing revenue received by the Company as well as royalty payments on net sales of the licensed vaccine products (including for by the Company or its sub-licensees). Pursuant to the University License Agreement, the University granted the Company an exclusive option for the exclusive use of the Licensed Rights in an undisclosed field. In September 2021, the Company exercised this option and disclosed the field to be chlamydia. Additionally, the Company has entered into the Research Agreement under which the Company has engaged the University on a fee-for-service basis to conduct supplementary research activities and preclinical development studies on the potential vaccines.

The vaccine technology developed at the University is based on the active live-attenuated bacterial typhoid fever vaccine *Salmonella Typhi Ty21a* with an excellent safety profile, as a carrier strain. Our vaccines have the potential to be administered orally, induce the mucosal immune system, induce a response to more than one antigen, and be stored and distributed at 2 to 8°C. We believe that, if there is sufficient data to advance into human clinical trials, the development program for these vaccines is expected to be abbreviated, as clinical safety data and manufacturing technology is already available for the underlying vaccine strain.

The Coronavirus outbreak began in the end of 2019 and in early 2022 was reaching its fourth infection peak worldwide with vaccinated people getting infected and with booster vaccinations being needed. As of January 12, 2022, there were three vaccines approved in US, and five in EU. At that time, over 9.5 billion doses had been administered, 59% of the world population had received at least one dose, and 35 million doses were being administered every day. The competition is large with 11 vaccines currently being in clinical studies only in Europe. Our COVID-19 vaccine candidate is unique in stimulating the mucosal immune system giving the potential to eliminate the virus when it enters the body, before an infection can occur, and drastically reducing the risk of vaccinated people getting infected and spreading the virus. In addition, the oral application and its storage stability greatly facilitates distribution and administration. Our next development steps include evaluating the administration route, dose and immunization scheme; initiating *in-vivo* immunology experiments with antigen variant candidates in relevant mice models; conducting virus challenge experiments in immunized transgenic animals; starting the manufacturing process assessment / development; and conducting pre-clinical safety and toxicology assessments.

Chlamydia trachomatis is a sexually transmitted bacterium infecting over 130 million subjects annually. In US, the prevalence 2.4 million per year, the incidence is 4 million per year, and the associated yearly health cost $691 million. The disease can spread to the reproductive tract eventually inducing infertility, miscarriage, or ectopic pregnancy, which is a life-threatening condition. Additionally, ocular infections can lead to inclusion conjunctivitis or trachoma, which is the primary source of visual impairment or infectious blindness. While diagnosed infections can be treated with antibiotics, three quarters of all infections are asymptomatic and currently no vaccine exists to protect against chlamydia. The potential strengths of our chlamydia vaccine candidate are the mucosal immunity, oral administration, good stability, and inexpensive production. Our next development steps include designing and preparing candidate vaccine strains; evaluating administration route, dose and immunization scheme; and initiating *in-vivo* immunology experiments with candidate strains in relevant mouse models.

On March 10, 2022, the Company announced the expansion of its research program with the University of Wuerzburg to include the development of human 3D intestinal tissue models to study infection biology in the gut, the site of *Salmonella* primary action.

Delayed Clearance Parathyroid Hormone ("DC-PTH") Fusion Polypeptides: Potential treatment for chronic hypoparathyroidism

On March 11, 2021, the Company entered into an exclusive license agreement with The University of Sheffield, United Kingdom, for the intellectual property relating to parathyroid hormone ("PTH") fusion polypeptides covering the field of human use, which will initially be studied by Aeterna for the potential therapeutic treatment of chronic hypoparathyroidism ("HypoPT"). Under the terms of the exclusive patent and know-how license agreement entered into with the University of Sheffield, Aeterna obtained worldwide rights to develop, manufacture and commercialize PTH fusion polypeptides covered by the licensed patent applications for all human uses for an up-front cash payment, and milestone payments to be paid upon the achievement of certain development, regulatory and sales milestones, as well as low single digit royalty payments on net sales of those products and certain fees payable in connection with sublicensing. Aeterna will be responsible for the further development, manufacturing, approval, and commercialization of the licensed products. Aeterna has also engaged the University of Sheffield under a research contract to conduct certain research activities to be funded by Aeterna, the results of which will be included within the scope of the license granted to Aeterna.

The researchers at the University of Sheffield have developed a method to increase the serum clearance time of peptides, which the Company is applying to the development of a treatment for HypoPT. HypoPT is an orphan disease where the PTH level is abnormally low or absent, with a prevalence per 100 000 of 37 in US, 22 in Denmark, 9.4 in Norway, and 5.3 to 27 in Italy. Standard treatment is calcium and vitamin D supplementation. In consultation with The University of Sheffield, Aeterna has selected AEZS-150 as the lead candidate in its DC-PTH program. AEZS-150 is being developed to provide a weekly treatment option of chronic hypoparathyroidism in adults and our next steps include working with The University of Sheffield to conduct in depth characterization of development candidate (*in-vitro* and *in-vivo*); developing the manufacturing process; and formalizing the pre-clinical development of AEZS-150 in preparation for a potential IND filing for conducting the first in-human clinical study.

AIM Biologicals: Targeted, highly specific autoimmunity modifying therapeutics for the potential treatment of neuromyelitis optica spectrum disorder and Parkinson's disease

In January 2021, Aeterna entered into an exclusive patent license and research agreement with the University of Wuerzburg, Germany, for worldwide rights to develop, manufacture, and commercialize AIM Biologicals for the potential treatment of NMOSD. Additionally, the Company has engaged Prof. Dr. Joerg Wischhusen from the University Hospital in Wuerzburg as well as neuro-immunologist Dr. Michael Levy from the Massachusetts General Hospital in Boston as consultants for scientific support and advice in the field of inflammatory CNS disorders, autoimmune diseases of the nervous system, and NMOSD. In September 2021, the Company entered into an additional exclusive license with the University of Wuerzburg for early pre-clinical development towards the potential treatment of Parkinson's disease.

AIM Biologicals is based on a natural process during pregnancy, which induces immunogenic tolerance of the maternal immune system to the partially foreign fetal antigens. Fetal proteins are processed and presented on certain immunosuppressive major histocompatibility complex class I molecules to induce this tolerance. In an autoimmune disease is the immune system misdirected and targets the body's own protein. With AIM Biologicals, we aim to restore the tolerance against such proteins to treat autoimmune diseases.

NMOSD is an autoimmune disease targeting the protein aquaporin 4, primarily found in optic nerves and the spinal cord. The disease leading to blindness and paralysis has a prevalence of 0.7-10 in 100,000, more common in persons with Asian or African compared to European ancestors, and nine times more prevalent among women compared to men. NMOSD progresses in often life-threatening relapses, which are aggressively treated with high-dose steroids and plasmapheresis. Our pre-clinical plans include conducting *in-vitro* and *in-vivo* assessments to select an AIM Biologicals-based development candidate; and manufacturing process development for the selected candidate.

Parkinson's disease is a neurological disease commonly associated with motoric problems with a slow and fast progression form. It is the second most common neurodegenerative disease affecting 10 million people worldwide. The hallmark of PD is the neuronal inclusion of mainly α-synuclein protein (αSyn) associated with the death of dopamine-producing cells. Dopaminergic medication is the mainstay treatment of PD symptoms, but currently there is no pharmacological therapy to prevent or delay disease progression leading to alternate treatments, such as deep brain stimulation with short electric bursts, being investigated for the treatment of symptoms. For the development of AIM Biologicals as potential PD therapeutics, Aeterna plans to utilize, among others, an innovative animal model on neurodegeneration by α-synuclein-specific T cells in AAV-A53T-α-synuclein Parkinson's disease mice, which has recently been published by University of Wuerzburg researchers. Our next steps include designing and producing antigen-specific AIM Biologics molecules for the potential treatment of Parkinson's disease; and conducting *in-vitro* and *in-vivo* assessments in relevant Parkinson's disease models.

Macimorelin Therapeutic: Ghrelin agonist in development for the treatment of amyotrophic lateral sclerosis (Lou Gehrig's disease)

In January 2021, the Company entered into a material transfer agreement with the University of Queensland, Australia, to provide macimorelin for the conduct of pre-clinical and subsequent clinical studies, evaluating macimorelin as a potential therapeutic for the treatment of ALS. The University of Queensland researchers have filed for supportive grants to conduct such clinical studies. AEZS and the University are currently in the final steps of negotiating a research agreement.

ALS is a rare progressive neurological disease primarily affecting the neurons controlling voluntary movement, leading to the disability to control movements such as walking, talking, and chewing. Most people with ALS die from respiratory failure, usually between 3-5 years after diagnosis. Currently there is no cure for ALS and no effective treatment to halt or reverse the progression of the disease. Ghrelin is a hormone with wide-ranging biological actions, most known for stimulating growth hormone release, which is demonstrating emerging evidence as therapeutic for ALS. As a ghrelin agonist, macimorelin has the potential as a treatment for ALS, which is evaluated in this research collaboration. Our next steps include working with the University of Queensland to conduct proof-of-concept studies with macimorelin in disease-specific animal models, assessing alternative formulations and formalizing a pre-clinical development plan.

Changes in personnel and advisors

On May 3, 2021, the Company announced the addition of Michael Teifel, Ph.D. as Senior Vice President, Non-Clinical Development and Chief Scientific Officer to drive forward our pre-clinical research initiatives. In the second quarter of 2021, Prof. Dr. Joerg Wischhusen (Wuerzburg University) and Dr. Michael Levy, MD, PhD were engaged by the Company as a scientific consultant to support the development of the AIM Biologicals in NMOSD. Dr. Thomas Rudel (Wuerzburg University) was engaged by the Company in September 2021 as a scientific consultant to support development of the salmonella-based vaccine platform for coronavirus and chlamydia vaccines. Effective January 24, 2022, Mr. Giuliano La Fratta joined the Company as the Senior Vice President, Chief Financial Officer, replacing Ms. Leslie Auld.

Nasdaq Letters

On July 28, 2021, we received a letter from the Listing Qualifications Staff of the Nasdaq, notifying us that during the 30 consecutive business days prior to the date of the letter, the closing bid price of our common shares was below $1.00 per share and, therefore, we did not meet the requirement for continued listing on Nasdaq as required by Nasdaq Listing Rule 5550(a)(2) (the "Bid Price Rule"). In accordance with Nasdaq Listing Rule 5810(c)(3)(A), we were granted a grace period of 180 calendar days, through January 24, 2022. On January 26, 2022, we announced that the Listing Qualifications Staff of the Nasdaq had notified the Company that it has been granted an additional 180 calendar day period, through July 26, 2022, to comply with the US$1.00 minimum bid price requirement for continued listing on the Nasdaq. If at any time before July 26, 2022, the bid price for the Company's common shares closes at or above US$1.00 per share for a minimum of 10 consecutive business days (and generally not more than 20 consecutive business days, in Nasdaq's discretion), it is expected that Nasdaq would provide formal notice that the Company has regained compliance with the bid price requirement. The Company may choose to implement a reverse stock split before July 26, 2022 in order to regain compliance. In the event the Company does not provide, during the 180-day grace period, evidence to demonstrate compliance with Bid Price Rule, it is expected that Nasdaq would notify the Company that its shares are subject to delisting. At such time, the Company may appeal such determination to a Nasdaq Hearings Panel (the "Panel") and it is expected that the Company's securities would continue to be listed and available to trade on Nasdaq at least pending the completion of the appeal process. There can be no assurance that any such appeal would be successful or that the Company would be able to comply with the terms of any extension that may be granted by the Panel. There is no assurance that we will regain compliance with the Bid Price Rule in the future, and therefore there can be no assurance that our common shares will remain listed on Nasdaq. The aforementioned notification from the Nasdaq does not impact the Company's listing status on the TSX.

As of the date of this Annual Report on Form 20-F, the Company's closing bid price was below $1.00. See "Item 3.D. Risk factors—Our Common Shares may be delisted from the NASDAQ or the TSX, which could affect their market price and liquidity. If our Common Shares were to be delisted, investors may have difficulty in disposing their Common Shares."

Settlement of Class-Action Lawsuit

On March 9, 2020, the Company settled the previously disclosed class-action lawsuit against it pending in the U.S. District Court for the District of New Jersey. This settlement was

approved by the U.S. District Court for the District of New Jersey on June 3, 2021. The settlement payment was funded entirely by the Company's insurers. As no appeals were filed within the 30-day appeal period, this matter is fully and finally settled.

Extension of German building lease

Effective August 25, 2021, the Company and its landlord mutually agreed to a one year extension to its existing building lease agreement for its German subsidiary, continuing such terms until March 31, 2023.

Exposure to Epidemic or Pandemic Outbreak

Coronavirus, or COVID-19, a contagious disease that was characterized by the World Health Organization as a pandemic in early 2020, continues to affect the global community. The significant spread of COVID-19 resulted in a widespread health crisis and has had adverse effects on national economies generally, on the markets that we serve, on our operations and on the market price of our Common Shares.

The spread of COVID-19 may continue to impact our operations, including the potential interruption of our clinical trial activities and of our supply chain. For example, the rise in the Omicron variant in the COVID-19 pandemic has caused delays in site initiation and patient enrollment in our Phase 3 DETECT clinical trial for diagnostic use in childhood-onset growth hormone deficiency. Additionally, sales activities for Macrilen™ in the US may be impacted due to delays of diagnostic activities on AGHD in the US. Further, the COVID-19 pandemic may also cause some patients to be unwilling to enroll in our trials or be unable to comply with clinical trial protocols if quarantines impede patient movement or interrupt healthcare services, which would delay our ability to conduct clinical trials or release clinical trial results on a timely basis and could delay our ability to obtain regulatory approval and commercialize our product candidates. The spread of an infectious disease, including COVID-19, may also result in the inability of our suppliers to deliver components or raw materials on a timely basis or at all. In addition, hospitals may reduce staffing and reduce or postpone certain treatments in response to the spread of an infectious disease. Such events may result in a period of business disruption and, in reduced operations, doctors or medical providers may be unwilling to participate in our clinical trials, any of which could materially affect our business, financial condition or results of operations.

Given this rapidly evolving situation, the duration, scope and impact on our business operations, clinical studies and financial results cannot at this time be fully determined or quantified. Aeterna Zentaris has developed protocols and procedures should they be required to deal with any potential epidemics and pandemics and has implemented these protocols and procedures to address the current COVID-19 pandemic. Despite appropriate steps being taken to mitigate such risks, there can be no assurance that existing policies and procedures will ensure that the Company's operations will not be adversely affected. The COVID-19 pandemic has resulted in a widespread health crisis that has adversely affected the economies and financial markets of many regions and countries. There can be no assurance that a disruption in financial markets, regional economies and the world economy would not negatively affect Aeterna Zentaris' access to capital or its financial performance.

Uncertain factors, including the duration of the outbreak, the severity of the disease and the actions to contain or treat its impact, could impair our operations including, among other things, employee mobility and productivity, availability of our facilities, conduct of our clinical trials and the availability and the productivity of third-party product and service suppliers. Please see the Risk Factor entitled "The economic effects of a pandemic, epidemic or outbreak of an infectious disease could adversely affect our operations or the market price of our Common Shares".

Russia/Ukraine Conflict

Conducting clinical trials in foreign countries, as in our ongoing DETECT-trial, presents additional risks that may delay completion of our clinical trials. These risks include the failure of enrolled patients in foreign countries to adhere to clinical protocol as a result of differences in healthcare services or cultural customs, managing additional administrative burdens associated with foreign regulatory schemes, as well as political and economic risks, including war, relevant to such foreign countries. For example, we have engaged a CRO to conduct the DETECT-trial outside the United States, including in Russia and Ukraine and clinical trial sites in those countries are being halted due to the conflict in Ukraine. To date, no patients have been enrolled in these clinical trials. Russia's invasion of Ukraine in February 2022 may impact our ability to conduct certain of our trials in the region. This could hinder the completion of our clinical trials and/or analyses of clinical results, which could materially harm our business.

In particular, we have engaged a CRO to conduct our DETECT-trial outside of the United States, including in Russia and Ukraine. As a result of Russia's invasion of Ukraine in February 2022, clinical trial sites in Ukraine and the surrounding region are being halted. Furthermore, the United States and its European allies have imposed significant new sanctions against Russia, including regional embargoes, full blocking sanctions, and other restrictions targeting major Russian financial institutions. Our ability to conduct clinical trials in Russia, parts of Ukraine and elsewhere in the region may become restricted under applicable sanctions laws, which would require us to identify alternative trial sites, which may increase our development costs and delay the clinical development of our product candidates. All of the foregoing could impede the execution of our clinical development plans, which could materially harm our business.

A. Operating Results

Consolidated Statements of Comprehensive Loss Information

(in thousands, except share and per share data)	Three months ended December 31,		Years ended December 31,		
	2021	**2020**	**2021**	**2020**	**2019**
	$	**$**	**$**	**$**	**$**
Revenues					
License fees	**361**	856	**1,670**	911	74
Development services	**528**	—	**3,337**	—	—
Product sales	—	1,354	—	2,370	129
Royalty income	**21**	20	**68**	67	45
Supply chain	**46**	136	**185**	304	284
Total revenues	**956**	2,366	**5,260**	3,652	532
Operating expenses					
Cost of sales	**18**	1,410	**90**	2,317	410
Research and development expenses	**1,863**	626	**6,574**	1,506	1,837
General and administrative expenses	**1,779**	1,314	**5,916**	4,759	6,615
Selling expenses	**427**	404	**1,351**	1,134	1,214
Restructuring costs	—	—	—	—	507
Gain on modification of building lease	—	—	—	(219)	—
Impairment of right of use asset	—	—	—	—	22
(Reversal) impairment of other asset	—	(139)	—	(139)	169
Total operating expenses	**4,087**	3,615	**13,931**	9,358	10,774

Loss from operations	**(3,131)**	(1,249)	**(8,671)**	(5,706)	(10,242)
Gain due to changes in foreign currency exchange rates	**257**	335	**215**	572	87
Change in fair value of warrant liability	**—**	—	**—**	1,147	4,518
Other finance costs	**—**	(2)	**(21)**	(736)	(593)
Net finance income	**257**	333	**194**	983	4,012
Loss before income taxes	**(2,874)**	(916)	**(8,477)**	(4,723)	(6,230)
Income tax (expense) recovery	**(20)**	(395)	**109**	(395)	188
Net loss	**(2,894)**	(1,311)	**(8,368)**	(5,118)	(6,042)
Other comprehensive loss					
Foreign currency translation adjustments	**(93)**	(657)	**367**	(1,139)	83
Actuarial (loss) gain on defined benefit plans	**(3,725)**	15	**(3,592)**	(650)	(1,068)
Comprehensive loss	**(6,712)**	(1,953)	**(11,593)**	(6,907)	(7,027)
Net loss per share (basic)	**(0.02)**	(0.02)	**(0.07)**	(0.12)	(0.35)
Net loss per share (diluted)	**(0.02)**	(0.02)	**(0.07)**	(0.12)	(0.35)

Our operating and financial review and prospects should be read in conjunction with our consolidated financial statements, accompanying notes and other information appearing in this Annual Report.

2021 compared with 2020

Fourth Quarter

Revenues

Our total revenue for the three-month period ended December 31, 2021 was $1.0 million as compared with $2.4 million for the same period in 2020, representing a decrease of $1.4 million, primarily due to $1.4 million decline in product sales of macimorelin to its licensees (as no product sales were generated in 2021), $0.5 million decline in license fees offset by $0.5 million increase in development services (as further discussed below).

In the fourth quarter of 2021, the Company restated its previously reported condensed consolidated interim financial statements for the three-month period ended March 31, 2021 and the three-month and six-month periods ended June 30, 2021 and three-month and nine-month periods ended September 30, 2021 with respect to the recognition of revenue for the Novo Amendment, signed in November 2020. During the fourth quarter of 2021, management reassessed the classification of the development activities associated with the DETECT-trial and concluded that subsequent to the Novo Amendment the parties no longer shared joint control of these activities and, as such, these development activities no longer met the definition of a joint operation, as defined in IFRS 11. Therefore, pursuant to the guidance in IFRS 15, the Company reclassified the charges to Novo, from research and development expenses to development services revenue, in the related periods. In addition, the license fees related to the pediatric indication were adjusted to reflect the revised pattern of recognition as the performance obligation for the development services has now been combined with the pediatric license. In addition, the accounting for prepaid expenses and other assets and deferred revenues related to the DETECT-trial expenses incurred were restated.

The impacts of these restatements are as follows (amounts in thousands, except for basic and diluted loss per share):

	Previously reported	Effect of restatement	Amended
	$	$	$
Consolidated interim statement of loss and comprehensive loss for the three-month period ended March 31, 2021			
License fees	537	(13)	524
Development service revenues	—	1,095	1,095
Research and development expenses	363	1,095	1,458
Net loss	(1,445)	(13)	(1,458)
Total comprehensive loss	(16)	(13)	(29)
Basic and diluted loss per share	(0.02)	—	(0.02)
Consolidated interim statement of financial position as of March 31, 2021			
Prepaid expenses and other current assets	3,050	543	3,593
Current portion of deferred revenues	2,101	556	2,657
Deficit	(323,222)	(13)	(323,235)

	Previously reported	Effect of restatement	Amended
	$	$	$
Consolidated interim statement of loss and comprehensive loss for the three-month period ended June 30, 2021			
License fees	537	(45)	492
Development service revenues	—	1,030	1,030
Research and development expenses	738	1,030	1,768
Net loss	(2,039)	(45)	(2,084)
Total comprehensive loss	(3,133)	(45)	(3,178)
Basic and diluted loss per share	(0.02)	—	(0.02)
Consolidated interim statement of loss and comprehensive loss for the six-month period ended June 30, 2021			
License fees	1,074	(58)	1,016
Development service revenues	—	2,125	2,125
Research and development expenses	1,101	2,125	3,226
Net loss	(3,484)	(58)	(3,542)
Total comprehensive loss	(3,149)	(58)	(3,207)
Basic and diluted loss per share	(0.03)	—	(0.03)
Consolidated interim statement of financial position as of June 30, 2021			
Prepaid expenses and other current assets	3,308	1,067	4,375
Current portion of deferred revenues	2,125	1,111	3,236
Deficit	(326,229)	(58)	(326,287)

	Previously reported	Effect of restatement	Amended
	$	$	$
Consolidated interim statement of loss and comprehensive loss for the three-month period ended September 30, 2021			
License fees	527	(234)	293
Development service revenues	—	684	684
Research and development expenses	801	684	1,485
Net loss	(1,698)	(234)	(1,932)
Total comprehensive loss	(1,440)	(234)	(1,674)
Basic and diluted loss per share	(0.01)	(0.01)	(0.02)
Consolidated interim statement of loss and comprehensive loss for the nine-month period ended September 30, 2021			
License fees	1,601	(292)	1,309
Development service revenues	—	2,809	2,809
Research and development expenses	1,902	2,809	4,711
Net loss	(5,182)	(292)	(5,474)
Total comprehensive loss	(4,589)	(292)	(4,881)
Basic and diluted loss per share	(0.05)	—	(0.05)
Consolidated interim statement of financial position as of September 30, 2021			
Prepaid expenses and other current assets	3,431	600	4,031
Current portion of deferred revenues	2,075	943	3,018
Deficit	(327,708)	(292)	(328,000)

These restatements did not impact the Company's cash and cash equivalent amounts and reported amounts of operating, investing and financing activities within the consolidated interim statements of cash flows for the three-month period ended March 31, 2021 and the three-month and six-month periods ended June 30, 2021 and three-month and nine-month periods ended September 30, 2021. Nor did these restatements have any impact on 2020 results. No amended financial statements will be filed.

Operating expenses

Our total operating expenses for the three-month period ended December 31, 2021 were $4.1 million as compared with $3.6 million for the same period in 2020, representing an increase of $0.5 million. This increase arose primarily from a $1.3 million increase in research and development expenses, a $0.5 million increase in general and administrative expenses and $0.1 million in costs incurred in 2020 and not incurred in 2021 (comprised of $0.1 million in reversal of impairment of other asset), offset by a decline of $1.4 million in cost of sales, as discussed below.

Research and development expenses

The following table summarizes our research and development expenses incurred during the periods indicated (amounts in thousands, except percentages):

	QUARTER ENDED DECEMBER 31,			
	2021	2020	$ CHANGE	% CHANGE
Macrilen™ (macimorelin) pediatric trial direct research and development expenses (DETECT-trial)	$ 526	$ (32)	$ 558	1,743.8%
AEZS-130 direct research and development expenses	143	—	143	100.0%
DC-PTH direct research and development expenses	63	—	63	100.0%
Parkinsons direct research and development expenses	171	—	171	100.0%
Covid-19 direct research and development expenses	137	—	137	100.0%
NMOSD direct research and development expenses	106	—	106	100.0%
Chlamydia direct research and development expenses	108	—	108	100.0%
Additional programs' direct research and development expenses	249	333	(84)	(25.2)%
Total direct research and development expenses	1,503	301	1,202	399.3%
Employee-related expenses	335	226	109	48.2%
Facilities, depreciation, and other expenses	25	99	(74)	(74.7)%
Total	$ 1,863	$ 626	$ 1,237	197.6%

Research and development expenses increased $1.2 million for the quarter ended December 31, 2021 compared to the quarter ended December 31, 2020 primarily due to $1.2 million increase in direct research and development expenses. Direct research and development expenses include expenses incurred under arrangements with third parties, such as a contract research organization for the DETECT-trial, contract manufacturers, and consultants. The $1.2 million increase in total direct research and development expenses for the quarter ended December 31, 2021 was primarily due to a $0.6 million increase in costs for the DETECT-trial and a $0.6 million increase in the initiation of our new pre-clinical projects with universities. During the fourth quarter of 2021, management reassessed the classification of the charges to Novo for development activities associated with the DETECT-trial and reclassified them from direct research and development expenses to development services revenue, as discussed in further detail above in "Revenues" in the Results from operations section of this MD&A. In 2020, the Company accounted for employee charges to Novo for the DETECT-trial relating as a reduction in the direct research and development costs, while the gross employee costs remained in the 'Employee-related expenses' in the analysis above. This classification led to the negative direct expenses for the DETECT-trial

In the fourth quarter of 2021, the Company was actively recruiting patients for the DETECT-trial. This is in contrast to 2020, when we were primarily focused on the completion of our pediatric Study P01 for macimorelin which established the dose that is being used in the DETECT-trial. In addition to the DETECT-trial, the Company was actively working with its university research partners on the named pre-clinical programs, which primarily began in the first quarter of 2021. Of note, the Parkinsons' project became active in the fourth quarter of 2021 after being in-licensed in the third quarter of 2021.

Employee-related expenses have increased in 2021 by $0.1 million for the quarter ended December 31, 2021 as compared to the quarter ended December 31, 2020 primarily from the impact of the addition of Dr. Michael Teifel as our Chief Scientific Officer in May 2021 and of our Head of Quality Control and CMC-Regulatory in March 2021, to better support

our new pre-clinical initiatives.

Facilities, depreciation, and other expenses have declined by $0.1 million for the quarter ended December 31, 2021 as compared to the quarter ended December 31, 2020 primarily from the impact of lease negotiations for its German subsidiary initiated in 2020. Effective March 31, 2020, the Company modified its existing building lease agreement with its landlord, significantly reducing its leased space and leasing costs, and ultimately leading to the extension of its lease term to March 31, 2023.

General and administrative expenses

General and administrative expenses increased by $0.5 million for the quarter ended December 31, 2021 compared to the quarter ended December 31, 2020, due to increased directors and officers' insurance coverage of $0.2 million, for recruiting costs pertaining to the Chief Financial Officer role of $0.1 million, and increased salary and bonus costs of $0.1 million.

Cost of sales

Cost of sales decreased by $1.3 million in the fourth quarter of 2021 as compared with the same quarter in 2020, as there were no purchases of macimorelin by any licensee in 2021 as compared to the sale of one batch of Macrilen™ in the fourth quarter of 2020 to Novo.

Net Loss

For the three-month period ended December 31, 2021, we reported a consolidated net loss of $2.9 million, or $0.02 loss per common share (basic and diluted), as compared with a consolidated net loss of $1.3 million, or $0.02 loss per common share (basic and diluted) for the three-month period ended December 31, 2020. The $1.6 million increase in net loss is primarily from a $0.5 million increase in total operating expenses and a $1.4 million decrease in revenues, partially offset by a $0.4 million reduction in income tax expense, as discussed above.

Fiscal Year-End

Revenues

Our total revenue for the twelve-month period ended December 31, 2021 was $5.3 million as compared with $3.7 million for the same period in 2020, representing an increase of $1.6 million, primarily due to $3.3 million increase in development services with Novo and $0.8 million increase in license fees related to the partial recognition of the €5 million up front payment received from Novo in 2020 offset by a $2.4 million decline in product sales (as no product sales were generated in 2021).

Operating expenses

Our total operating expenses for the twelve-month period ended December 31, 2021 was $13.9 million as compared with $9.4 million for the same period in 2020, representing an increase of $4.5 million. This increase arises primarily from a $5.1 million increase in research and development expenses, $1.1 million increase in general and administration expenses, $0.3 million in increase in selling expenses and $0.3 million in costs incurred in 2020 and not incurred in 2021 (comprised of $0.2 million in gain on modification of building lease and $0.1 million in reversal of impairment of other asset), offset by a $2.2 million decrease in cost of sales, as discussed below.

Research and development expenses

The following table summarizes our research and development expenses incurred during the periods indicated (amounts in thousands, except percentages):

	YEAR ENDED DECEMBER 31,			
	2021	2020	$ CHANGE	% CHANGE
Macrilen™ (macimorelin) pediatric trial direct research and development expenses (DETECT-trial)	$ 3,244	$ 184	$ 3,060	1,663.0%
AEZS-130 direct research and development expenses	230	—	230	100.0%
DC-PTH direct research and development expenses	154	—	154	100.0%
Parkinson's direct research and development expenses	171	—	171	100.0%
Covid-19 direct research and development expenses	712	—	712	100.0%
NMOSD direct research and development expenses	453	—	453	100.0%
Chlamydia direct research and development expenses	146	—	146	100.0%
Additional programs' direct research and development expenses	486	475	11	2.3%
Total direct research and development expenses	5,596	659	4,937	749.2%
Employee-related expenses	839	653	186	28.5%
Facilities, depreciation, and other expenses	139	194	(55)	(28.4)%
Total	$ 6,574	$ 1,506	$ 5,068	336.5%

Research and development expenses increased $5.1 million for the year ended December 31, 2021 as compared to the year ended December 31, 2020 primarily due to $4.9 million increase in direct research and development expenses. Direct research and development expenses include expenses incurred under arrangements with third parties, such as a contract research organization for the DETECT-trial, contract manufacturers, and consultants. The $4.9 million increase in total direct research and development expenses for the year ended December 31, 2021 was primarily due to a $3.1 million increase in costs for the DETECT-trial and a $1.8 million increase in the initiation of our new pre-clinical projects with universities for named projects. In the second quarter of 2021, the DETECT-trial became active and we announced the opening of the first clinical site in the U.S. During the fourth quarter of 2021, management reassessed the classification of the charges to Novo for development activities associated with the DETECT-trial and reclassified them from direct research and development expenses to development services revenue, as discussed in further detail above in "Revenues" in the 2021 compared with 2020 for the Fourth Quarter from this section of this Annual Report.

Employee-related expenses have increased in 2021 by $0.2 million as compared to the year ended December 31, 2020 primarily from the addition of two senior members of our research and development team earlier in 2021.

Facilities, depreciation, and other expenses have declined in 2021 by $0.1 million as compared to the year ended December 31, 2020, primarily from the impact of lease negotiations for its German subsidiary which were completed early in 2020 and resulted in the negotiated reduction in leased space for its German subsidiary.

General and administrative expenses

General and administrative expenses increased by $1.1 million for the year ended December 31, 2021 compared to the year ended December 31, 2020, primarily from higher share based compensation of $0.2 million, higher spending on media and communication of $0.2 million, increased directors and officers' insurance coverage of $0.2 million, higher professional fees of $0.2 million, increased higher public company costs of $0.2 million from holding our annual shareholders meeting in May 2021, subsequent to our issuance of common shares in the February 2021 Financing and the 2021 Warrant Exercises, in addition to recruiting costs for the Chief Financial Officer role of $0.1 million.

Cost of sales

Cost of sales decreased by $2.2 million during the year ended December 31, 2021 as compared to the same period in 2020, as there were no purchases of macimorelin by any licensee in 2021 as compared to the sale of two batches of Macrilen™ to Novo in 2020.

Net finance income

Our net finance income for the twelve-month period ended December 31, 2021 was $0.2 million as compared with $1.0 million for the same period in 2020, representing a decrease of $0.8 million. This is primarily due to a $1.1 million change in fair value of warrant liability, a $0.4 million decline in gain due to change in foreign currency, offset by a $0.7 million decline in other finance costs. During the prior year, the Company registered the common shares underlying certain warrants which allowed the Company to reclassify such warrants from liability to shareholders' equity in the consolidated statements of financial position. As such the change in fair value of such warrants liabilities was classified as a finance cost in the consolidated statements of loss in 2020; there was no such change in fair value in 2021.

Net Loss

For the twelve-month period ended December 31, 2021, we reported a consolidated net loss of $8.4 million, or $0.07 loss per common share (basic and diluted), as compared with a consolidated net loss of $5.1 million, or $0.12 loss per common share (basic and diluted), for the year ended December 31, 2020. The $3.3 million increase in net loss is primarily from a $4.5 million increase in operating expenses and a $0.8 million decline in net finance income, partially offset by an increase of $1.6 million in total revenues and a change in income tax recovery of $0.5 million, as previously discussed.

2020 compared with 2019

Fourth Quarter

Revenues

Our total revenue for the three-month period ended December 31, 2020 was $2.4 million as compared with $0.02 million for the same period in 2019, representing an increase of $2.4 million. The 2020 revenue was comprised of $1.4 million in product sales (2019 - $nil), $0.9 million in licensing revenue (2019 - $0.02 million), $0.02 million in royalty revenue (2019 - $0.2 million) and $0.1 million in supply chain revenue (2019 – ($0.02) million).

On November 16, 2020, the Company announced that it had entered into the Amendment of its existing License Agreement and received an upfront payment of €5 million ($6.1 million) in December 2020. Management determined that the remaining performance obligation under the contract which provides the customer with a license of a future FDA approved pediatric indication is a distinct performance obligation before and after the modification. Accordingly, the Company accounted for the modification to the License Agreement as an adjustment to the existing License Agreement with Novo, on a prospective basis. The portion of the changes in the transaction price that was attributable to the change in future royalty rate was allocated to both the adult and pediatric indications. Based on the change in future royalty rates, the Company determined that $0.6 million of the additional upfront payment should be allocated to the Adult Indication. Accordingly, the Company recognized $0.6 million related to the adult indication in revenues for the year ended December 31, 2020 and has deferred $5.6 million to be recognized over time until the expected FDA approval date of June 2023.

Operating expenses

Our total operating expense for the three-month period ended December 31, 2020 was $3.6 million as compared with $1.8 million for the same period in 2019, representing an increase of $1.8 million. This increase arises primarily from a $1.1 million increase in cost of sales, $0.4 million increase in research and development costs, $0.4 million increase in selling expenses and $0.5 million in costs incurred in the fourth quarter of 2019 and not incurred in the fourth quarter of 2020 (comprised of $0.3 million in restructuring costs and approximately $0.2 million in impairment of right of use asset), offset by a decline of $0.4 million in general and administrative expenses and a reversal of $0.1 million of write off of other asset.

In the fourth quarter of 2020, cost of sales increased from the sale of a batch of macimorelin to Novo Nordisk. The increase in research and development costs reflect the Company's initial pipeline expansion activities in 2020 as compared to close out activities for Study P01 in 2019. The impact of our June 2019 restructuring in our German subsidiary, namely for payroll and share based compensation costs, was a key influence in the declines in general and administrative expenses.

Net finance costs

Our net finance income for the three-month period ended December 31, 2020 was $0.3 million as compared with $0.6 million for the same period in 2019, representing a decrease of $0.3 million. This is primarily due to a $0.5 million lower gain in the change in fair value of warrant liability offset by $0.3 million from changes in currency exchange rates. By December 31, 2020, the Company had registered all of the common shares underlying all of its issued and outstanding warrants.

Net loss

For the three-month period ended December 31, 2020, we reported a consolidated net loss of $1.3 million, or $0.02 loss per common share (basic), as compared with a consolidated net loss of $1.0 million, or $0.05 loss per common share for the three-month period ended December 31, 2019. The $0.3 million increase in net results is primarily from an increase in total operating expenses of $1.8 million, an increase in net finance costs of $0.2 million, a change of tax expenses of $0.6 million partially offset by an increase in revenues of $2.3 million in operating expenses.

Fiscal Year-End

Revenues

Our total revenue for the twelve-month period ended December 31, 2020 was $3.7 million as compared with $0.5 million for the same period in 2019, representing an increase of $3.2 million. The 2020 revenue was comprised of $2.4 million in product sales (2019 – $0.1 million), $0.9 million in licensing revenue (2019 - $0.07 million), $0.3 million in supply chain (2019 - $0.3 million) and $0.07 million in royalty income (2019 - $0.05 million).

On November 16, 2020, the Company announced that it had entered into the Amendment of its existing License Agreement and received an upfront payment of €5 million ($6.1 million) in December 2020. Management determined that the remaining performance obligation under the contract which provides the customer with a license of a future FDA approved pediatric indication is a distinct performance obligation before and after the modification. Accordingly, the Company accounted for the modification to the License Agreement as an adjustment to the existing License Agreement with Novo , on a prospective basis. The portion of the changes in the transaction price that was attributable to the change in future royalty rate was allocated to both the adult and pediatric indications. Based on the change in future royalty rates, the Company determined that $0.6 million of the additional upfront payment should be allocated to the Adult Indication. Accordingly, the Company recognized $0.6 million related to the adult indication in revenues for the year ended December 31, 2020 and has deferred $5.6 million to be recognized over time until the expected FDA approval date of June 2023.

Operating expenses

Our total operating expense for the twelve-month period ended December 31, 2020 was $9.4 million as compared with $10.8 million for the same period in 2019, representing a decrease of $1.4 million. This decline arises primarily from a $1.9 million reduction in general and administration expenses, a decrease of $0.5 million in restructuring costs, a $0.3 million reduction in research and development costs, a $0.3 million reversal in write off of other asset, a $0.2 million gain on modification of building lease and $0.1 million reduction in selling costs, offset by an increase of $1.9 million in cost of sales. This decline in operating expenses is in-line with the expected impact of our cost control initiatives as previously implemented and the impact of the 2019 restructuring at our German subsidiary.

Net finance income

Our net finance income for the year ended December 31, 2018 was $1.2 million, as compared to $2.8 million for the same period in 2017, representing a decrease of $1.6 million. The decline in net finance income is primarily due to the change in fair value of our warrant liability. Such change in fair value results from the periodic "mark-to-market" revaluation via the application of pricing models to our outstanding share purchase warrants. The closing price of our Common Shares, which, on the NASDAQ, fluctuated from $1.19 to $3.87 during the twelve-month period ended December 31, 2018, compared to $2.67 to $2.70 during the same period in 2017, also had a direct impact on the change in fair value of warrant liability.

Net Loss

For the twelve-month period ended December 31, 2020, we reported a consolidated net loss of $5.1 million, or $0.12 loss per common share, as compared with a consolidated net loss of $6.0 million, or $0.35 loss per common share (basic), for the twelve-month period ended December 31, 2019. The $0.9 million improvement in net results is primarily from an increase in total revenues of $3.1 million and a reduction of operating expenses of $1.4 million partially offset by a $3.0 million decline in net finance income and an increase in income tax expense of $0.6 million.

Selected quarterly financial data

	Three months ended			
(in thousands, except for per share data)	**December 31, 2021**	**September 30, 2021[1]**	**June 30, 2021[1]**	**March 31, 2021[1]**
	$	**$**	**$**	**$**
Revenues	**956**	**1,052**	**1,584**	**1,668**
Net loss	**(2,894)**	**(1,932)**	**(2,084)**	**(1,458)**
Net loss per share (basic and diluted)[2]	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**

	Three months ended			
(in thousands, except for per share data)	**December 31, 2020**	**September 30, 2020**	**June 31, 2020**	**March 31, 2020**
	$	**$**	**$**	**$**
Revenues	2,366	128	68	1,090
Net (loss) income	(1,311)	(1,136)	(3,450)	779
Net (loss) income per share (basic and diluted)[2]	(0.02)	(0.02)	(0.15)	0.04

(1) The restatements are discussed above under "Revenues" in the Results from operations section of this 20-F comparing 2021 with 2020 for the Fourth Quarter (which had no impact on 2020). The interim financial statements for the periods ended March 31, 2021, June 30, 2021 and September 30, 2021 have not been refiled but the comparatives will be corrected when the interim financial statements for the periods ended March 31, 2022, June 30, 2022 and September 30, 2022 are filed. These restatements did not have any impact on 2020 results.

(2) Net loss per share is based on the weighted average number of shares outstanding during each reporting period, which may differ on a quarter-to-quarter basis. As such, the sum of the quarterly net loss per share amounts may not equal full-year net loss per share.

Historical quarterly results of operations and net (loss) income cannot be taken as reflective of recurring revenue or expenditure patterns of predictable trends, largely given the non-recurring nature of certain components of our historical revenues, due most notably to unpredictable quarterly variations in net finance income, which are impacted by periodic "mark-to-market" revaluations of our warrant liability and of foreign exchange gains and losses.

Condensed Consolidated Statement of Financial Position Information

(in thousands)	**As of December 31, 2021**	**As of December 31, 2020**	**As of December 31, 2019**
	$	**$**	**$**
Cash and cash equivalents	**65,300**	24,271	7,838
Trade and other receivables and other current assets	**5,447**	3,322	1,869
Inventory	**73**	21	1,203
Restricted cash equivalents	**335**	338	364
Property, plant and equipment	**42**	22	35
Right of use assets	**150**	157	582
Other non-current assets	**8,755**	8,874	8,090
Total assets	**80,102**	37,005	19,981
Payables and accrued liabilities and income taxes payable	**2,787**	2,322	3,596
Current portion of provisions	**34**	92	418
Current portion of deferred revenues	**4,815**	2,193	991
Lease liabilities	**161**	184	903
Warrant liability	**—**	—	2,225
Non-financial non-current liabilities [*]	**19,319**	19,003	14,281

Total liabilities	**27,116**	23,794	22,444
Shareholders' equity (deficiency)	**52,986**	13,211	(2,463)
Total liabilities and shareholders' equity (deficiency)	**80,102**	37,005	19,981

(*) Comprised mainly of employee future benefits, provisions, deferred gain and non-current portion of deferred revenues.

Outstanding Share Data

As at March 25, 2022, we had 121,397,007 common shares issued and outstanding, as well as 1,086,368 stock options, 423,000 deferred share units and 11,441,213 warrants outstanding representing a total of 11,441,213 equivalent common shares.

Recent Accounting Pronouncements

The IASB continues to issue new and revised IFRS. A listing of the recent accounting pronouncements promulgated by the IASB and not yet adopted by the Company is included in note 4 to the Company's December 31, 2021 consolidated financial statements which are included in Item 17 of this Annual Report on Form 20-F.

B. **Liquidity, Cash Flows and Capital Resources**

Since inception, the Company has incurred significant expenses in its efforts to develop and co-promote products. Our current business focus is to: investigate further therapeutic uses of Macrilen™, expand pipeline development activities, further expand the commercialization of macimorelin in available territories and fund our 50% share of the DETECT-trial costs which exceed €9 million. Consequently, the Company has incurred operating losses and has generated negative cash flow from operations historically and in each of the last several years except for the year ended December 31, 2018 when the Company earned revenue from the sale of a license for the adult indication of Macrilen™ (macimorelin) in the U.S. and Canada. The Company expects to incur significant expenses and operating losses for the foreseeable future as it advances its product candidates through preclinical and clinical development, seeks regulatory approval and pursues commercialization of any approved product candidates. We expect that our research and development costs will increase in connection with our planned research and development activities.

As of December 31, 2021, the Company had cash and cash equivalents of $65.3 million and an accumulated deficit of $334.6 million. The Company also had a net loss of $8.4 million and negative cash flows from operations of $8.6 million for the year ended December 31, 2021. We believe that our existing cash on hand will be sufficient to fund our anticipated operating and capital expenditure requirements through 2023. We have based this estimate on assumptions that may prove to be wrong, and we could exhaust our capital resources sooner than we expect. We may also require additional capital to pursue in-licenses or acquisitions of other product candidates.

Registered and Private Offerings

On March 28, 2017, we commenced a new at-the-market ("ATM") offering pursuant to the existing ATM Sales Agreement, dated April 1, 2016, under which we were able, at our discretion, from time to time, to sell up to a maximum of 3 million common shares through ATM issuances on the NASDAQ, up to an aggregate amount of $9.0 million (the "**March 2017 ATM Program**"). The common shares were to be sold at market prices prevailing at the time of the sale of the common shares and, as a result, sale prices varied.

Between March 28, 2017 and April 18, 2017, we issued a total of 597,994 common shares under the March 2017 ATM Program at an average issuance price of $2.97 per share for aggregate gross proceeds of $1.8 million less cash transaction costs of $55,000 and previously deferred financing costs of $65,000.

On April 27, 2017, we entered into a new ATM Sales Agreement (the "**New ATM Sales Agreement**"), and filed with the SEC a prospectus supplement (the "**Prospectus Supplement**") related to sales and distributions of up to a maximum of 2,240,000 common shares through ATM issuances on the NASDAQ, up to an aggregate amount of $6.9 million under the New ATM Sales Agreement. The common shares will be sold at market prices prevailing at the time of the sale of the common shares and, as a result, prices may vary. The New ATM Sales Agreement and the Prospectus Supplement superseded and replaced the March 2017 ATM Program, which itself had superseded and replaced the April 2016 ATM Program. The Prospectus Supplement supplements the base prospectus included in our Shelf Registration Statement on Form F-3, as amended (the "**2017 Shelf Registration Statement**"), which was declared effective by the SEC on April 27, 2017. Between May 30, 2017 and December 31, 2017, we issued 1.8 million common shares at an average issuance price of $2.08 per share under the New ATM Sales Agreement.

On September 20, 2019, we entered into a securities purchase agreement (the "**2019 Securities Purchase Agreement**") with institutional investors in the U.S. to purchase approximately $5.0 million of our Common Shares for $1.50 per share in a registered direct offering and warrants to purchase Common Shares in a concurrent private placement. The gross proceeds from the offering were approximately $5.0 million before deducting the placement agent's fees and other estimated offering expenses. Under the terms of the 2019 Securities Purchase Agreement, we sold 3,325,000 Common Shares. In a concurrent private placement, we issued unregistered warrants to purchase up to approximately 3,325,000 Common Shares. The warrants are exercisable six months following the date of issuance and have an exercise price of $1.65. The warrants will expire five years from the date of issuance. The Common Shares described above (but not the warrants or the Common Shares underlying the warrants) were offered by us pursuant to a "shelf" registration statement on Form F-3, as amended (the "**2019 Shelf Registration Statement**"), which was declared effective by the SEC on August 15, 2019.

On February 21, 2020, the Company completed a registered direct offering for 3,478,261 common shares, at a purchase price of $1.29375 per share, priced at-the-market. Additionally, the Company issued to the investors in the offering unregistered warrants to purchase up to an aggregate of 2,608,696 common shares in a concurrent private placement. The warrants have an exercise price of $1.20 per common share, are exercisable immediately and will expire five and one-half years following the date of issuance. The net cash proceeds to the Company from the offering totaled $3.9 million. The Company issued 243,478 warrants to the placement agent with an exercise price of $1.61719 per common share, which are exercisable immediately and will expire five years following the date of issuance. Collectively, this financing is referred to as the "February 2020 Financing".

Effective June 16, 2020, the Company registered under the Securities Act of 1933 the 2,608,696 investor warrants and 243,478 placement agent warrants issued on February 21, 2020 and the 3,325,000 investor warrants issued on September 20, 2019.

On July 7, 2020, the Company completed a public offering of 26,666,666 units at a price to the public of $0.45 per unit, for gross proceeds of $12 million, before deducting placement agent fees and other offering expenses payable by the Company, in the amount of $1.4 million. Each unit contained one common share (or common share equivalent in lieu thereof) and one investor share purchase warrant to purchase one common share. In total, 26,666,666 common shares, 26,666,666 investor share purchase warrants with an exercise price of $0.45 per share expiring July 7, 2025 and 1,866,667 placement agent warrants with an exercise price of $0.5625 per share expiring July 1, 2025 were issued. The net cash proceeds to the Company from the offering totaled $10.6 million. Collectively, this financing is referred to as the "July 2020 Financing".

On August 5, 2020, the Company entered into a securities purchase agreement with several institutional investors in the U.S. providing for the sale and issuance of 12,427,876 common shares at a purchase price of $0.56325 per common share in a registered direct offering priced at-the-market under Nasdaq rules. The offering resulted in gross proceeds of $7 million. Concurrently, the Company issued to the purchasers unregistered warrants to purchase up to an aggregate of 9,320,907 common shares. The warrants are exercisable for

a period of five and one-half years, exercisable immediately following the issuance date and have an exercise price of $0.47 per common share. In addition, the Company issued unregistered warrants to the placement agent to purchase up to an aggregate of 869,952 common shares, with an exercise price of $0.7040625 per share and an expiration date of August 3, 2025. The net cash proceeds to the Company from the offering totaled $6.3 million. Effective September 14, 2020, the Company registered the common shares underlying the 9,320,907 investor warrants and 869,952 placement agent warrants issued on August 3, 2020 by way of a registration statement which removed the cashless exercise option for registered warrants. Collectively, this financing is referred to as the "August 2020 Financing".

During the period between January 1, 2021 and December 31, 2021, holders have exercised certain of our outstanding warrants to purchase 35,111,187 of our common shares for gross proceeds of approximately $20.1 million (such exercises, the "**Warrant Exercises**").

On February 19, 2021, the Company closed a public offering of 20,509,746 common shares at a price to the public of $1.45 per common share, for gross proceeds of $29.7 million, before deducting underwriting discounts, commissions and offering expenses payable by the Company, in the amount of $2.8 million. Aeterna also granted the underwriter a 30-day overallotment option (the "**Underwriter Option**") to purchase up to 3,076,461 additional common shares at the public offering price, less underwriting discounts and commissions, and 1,435,682 warrants with an exercise price of $1.8125 and expiring on February 17, 2026. The net cash proceeds to the Company from the offering totaled $26.9 million. On February 22, 2021, the underwriter exercised the Underwriter Option in full and received 3,076,461 common shares for gross proceeds to the Company of $4.5 million. In connection with the public offering and the exercise of the Underwriter Option, the Company paid commissions and other expenses of $0.4 million and issued 215,352 warrants priced at $1.8125 and expiring on February 17, 2026. Aggregate gross proceeds received in connection with the February 2021 Financing totaled $34.2 million, less cash transaction costs of $3.2 million and non-cash transaction costs, which represent the issue-date fair value of the February 2021 Placement Agent Warrants, of $1.9 million. Collectively, this financing is referred to as the "February 2021 Financing".

The variations in our liquidity by activity are explained below.

	Three months ended December 31,		Years ended December 31,		
(in thousands)	**2021**	**2020**	**2021**	**2020**	**2019**
	$	**$**	**$**	**$**	**$**
Cash and cash equivalents - Beginning of period	**68,002**	21,746	**24,271**	7,838	14,512
Cash flows from operating activities:					
Net cash (used in) operating activities	**(2,413)**	2,518	**(8,581)**	(4,129)	(10,725)
	(2,413)	2,518	**(8,581)**	(4,129)	(10,725)
Cash flows from financing activities:					
Net proceeds from issuance of common shares and issuance of common shares and warrants	**—**	—	**30,979**	20,733	4,193
Proceeds from exercise of warrants, stock options and deferred share units	**45**	—	**20,087**	—	314
Proceeds on deferred gain	**98**	—	**98**	—	—
Payments on lease liability	**(32)**	(17)	**(127)**	(265)	(614)
	111	(17)	**51,037**	20,468	3,893
Cash flows from investing activities:					
Net cash (used in) provided by investing activities	**(124)**	—	**(658)**	56	50
	(124)	—	**(658)**	56	50
Effect of exchange rate changes on cash and cash equivalents	**(276)**	24	**(769)**	38	108
Cash and cash equivalents - End of period	**65,300**	24,271	**65,300**	24,271	7,838

Operating Activities

2021 compared to 2020

Cash used by operating activities totaled $8.6 million for the twelve months ended December 31, 2021, as compared to $4.1 million used by operating activities in the same period in 2020. This $4.5 million increase in spending in operating activities is attributed primarily to $1.9 million spending on the pre-clinical development programs, four potential therapeutics and two potential vaccines initiated in 2021 in addition to $2.4 million decrease in product sales.

2020 compared to 2019

Cash used by operating activities totaled $4.1 million for the twelve months ended December 31, 2020, as compared to $10.7 million used by operating activities in the same period in 2019. This $6.6 million improvement in operating activities is attributed primarily to the receipt of the non-refundable payment of $6.1 million (€5 million) from Novo Nordisk and the impact of the June 2019 restructuring in Germany, primarily impacting payroll and share-based compensation costs.

Financing Activities

2021 compared to 2020

Cash provided by financing activities totaled $51.0 million for the twelve months ended December 31, 2021, as compared with cash provided by financing activities of $20.5 million in the same period in 2020. In February 2021, the Company completed a financing which provided $31.0 million in net funding (2020 – the Company completed three financings for $20.7 million in net funding). Throughout 2021, holders exercised 35.1 million warrants resulting in proceeds to the Company of $20.1 million.

2020 compared to 2019

Cash provided by financing activities totaled $20.5 million for the twelve months ended December 31, 2020, as compared with cash provided by financing activities of $3.9 million in the same period in 2019. On February 21, 2020, the Company completed the February 2020 Financing with net cash proceeds of $3.9 million. In 2020, the Company also completed the July 2020 Financing with net proceeds of $10.6 million and the August 2020 Financing with net proceeds of $6.3 million (2019 – completed the September 2019 financing for $4.2 million).

Investing Activities

2021 compared to 2020

Cash used in investing activities totaled $0.7 million for the twelve months ended December 31, 2021, as compared with cash provided by investing activities of $0.1 million in the same period in 2020. The $0.6 million year-over-year increase is attributable entirely to the five pre-clinical development programs discussed above, for which we made payments to the University of Wuerzburg for $0.5 million and to the University of Sheffield for $0.1 million.

2020 compared to 2019

Cash flows from investing activities totaled $0.1 million for the year ended December 31, 2020, as compared with $0.1 million for the same period in 2019 reflecting change being made in our restricted cash balances.

Critical Accounting Policies, Estimates and Judgments

Our consolidated financial statements as of December 31, 2021 and December 31, 2020 and for the years ended December 31, 2021, 2020 and 2019 have been prepared in accordance with IFRS as issued by the IASB.

The preparation of consolidated financial statements in accordance with IFRS requires management to make judgments, estimates and assumptions that affect the reported amounts of our assets, liabilities, revenues, expenses and related disclosures. Judgments, estimates and assumptions are based on historical experience, expectations, current trends and other factors that management believes to be relevant when our consolidated financial statements are prepared.

Management reviews, on a regular basis, the Company's accounting policies, assumptions, estimates and judgments in order to ensure that the consolidated financial statements are presented fairly and in accordance with IFRS. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected. Further details can be found in note 3 in the consolidated financial statement as of December 31, 2021 and December 31, 2020 and for the years ended December 31, 2021, 2020 and 2019. Our most significant accounting estimates and assumptions that the Company has made in the preparation of the consolidated financial statements including accounting for a contract modification, license and collaboration arrangement with multiple elements, impairment of goodwill, employee future benefits and research and development accrual.

Capital Disclosures

The Company's objective in managing capital, consisting of shareholders' equity (deficiency), with cash and cash equivalents and restricted cash equivalents being its primary components, is to ensure sufficient liquidity to fund R&D costs, selling expenses, G&A expenses and working capital requirements. Over the past several years, the Company has raised capital via public and private equity offerings and issuances as its primary source of liquidity. The capital management objective of the Company remains the same as that in previous periods. The policy on dividends is to retain cash to keep funds available to finance the activities required to advance the Company's product development portfolio and to pursue appropriate commercial opportunities as they may arise.

The Company is not subject to any capital requirements imposed by any regulators or by any other external source.

Material Cash Requirements

Contractual obligations and commitments as of December 31, 2021

	Service and manufacturing	R&D contracts	TOTAL
	$	$	$
Less than 1 year	1,085	2,252	**3,337**
1 – 3 years	6	1,049	**1,055**
4 – 5 years	**-**	**-**	**-**
More than 5 years	-	-	**-**
Total	**1,091**	**3,301**	**4,392**

During 2021, the Company executed various agreements including in-licensing and similar arrangements with development partners. Such agreements may require the Company to make payments on achievement of stages of development, launch or revenue milestones, although the Company generally has the right to terminate these agreements at no penalty.

Based on the closing exchange rates at December 31, 2021, the Company expects to pay $3.3 million, including $3.1 million (€2.8 million), and $0.2 million (£0.1 million), in R&D contracts and up to $8.9 million, including $7.4 million (€6.5 million) and $1.5 million (£1.2 million), in R&D milestone payments and up to $32.9 million, including $31.3 million (€27.6 million) and $1.6 million (£1.3 million), in revenue related milestone payments. The table below contains all potential R&D and revenue-related milestone payments that the Company may be required to make under such agreements:

(in thousands)	Future potential R&D milestone payments	Future potential revenue milestone payments	TOTAL
	$	$	$
Less than 1 year	28	-	**28**
1 – 3 years	113	-	**113**
4 – 5 years	927	-	**927**
More than 5 years	7,869	32,942	**40,811**
Total	**8,937**	**32,942**	**41,879**

The future payments that are disclosed represent contract payments and are not discounted and are not risk-adjusted. The development of any pharmaceutical product candidates is a complex and risky process that may fail at any stage in the development process due to a number of factors. The timing of the payments is based on the Company's current best estimate of achievement of the relevant milestone.

C. Research and development, patents and licenses, etc.

For a description of our R&D policies for the last three years, see "Item 4.B. Business Overview" and "Key Developments" at the beginning of this Item 5. Over the past three years, our research and development activities have encompassed the 2018 initiation of pediatric indication P01 study for Macrilen™ (macimorelin) for which Novo paid 70% of the costs, the 2021 initiation of the PCT study for Macrilen™ (macimorelin) for which Novo is paying 100% of the initial €9 million of the trial costs and 50% of any excess costs, in addition to our pipeline activities which consist of pre-clinical work.

D. Trend Information

Aeterna is currently conducting its pivotal Phase 3 safety and efficacy study AEZS-130-P02 (the "**DETECT-trial**") evaluating macimorelin for the diagnosis of CGHD. Children and adolescents from two to less than 18 years of age with suspected growth hormone deficiency are to be included. The study is expected to include approximately 100 subjects in Europe and North America, with at least 40 subjects in pre-pubertal and 40 subjects in pubertal status. Macimorelin growth hormone stimulation test ("**GHST**") will be performed twice for repeatability data and two standard GHSTs will be used as controls: arginine (IV) and clonidine (orally). On April 22, 2021, the U.S. FDA Investigational New Drug Application associated with this clinical trial became active. The first clinical sites in the U.S. and in Europe are open for patient recruitment. In Europe, national clinical trial approval procedures and site initiation activities are ongoing. At this point in time, we are closely monitoring delays in site activation and enrollment due to the ongoing COVID-19 pandemic, to mitigate potential impact on estimated trial completion dates.

The Company continues to advance its ongoing business development discussions to secure commercialization partners for macimorelin in additional markets. In addition to its previously established agreements, Aeterna recently entered into a license agreement with NK Meditech Ltd., for the development and commercialization of macimorelin in the Republic of Korea, and a distribution agreement with Er-Kim Pharmaceuticals Bulgaria EOOD for the commercialization of macimorelin in Turkey and some Balkan countries.

For the development of AIM Biologicals as potential PD therapeutics, Aeterna plans to utilize, among others, an innovative animal model on neurodegeneration by α-synuclein-specific T cells in AAV-A53T-α-synuclein Parkinson's disease mice, which has recently been published by University of Wuerzburg researchers.

Next Steps – NMOSD

- Conduct *in-vitro* and *in-vivo* assessments to select an AIM Biologicals-based development candidate.
- Manufacturing process development for selected candidate.

Next Steps – Parkinson's Disease

- Design and produce antigen-specific AIM Biologics molecules for the potential treatment of Parkinson's disease.
- Conduct *in-vitro* and *in-vivo* assessments in relevant Parkinson's disease models.

In consultation with the University of Sheffield, Aeterna has selected AEZS-150 as the lead candidate in its DC-PTH program. AEZS-150 is being developed with the goal of providing a potential new treatment option of primary hypoparathyroidism in adults.

Next Steps DC-PTH

- Work with the University of Sheffield to conduct in depth characterization of development candidate (in-vitro and in-vivo).
- Develop manufacturing process.
- Formalize pre-clinical development of AEZS-150 in preparation for a potential IND filing for conducting the first in-human clinical study

Apart from already available pre-clinical and clinical data on macimorelin for the development as a diagnostic, Aeterna may utilize the established supply chain to support this development. Alternative formulations are currently also under development, as a further option in addition to the existing oral solution already approved for the diagnostic use in adult growth hormone deficiency (AGHD).

Next Steps – Macimorelin as a Potential Therapeutic (ALS)

- Work with the University of Queensland to conduct proof-of-concept studies with macimorelin in disease-specific animal models.
- Assess alternative formulations.
- Formalize pre-clinical development plan

During 2021, the Company entered into a Research Agreement with the University of Wuerzburg on a fee-for-service basis to conduct supplementary research activities and pre-clinical development studies on the potential vaccines, the results of which are covered within the scope of the license agreements. Additionally, Prof. Dr. Thomas Rudel of the University of Wuerzburg was engaged by the Company in September 2021 as a scientific consultant to support development of the salmonella-based vaccine platform for the coronavirus and *Chlamydi*a vaccines.

Next Steps – Coronavirus Vaccine

- Evaluate administration route, dose and immunization scheme.
- *In-vivo* immunology experiments with antigen variant candidates in relevant mice models.
- Conduct virus challenge experiments in immunized transgenic animals.
- Start manufacturing process assessment / development.
- Conduct pre-clinical safety and toxicology assessment.

Next Steps – Chlamydia Vaccine

- Design and prepare candidate vaccine strains.
- Evaluate administration route, dose and immunization scheme.
- *In-vivo* immunology experiments with candidate strains in relevant mouse models.

Financial Risk Factors and Other Instruments

The nature and extent of our exposure to risks arising from financial instruments, including credit risk, liquidity risk and market risk (share price risk) and how we manage those risks are described in note 24 to the Company's annual audited consolidated financial statements as of December 31, 2021 and 2020 and for the years ended December 31, 2021, 2020 and 2019.

The consolidated financial statements filed as part of this Annual Report on Form 20-F are presented under "Item 17. – Financial Statements".

E. Critical Accounting Estimates

See Item 5.B above "Liquidity, Cash Flows and Capital Resources – Critical Accounting Policies, Estimates and Judgments".

Item 6. Directors, Senior Management and Employees

A. Directors and senior management

The following table sets forth information about our directors and our senior corporate officers as at December 31, 2021:

Name and Place of Residence	Position with Aeterna Zentaris
Ammer, Nicola Hessen, Germany	Senior Vice President Clinical Development, Chief Medical Officer
Auld, Leslie Ontario, Canada	Senior Vice President, Chief Financial Officer
Edwards, Peter G. Ohio, United States	Director
Egbert, Carolyn Texas, United States	Director, Chair of the Board
Gagnon, Gilles Quebec, Canada	Director
Gerlach, Matthias Hessen, Germany	Senior Vice President Manufacturing and Supply Chain
Grau, Guenther Hessen, Germany	Vice President Finance
Guenther, Eckhard Hessen, Germany	Senior Vice President Business Development & Alliance Management; Managing Director AEZS Germany
Paulini, Klaus Hessen, Germany	President, Chief Executive Officer, Director; Managing Director AEZS Germany
Turpin, Dennis(1) Quebec, Canada	Director
Teifel, Michael Hessen, Germany	Senior Vice President Non-Clinical Development, Chief Scientific Officer

(1) Mr. Turpin joined the Board on May 5, 2021.

The following is a brief biography of each of our directors and executive officers.

Nicola Ammer was appointed as our Senior Vice President, Clinical Development and as Chief Medical Officer in January 2021. She serves as one of our executive officers. Dr. Ammer, who is based in the Frankfurt, Germany office of AEZS Germany, began her career in the pharmaceutical medicine environment in the CRO business in 2002 and gained experience in all aspects of clinical research & development in various positions with increasing responsibility, including a Director of Clinical Operations. She joined AEZS Germany in March 2015 as Clinical Program Director and took over the role of the Head of Clinical Development in January 2016. She possesses numerous skills in the area of pharmaceutical medicine and contributed significantly to the successful completion of the macimorelin clinical development program in the adult indication. Dr. Ammer obtained the license to practice medicine in 1995 after completion of her academic studies at the University of Essen. She was awarded a doctorate diploma in medicine by the University of Münster in 2004 and a Master of Science in Pharmaceutical Medicine by the University Duisburg-Essen in 2009.

Leslie Auld was appointed as our Senior Vice President, Chief Financial Officer in September 2018. She has over twenty-five years of accounting, finance and pharmaceutical industry experience, with increasingly senior roles at Helix BioPharma Corp., Luminex Diagnostics (formerly TM BioScience Corp.), Attwell Capital Inc. (formerly Fralex Therapeutics) and GeneNews Limited. Ms. Auld was most recently the Chief Financial Officer and Treasurer of GeneNews Limited from 2010 to 2018. A Chartered Professional Accountant, Ms. Auld graduated with an Honors Bachelor of Science degree in Pharmacology & Toxicology from the Western University and has a Master of Business Administration degree from the University of Toronto and began her career at PricewaterhouseCoopers.

Peter G. Edwards joined the Board on May 15, 2020 and is a member of the Audit Committee and of the Nominating, Governance and Compensation Committee. Mr. Edwards is currently General Counsel of Aziyo Biologics. Mr. Edwards served as the Executive Vice President and General Counsel of Celanese Corporation from January 2017 to January 2019. Mr. Edwards previously was Executive Vice President and General Counsel of Baxalta Incorporated, the biopharmaceutical spin-off from Baxter, from June 2015 until its merger with Shire plc in July 2016. Before that, he was Senior Vice President and General Counsel of the global specialty pharmaceuticals company Mallinckrodt plc from July 2013 to June 2015 and served as its Vice President and General Counsel from May 2010 to its spin-off from Covidien plc in June of 2013. He previously served as Executive Vice President and General Counsel for Solvay Pharmaceuticals in Brussels, Belgium from June 2007 until April 2010 and as its Senior Vice President and General Counsel in the US from October 2005 to June 2007. Prior to that, he held in-house positions of increasing responsibility within Mettler-Toledo, Inc. and Eli Lilly and Company. Mr. Edwards began his career in 1990 as an associate in the Kansas City, Missouri office of Shook, Hardy & Bacon L.L.P. Mr. Edwards received his J.D., cum laude, from Brigham Young University.

Carolyn Egbert has served as a director on our Board since August 2012 and as Chair of our Board since May 2016. She is also a member of the Nominating, Governance and Compensation Committee. After enjoying the private practice of law as a defense litigator in Michigan and Washington, D.C., she joined Solvay America, Inc. (" **Solvay**") (a chemical and pharmaceutical company) in Houston, Texas. Over the course of a twenty-year career with Solvay, she held the positions of Vice President, Human Resources, President of Solvay Management Services, Global Head of Human Resources and Senior Executive Vice President of Global Ethics and Compliance. During her tenure with Solvay, she served as a director on the board of directors of seven subsidiary companies and as Chair of one subsidiary board. After retiring in 2010, she established Creative Solutions for Executives, a consulting business providing expertise in corporate governance, ethics and compliance, organizational development, executive compensation and strategic human resources. She holds a Bachelor of Sciences degree in Biological Sciences from George Washington University, Washington D.C. and a Juris Doctor degree from Seattle University, Seattle, Washington. She also was a Ph.D. candidate in Pharmacology at both Georgetown University Medical School at Washington, D.C. and Northwestern University Medical School at Chicago, Illinois. She remains an active member of both the Michigan State Bar and the District of Columbia Bar, Washington, D.C.

Gilles Gagnon joined the Board on January 1, 2020 and is a member of the Audit Committee and of the Nominating, Governance and Compensation Committee. Mr. Gagnon is

currently the President and Chief Executive Officer of Ceapro Inc., a biotechnology company. Prior to that, he was President and CEO of Aeterna Zentaris Inc. During the past 35 years, Mr. Gagnon has worked at several management levels within the field of health, especially in the hospital environment and pharmaceutical industry. Mr. Gagnon has participated in several international committees and strategic advisory boards. He served nine years on the board of directors of Canada's Research Based Pharmaceutical Companies (Rx&D—now Innovative Medicine Canada) where he represented members from the biopharmaceutical sector and pioneered the Rx&D's Canadian Bio partnering initiative. He is currently a member of the CEO Council of Innovative Medicine Canada. He is a certified corporate Director having completed the Directors Education Program at the Rotman School of Management at the University of Toronto, and he has served on several boards of both private and publicly listed companies in the biopharmaceutical sector.

Matthias Gerlach was appointed as our Vice President, Manufacturing Operations in June 2014 and as Vice President, Manufacturing and Supply Chain in January 2018. He serves as one of our executive officers. From December 2011 through May 2014, he was our Vice President, Medicinal Chemistry. Dr. Gerlach, who is based in the Frankfurt office of AEZS Germany, began his career in the pharmaceutical industry in 1997. He joined our Company in January 2001, assuming roles of increasing responsibility in areas of medicinal chemistry and preclinical development through product commercialization during his career. He possesses numerous scientific and business skills and has a long record of successful innovation, drug development and management, and contributed significantly to the successful U.S.-commercialization of macimorelin in the adult indication. Dr. Gerlach obtained a diploma in Chemistry from the Johann Wolfgang Goethe University in Frankfurt in 1994 and was awarded his doctorate diploma in synthetic organic chemistry by the Johann Wolfgang Goethe University in 1997.

Guenther Grau was appointed as our Vice President, Finance in February 2018. Mr. Grau has been part of the Company since 2000. He began his career in the pharmaceutical industry at ASTA Medica AG, a predecessor of our Company, in 1995, assuming roles of increasing responsibility in areas of internal and external accounting during his career. Mr. Grau obtained a diploma in Business Administration from the Philipps-University, Marburg, in 1991.

Eckhard Guenther was appointed as Managing Director of Aeterna Zentaris GmbH in January 2020 and Senior Vice President of Business Development & Alliance Management in 2021. Dr. Guenther brings more than 25 years in the pharmaceutical industry, with profound knowledge and expertise in drug discovery and development in various indication areas like oncology and endocrinology. Additionally, over the course of his career, he has gained extensive experience across research coordination, project management, intellectual properties and business development. After receiving his Ph.D. in organic chemistry from the Martin-Luther University of Halle-Wittenberg (Germany), he started his industrial career at Fahlberg-List Magdeburg in 1985. In 1990 he joined ASTA Medica AG in Frankfurt where he worked in the department of Medicinal Chemistry. During his time at ASTA Medica, Dr. Guenther was significantly involved in the preparation and execution for the spin-off of the biotechnology company Zentaris from ASTA Medica. After the founding of Aeterna Zentaris in 2002 he was appointed to Vice President of Drug Discovery and Preclinical Research. In 2008 he was promoted to Vice President Alliance Management & Intellectual Property and in 2014 he became Vice President of Business Development at Aeterna Zentaris. Dr. Guenther was responsible for the initiation and execution of several research and development and licensing deals with midsize and large international pharmaceutical companies, like Consilient Health, MegaPharm Ltd., Schering Pharma, Solvay, Yakult Honsha, Hikma Pharmaceuticals and Sinopharm A-Think. Dr. Guenther is based in Frankfurt, Germany.

Dr. Klaus Paulini was appointed President and Chief Executive Officer of the Company in October 2019 and also serves as a director on our Board. Dr. Paulini is based in Frankfurt, Germany at our subsidiary AEZS Germany, where he was appointed Managing Director in July 2019 and as Vice President Quality and Regulatory in February 2018. Dr. Paulini began his career in the pharmaceutical industry at ASTA Medica AG in 1997. He had an active role when Zentaris was formed and spun out of ASTA Medica and served in various roles with increasing responsibility at the company ever since, including project responsibility for Cetrotide®. As Head of Quality Assurance from 2010 and 2019, Dr. Paulini successfully managed many of our clinical development projects – including Macrilen™/Macimorelin – in the research and development phase as group leader medicinal chemistry. With his extensive experience and knowledge, he provided successful oversight and valuable input for our pharmaceutical and clinical development programs, ensuring successful and compliant outcomes, ultimately leading to regulatory approvals by the U.S. FDA and the EMA. Dr. Paulini obtained his PhD (Dr. Ing.) in chemistry at the Technical University Darmstadt (Germany) in 1993 and specialized in medicinal chemistry/drug discovery during subsequent postdoctoral fellowships at Strathclyde University (Glasgow, Scotland) and J.W. Goethe University (Frankfurt, Germany) before joining ASTA Medica AG.

Dennis Turpin is a seasoned professional executive and chartered accountant (CA, CPA) with significant experience in finance and capital markets transactions, business development and mergers and acquisitions, over 20 years of which has been in the biopharmaceutical industry. He is currently the President and Chief Executive Officer of Endoceutics, Inc., a speciality biopharmaceutical company where he was previously the Vice President, Special Projects. Mr. Turpin was previously the Vice President and Chief Financial Officer of the Quebec Port Authority from February 2016 to June 2018. From 2007 to 2015, Mr. Turpin was the Senior Vice President and Chief Financial Officer of Aeterna Zentaris and, between 2007 and 1996 he held various finance roles with Aeterna Zentaris. Prior to that, he was a Director in the tax department at Coopers Lybrand, now PricewaterhouseCoopers, from 1988 to 1996 and worked as an auditor from 1985 to 1988. Mr. Turpin earned his Bachelor's degree in Accounting from Laval University in Québec. He obtained his license in accounting in 1985 and became a chartered accountant in 1987.

Michael Teifel is a leading industry executive with a career spanning over 20 years in various therapeutic areas, including endocrinology and oncology. He has deep experience in translating research into clinical development. Over the course of his career, he has gained particular expertise in the design and implementation of non-clinical development programs for small molecule drugs, peptides, targeted therapies, and biologics, as well as in the continued non-clinical evaluation of drug candidates for global registration. Dr Teifel joined Aeterna Zentaris having held various positions in industry with increasing responsibilities in pharmacology, pharmacokinetics, toxicology and translational sciences. He began his career in industry at Roche Diagnostics in the area of delivery systems / non-viral gene therapy. In 1999, Dr. Teifel joined the biotech start-up, Munich Biotech in Martinsried, Germany as a co-founder. As head of pharmacology & toxicology, he was responsible for the evaluation and non-clinical development of a novel vascular targeting technology for the development of anti-tumor diagnostics and therapeutics. In 2004, Dr. Teifel started his first term at Aeterna Zentaris where he held several positions in the field of preclinical development and translational research. In his capacity he was, among others, responsible for preparation of the non-clinical dossier for registration of macimorelin in the U.S. and EU in the indication AGHD. In 2019, Dr. Teifel left Aeterna Zentaris to pursue his career in non-clinical research and development at Cleara Biotech in Utrecht, The Netherlands. As head of translational sciences at Cleara Biotech, he was responsible for translating research on anti-senescent drugs into pre-clinical development in age-related diseases and late-stage cancer. In May 2021 he re-joined Aeterna Zentaris as Senior Vice-President Non-Clinical Development and Chief Scientific officer. Dr. Teifel holds a degree in biology and his Ph.D. from the Technical University of Darmstadt, Germany.

There are no family relationships between any of the persons named above and no arrangement with any customers, major shareholders, suppliers or others pursuant to which any person above was selected as a director or executive officer. Each director holds office until the Company's next annual general meeting or until a successor is duly elected or appointed.

B. Compensation

Our directors and executive officers are generally paid in their home country currency. Unless otherwise indicated, all compensation information included in this document is presented in U.S. dollars and, to the extent a director or officer has been paid in a currency other than U.S. dollars, the amounts have been converted from such person's home country currency to U.S. dollars based on the following annual average exchange rates: for the financial year ended December 31, 2021: €1.000 = U.S.$1.182 and CAN$1.000 = U.S.$0.797; for the financial year ended December 31, 2020: €1.000 = U.S.$1.140 and CAN$1.000 = U.S.$0.745; for the financial year ended December 31, 2019: €1.000 = U.S.$1.120 and CAN$1.000 = U.S.$0.754.

Compensation of Outside Directors

The compensation paid to members of our Board who are not our employees (our "**Outside Directors**") is designed to (i) attract and retain the most qualified people to serve on the Board and its committees, (ii) align the interests of the Outside Directors with those of our shareholders, and (iii) provide appropriate compensation for the risks and responsibilities related to being an effective Outside Director. This compensation is recommended to the Board by the Nominating, Governance and Compensation Committee ("**NGCC**"). The NGCC is currently composed of three Outside Directors, each of whom is independent, namely Ms. Carolyn Egbert (Chair), Mr. Peter G. Edwards and Mr. Gilles

Gagnon.

The Board has adopted a formal mandate for the NGCC, which is available on our website at *www.zentaris.com*. The mandate of the NGCC provides that it is responsible for, among other matters, assisting the Board in developing our approach to corporate governance issues, proposing new Board nominees, overseeing the assessment of the effectiveness of the Board and its committees, their respective chairs and individual directors, making recommendations to the Board with respect to directors' compensation and generally serving in a leadership role for our corporate governance practices.

Retainers

Our Outside Directors are paid an annual retainer, the amount of which depends on the position held on the Board. Annual retainers are paid on a quarterly basis to our Outside Directors. Each Outside Director is paid the equivalent value of the payment in his or her home currency, net of any withholdings or deductions required by applicable law.

Type of Compensation	Annual Retainer for the year 2021
Chair of the Board Retainer	60,000
Board Member Retainer	30,000
Audit Committee Chair Retainer	20,000
Audit Committee Member Retainer	5,000
NGCC Chair Retainer	10,000
NGCC Member Retainer	3,000

All Directors are reimbursed for travel and other out-of-pocket expenses incurred in attending Board or committee meetings. Retainers are prorated when an Outside Director joins the Board during a financial year.

Outstanding Awards

The following table shows all awards outstanding to each Outside Director as at December 31, 2021:

	Option-based Awards					Share-based Awards			
Name	Issuance Date (mm-dd-yyyy)	Number of Securities Underlying Unexercised Options (#)	Option Exercise Price ($)	Option Expiration Date (mm-dd-yyyy)	Value of Unexercised In-the-money Options[1] ($)	Issuance Date (mm-dd-yyyy)	Number of Shares or Units of Shares that have Not Vested (#)	Market or Payout Value of Share-based Awards that have Not Vested[2] ($)	Market or payout value of vested share-based awards not paid out or distributed ($)
Edwards, Peter	—	—	—	—	—	05/15/2020	30,000	—	10,800
	—	—	—	—	—	05/05/2021	70,000	—	25,200
	05-10-2016	10,000	3.48	05-09-2023	—	—	—	—	—
	12-06-2016	7,850	3.45	12-06-2023	—	—	—	—	—
	08-15-2017	60,000	2.05	08-15-2024	—	—	—	—	—
Egbert, Carolyn	—	—	—	—	—	05/08/2018	23,000	—	8,280
	—	—	—	—	—	05/22/2019	30,000	—	10,800
						05/15/2020	30,000	—	10,800
	—	—	—	—	—	05/15/2021	70,000	—	25,200
Gagnon, Gilles	—	—	—	—	—	05/15/2020	30,000	—	10,800
	—	—	—	—	—	05/19/2021	70,000	—	25,200
Turpin, Dennis[3]	—	—	—	—	—	05/19/2021	70,000	—	25,200

(1) "Value of unexercised in-the-money options" at financial year-end is calculated based on the difference between the closing prices of the Common Shares on the NASDAQ on the last trading day of the fiscal year (December 31, 2021) of $0.36 and the exercise price of the options, multiplied by the number of unexercised options.

(2) The Company used the closing price of its Common Shares on the NASDAQ as at the last trading day of the fiscal year (December 31, 2021) of $0.36.

(3) Mr. Dennis Turpin joined the Board on May 5, 2021.

See "Summary of the Stock Option Plan" for more details on the Company's second amended and restated stock option plan adopted by the Board on March 29, 2016 and ratified by the shareholders on May 10, 2016 ("**Stock Option Plan**") and see "Summary of Long-Term Incentive Plan" for more details on the Company's long-term incentive plan adopted by the Board on March 27, 2018, and ratified by the shareholders on May 8, 2018 ("**Long-Term Incentive Plan**").

Total Compensation of Outside Directors

The table below summarizes the total compensation paid to our Outside Directors during the financial year ended December 31, 2021 (all amounts are in U.S. dollars). Our Outside Directors are generally paid in their home currency. Mr. Desbiens, Mr. Gagnon and Mr. Turpin were paid in Canadian dollars. Ms. Egbert and Mr. Edwards were paid in U.S. dollars.

	Fees	Share-based	Option-based	Non-Equity Incentive Plan	Pension	A l l Other

Name	earned[1] ($)	Awards[2] ($)	Awards ($)	Compensation ($)	Value ($)	Compensation ($)	Total ($)
Desbiens, Pierre-Yves[3]	25,000	—	—	—	—	—	25,000
Edwards, Peter	38,000	60,753	—	—	—	—	98,753
Egbert, Carolyn	70,000	60,753	—	—	—	—	130,753
Gagnon, Gilles	38,000	60,753	—	—	—	—	98,753
Turpin, Dennis[4]	32,778	60,753	—	—	—	—	93,531

(1) In respect of our financial year ended December 31, 2021, we paid an aggregate amount of $203,778 to all of our Outside Directors for services rendered in their capacity as directors, excluding reimbursement of out-of-pocket expenses and the value of share-based and option-based awards granted in 2021.
(2) Amounts shown represent the value of the DSUs on the grant date ($0.89). The value of one DSU on the grant date is the closing price of one Common Share on the NASDAQ on the last trading day preceding the date of grant.
(3) Mr. Pierre-Yves Desbiens served on the Board until May 5, 2021.
(4) Mr. Dennis Turpin joined the Board on May 5, 2021.

Compensation of Executive Officers

The following is disclosure of information related to the compensation that we paid to our "Named Executive Officers" during 2021. For the 2021 year, our "Named Executive Officers" were as follows:

- Dr. Klaus Paulini, who, since October 4, 2019, is serving as President and Chief Executive Officer, as well as Managing Director AEZS Germany since July 2019;
- Ms. Leslie Auld, who, since September 24, 2018, is serving as Senior Vice President, Chief Financial Officer as an independent contractor; and
- Dr. Matthias Gerlach, who serves as Vice President Manufacturing and Supply Chain; Mr. Eckhard Guenther, who serves as Vice President Business Development & Alliance Management and Managing Director AEZS Germany; and Ms. Nicola Ammer, who serves as Chief Medical Officer and Senior Vice President Clinical Development, who were our three most highly compensated executive officers (other than our current and former Chief Executive Officer and our Chief Financial Officer) employed at the end of 2021.

Compensation Discussion & Analysis

Compensation Philosophy and Objectives

Our Board, through the NGCC, establishes our executive compensation program that is market-based and at a competitive percentile grouping for both total cash and total direct compensation. The NGCC has established a compensation program that is designed to attract, motivate and retain high-performing senior executives, encourage and reward superior performance and align the executives' interests with those of our shareholders by:

- providing the opportunity for an executive to earn compensation that is competitive with the compensation received by executives serving in the same or measurably similar positions within comparable companies;
- providing the opportunity for executives to participate in equity-based incentive compensation plans;
- aligning executive compensation with our corporate objectives; and
- attracting and retaining highly qualified individuals in key positions.

Compensation Elements

Our executive compensation is targeted at the 50th percentile for small cap biopharmaceutical companies within both the local and national markets and is comprised of both fixed and variable components. The variable components include equity and non-equity incentive plans. Each compensation component is intended to serve a different function, but all elements are intended to work in concert to maximize both corporate and individual performance by establishing specific, competitive operational and corporate goals and by providing financial incentives to employees based on their level of attainment of these goals.

Our current executive compensation program is comprised of the following four basic components: (i) base salary; (ii) an annual bonus linked to both individual and corporate performance; (iii) equity incentives, including stock options, previously granted under our second amended and restated stock option plan adopted by the Board on March 29, 2016 and ratified by the shareholders of Aeterna Zentaris on May 10, 2016 (the "**Stock Option Plan**"), and presently granted under the Corporation's long-term incentive plan adopted by the Board on March 27, 2018 and ratified by the shareholders of Aeterna Zentaris on May 8, 2018 (the "**Long-Term Incentive Plan**"), established for the benefit of our directors, certain executive officers and other participants as may be designated from time to time by either the Board or the NGCC; and (iv) other elements of compensation, consisting of benefits, perquisites and retirement benefits.

Base Salary. Base salaries are intended to provide a steady income to our executive officers regardless of share price. In determining individual base salaries, the NGCC takes into consideration individual circumstances that may include the scope of an executive's position, the executive's relevant competencies or experience and retention risk. The NGCC also takes into consideration the fulfillment of our corporate objectives, as well as the individual performance of the executive.

Short-Term, Non-Equity Incentive Compensation. Our short-term, non-equity incentive compensation plan sets a target cash bonus for each executive officer, expressed as a percentage of the executive officer's base salary. The amount of cash bonus paid to an executive officer depends on the extent to which he or she contributed to the achievement of the annual performance objectives established by the Board for the year. The annual performance objectives are specific operational, clinical, regulatory, financial, commercial and corporate goals that are intended to advance our product pipeline, to promote the success of our commercial efforts and to enhance our financial position. The annual performance objectives are set at the end of each financial year as part of the annual review of corporate strategies. The performance objectives are not established for individual executive officers but rather by functional area(s), many of which are carried out by or fall within the responsibility of our President and Chief Executive Officer, Chief Financial Officer (or principal financial officer) and our other executive officers, including our Named Executive Officers. The award of a cash bonus requires the approval of both the NGCC and the Board and is based upon an assessment of each individual's performance, as well as our overall performance at a corporate level. The determination of individual performance does not involve quantitative measures using a mathematical calculation in which each individual performance objective is given a numerical weight. Instead, the NGCC's determination of individual performance is a subjective determination as to whether a particular executive officer substantially achieved the stated objectives or over-performed or under-performed with respect to corporate objectives that were deemed to be important to our success.

Long-Term Equity Compensation Plan of Executive Officers. The long-term component of the compensation of our executive officers is based exclusively on the Long-Term Incentive Plan, which permits the issuance of a number of equity-based awards based on the contribution of the officers and their responsibilities. The Board adopted a policy regarding stock option grants in December 2014, which provides that each Named Executive Officer is eligible to receive options to acquire our Common Shares having a value, based on the Black-Scholes option pricing model, equal to a specified multiple of his or her salary. The specified multiple for the President and Chief Executive Officer is 1.5. The specified multiple for each other Named Executive Officer is 0.75. To encourage retention and focus management on developing and successfully implementing our continuing growth strategy, stock options vest over a period of three years, with the first third vesting on the first anniversary of the date of grant. Since the adoption of the Long-Term Incentive Plan in 2018, we have broadened the types of equity-based awards which we may issue beyond stock options (to include, among other types, restricted stock units ("**RSUs**"), DSUs and others).

Other Forms of Compensation. Our executive employee benefits program also includes life, medical, dental and disability insurance to the same extent and in the same manner as all other employees. Several of our executive officers also receive a car allowance as a perquisite. These benefits and perquisites are designed to be competitive overall with equivalent positions in comparable North American organizations in the life sciences industry. We also contribute to our North American employees' retirement plans up to an annual maximum amount of $19,500 for employees in the United States. The contribution amounts for our United States employees are subject to limitations imposed by the United States Internal Revenue Service on contributions to our most highly compensated employees. Employees based in Frankfurt; Germany also benefit from certain employer contributions into the employees' pension funds. Our executive officers, including the Named Executive Officers, are eligible to participate in such employer-contribution plans to the same extent and in the same manner as all other employees.

Positioning

The NGCC is authorized to engage its own independent consultant to advise it with respect to executive compensation matters. While the NGCC may rely on external information and advice, all of the decisions with respect to executive compensation are made by the Board upon the recommendation of the NGCC and may reflect factors and considerations other than, or that may differ from, the information and recommendations provided by any external compensation consultants that may be retained from time to time.

In 2013, the NGCC retained a compensation consultant to benchmark our executive compensation plan in an effort to determine whether we were achieving our objective of providing market competitive compensation opportunities. The compensation consultant gathered compensation data from companies that it concluded were of comparable size and/or stage of development as us and from other companies with which we compete for executive talent and advised the NGCC that our executive compensation should be generally aligned with the 50th percentile, or the mid-point, of the companies surveyed by the consultant. Furthermore, the consultant advised the NGCC that the total cash target payment (base salary and, if applicable or awarded in cash, annual bonus) for our executive officers in 2013 generally fell around the 50th percentile of the companies surveyed. The NGCC did not repeat or update the benchmarking process in 2014 – 2020 because it concluded that doing so would not provide additional meaningful data, considering the expense of the process. However, the NGCC, as a matter of good governance, annually reviews and assesses the Corporation's current compensation program and makes appropriate adjustments, if any.

Risk Assessment of Executive Compensation Program

The Board, through the NGCC, oversees the implementation of compensation methods that tie a portion of executive compensation to our short-term and long-term performance and that of each executive officer and that take into account the advantages and risks associated with such compensation methods. In addition, the Board oversees the creation of compensation policies that are intended to reward the creation of shareholder value while reflecting a balance between our short-term and long-term performance and that of each executive officer. The NGCC has considered in general terms the concept of risk as it relates to our executive compensation program.

Base salaries are fixed in amount to provide a steady income to the executive officers regardless of share price and thus do not encourage or reward risk-taking to the detriment of other important business, operational, commercial or clinical metrics or milestones. The variable compensation elements (annual bonuses and equity-based awards) are designed to reward each of short-term, mid-term and long-term performance. For short-term performance, a discretionary annual bonus may be awarded based on the timing and level of attainment of specific operational and corporate goals that the NGCC believes to be challenging yet does not encourage unnecessary or excessive risk-taking. While our bonus payments are generally based on annual performance, a maximum bonus payment is pre-fixed for each senior executive officer and represents only a portion of each individual's overall total compensation opportunities. In exceptional circumstances, a particular executive officer may be awarded a bonus that exceeds his or her maximum pre-fixed or target bonus amount. Finally, a significant portion of executive compensation is provided in the form of equity-based awards, which is intended to further align the interests of executives with those of shareholders. The NGCC believes that these awards do not encourage unnecessary or excessive risk-taking since the ultimate value of the awards is tied to our share price, and in the case of grants under the long-term incentive compensation plan, are generally subject to mid-term and long-term vesting schedules to help ensure that executives generally have significant value tied to long-term share price performance.

The NGCC believes that the variable compensation elements (annual bonuses and equity-based awards) represent a percentage of overall compensation that is sufficient to motivate our executive officers to produce superior short-term, mid-term and long-term corporate results, while the fixed compensation element (base salary) is also sufficient to discourage executive officers from taking unnecessary or excessive risks. The NGCC and the Board also generally have the discretion to adjust annual bonuses and equity-based awards based on individual performance and any other factors they may determine to be appropriate in the circumstances. Such factors may include, where necessary or appropriate, the level of risk-taking a particular executive officer may have engaged in during the preceding year.

Based on the foregoing, the NGCC has not identified any specific risks associated with our executive compensation program that are reasonably likely to have a material adverse effect on us. The NGCC believes that our executive compensation program does not encourage or reward any unnecessary or excessive risk-taking behavior.

Our directors, executive officers and employees are prohibited from purchasing, selling or otherwise trading in derivative securities relating to our Common Shares. Derivative securities are securities whose value varies in relation to the price of our securities. Examples of derivative securities include warrants to purchase our Common Shares, and put or call options written on our Common Shares, as well as individually arranged derivative transactions, such as financial instruments, including, for greater certainty, prepaid variable forward contracts, equity swaps, collars, or units of exchange funds, which are designed to hedge or offset a decrease in market value of our equity securities granted as executive compensation or directors' remuneration. Options to acquire our Common Shares and other equity-based awards issued pursuant to the Stock Option Plan or Long-Term Incentive Plan are not derivative securities for this purpose.

2021 Compensation

Base Salary. The primary element of our compensation program is base salary. Our view is that a competitive base salary is a necessary element for retaining qualified executive officers. In determining individual base salaries, the NGCC takes into consideration individual circumstances that may include the scope of an executive's position, the executive's relevant competencies or experience and retention risk. The NGCC also takes into consideration the fulfillment of our corporate objectives, as well as the individual performance of the executive.

Short-Term, Non-Equity Incentive Compensation. The Board, based on the NGCC's recommendation, adopted the following performance objectives for 2021:

Goal		Result
Commercialization of Macrilen™ (macimorelin) in Europe and the rest of the world	Successfully execute the Board-approved strategy and implementation plan to pursue commercialization opportunities for macimorelin for the rest of the world.	In progress. The Company signed a distribution agreement, in June 2020, with MegaPharm Ltd. for Israel and the Palestinian Authority, with Consilient Health in December 2020 for the United Kingdom and the European Union, with NK Meditech in December 2021 for South Korea. The Company continues to explore opportunities in additional geographies.
Commercialization of Macrilen™ (macimorelin) in United States and Canada	Ensure effective clinical studies are in place to obtain approval of pediatric indication of Macrilen™ (macimorelin).	In progress. In November 2020, the Company executed an amendment to the License Agreement with Novo whereby the Company will conduct the pivotal Study P02 as sponsor in partnership with a contract research organization. Study P02 was initiated in April 2021.
Identify and pursue cost-effective pipeline development projects to further growth strategy, including the therapeutic development potential of Macrilen™ (macimorelin)		During 2021, we in-licensed six new preclinical programs, four potential therapeutics (NMOSD, Parkinson's Disease, Hypoparathyroidism and ALS) and two potential vaccines (COVID-19 and Chlamydia Trachomatis). The ALS program aims at therapeutic use of macimorelin.
Improve operations	Manage costs and control expenses to maximize cash conservation.	Ongoing activity in progress.
	Ensure appropriate capitalization of the Company.	The Company raised approximately $31.0 million with a public financing in February 2021 and approximately $20.1 million through the exercise of warrants.

Long-Term Equity Compensation

For the financial year ended December 31, 2021, the Board approved awards of a total of 580,000 stock options at an exercise price of $0.42 to employees of the Corporation on December 17, 2021 in accordance with the Long-Term Incentive Plan.

Summary of the Stock Option Plan

We established the Stock Option Plan in order to attract and retain directors, officers, employees and suppliers of ongoing services, who will be motivated to work towards ensuring our success. The Board has full and complete authority to interpret the Stock Option Plan, to establish applicable rules and regulations and to make all other determinations it deems necessary or useful for the administration of the Stock Option Plan, provided that such interpretations, rules, regulations and determinations are consistent with the rules of all stock exchanges and quotation systems on which our securities are then traded and with all relevant securities legislation.

There were 141,400 options outstanding under the Stock Option Plan representing approximately 0% of all issued and outstanding Common Shares as of December 31, 2021. The proposed number of Common Shares issuable pursuant to the Long-Term Incentive Plan is fixed at 11.4% of the issued and outstanding Common Shares at any given time less the number of Common Shares issuable pursuant to stock options granted at such time under the Stock Option Plan. See below for a complete description of the Long-Term Incentive Plan. As of December 31, 2020, there were 246,619 Common Shares unallocated and available for future grants of options under the Stock Option Plan; however, the Corporation does not intend on issuing any new stock options under the Stock Option Plan, and instead will issue any future stock options under the Long-Term Incentive Plan.

The burn rate for the Stock Option Plan for the most recently completed fiscal year is set out below:

Stock Option Plan			
Year End	Options Granted	Weighted Average Shares Outstanding	Burn Rate[(1)]
December 31, 2021	0	114,924,497	0%
December 31, 2020	0	41,083,163	0%
December 31, 2019	0	17,494,472	0%

Notes:

(1) Annual burn rate is expressed as a percentage and is calculated by dividing the number of securities granted under the Stock Option Plan by the weighted average number of securities outstanding for the applicable fiscal year.

Under the Stock Option Plan, (i) the number of securities issuable to insiders, at any time, or issued within any one-year period, under all of our security-based compensation arrangements, cannot exceed 10% of our issued and outstanding securities and (ii) no single person eligible to receive grants under the Stock Option Plan (each a "**Participant**") may hold options to purchase, from time to time, more than 5% of our issued and outstanding Common Shares. In addition: (i) the aggregate fair value of options granted under all of our security-based compensation arrangements to any one of our Outside Directors entitled to receive a benefit under the Stock Option Plan, within any one-year period, cannot exceed $100,000 valued on a Black-Scholes basis and as determined by the NGCC; and (ii) the aggregate number of securities issuable to all of our Outside Directors entitled to receive a benefit under the Stock Option Plan, within any one-year period, under all of our security-based compensation arrangements, cannot exceed 1% of its issued and outstanding securities.

Options granted under the Stock Option Plan may be exercised at any time within a maximum period of seven or ten years following the date of their grant (the "**Outside Expiry Date**"), depending on the date of grant. The Board or the NGCC, as the case may be, designates, at its discretion, the specific Participants to whom stock options are granted under the Stock Option Plan and determines the number of Common Shares covered by each of such option grants, the grant date, the exercise price of each option, the Outside Expiry Date and any other matter relating thereto, in each case in accordance with the applicable rules and regulations of the regulatory authorities. The price at which the Common Shares may be purchased may not be lower than the greater of the closing prices of the Common Shares on the NASDAQ on the last trading day preceding the date of grant of the option. Options granted under the Stock Option Plan shall vest in equal tranches over a three-year period (one-third each year, starting on the first anniversary of the grant date) or as otherwise determined by the Board or the NGCC, as the case may be. Participants may not assign their options (nor any interest therein) other than by will or in accordance with the applicable laws of estates and succession.

Unless the Board or the NGCC decides otherwise, Participants cease to be entitled to exercise their options under the Stock Option Plan: (i) immediately, in the event a Participant who is an officer or employee resigns or voluntarily leaves his or her employment or his or her employment is terminated with cause and, in the case of a Participant who is a non-employee director of us or one of our subsidiaries, the date on which such Participant ceases to be a member of the relevant Board; (ii) six months following the date on which employment is terminated as a result of the death of a Participant who is an officer or employee and, in the case of a Participant who is an Outside Director, six months following the date on which such Participant ceases to be a member of the Board by reason of death; (iii) 90 days following the date on which a Participant's employment is terminated for a

reason other than those mentioned in (i) or (ii) above including, without limitation, upon the disability, long-term illness, retirement or early retirement of the Participant; and (iv) where the Participant is a service supplier, 30 days following the date on which such Participant ceases to act as such, for any cause or reason (each, an "**Early Expiry Date**").

The Stock Option Plan also provides that, if the expiry date of one or more options (whether an Early Expiry Date or an Outside Expiry Date) occurs during a "blackout period" or within the seven business days immediately after a blackout period imposed by us, the expiry date will be automatically extended to the date that is seven business days after the last day of the blackout period. For the purposes of the foregoing, "blackout period" means the period during which trading in our securities is restricted in accordance with our corporate policies.

If (i) we accept an offer to amalgamate, merge or consolidate with any other entity (other than one of our wholly-owned subsidiaries) or to sell or license all or substantially all of our assets to any other entity (other than one of our wholly-owned subsidiaries); (ii) we sign a support agreement in customary form pursuant to which the Board agrees to support a takeover bid and recommends that our shareholders tender their Common Shares to such takeover bid; or (iii) holders of more than 50% of our then outstanding Common Shares tender all of their Common Shares to a takeover bid made to all of the holders of the Common Shares to purchase all of the then issued and outstanding Common Shares, then, in each case, all of the outstanding options shall, without any further action required to be taken by us, immediately vest. Each Participant shall thereafter be entitled to exercise all of such options at any time up to and including, but not after the close of business on that date which is ten days following the Closing Date (as defined below). Upon the expiration of such ten-day period, all rights of the Participant to such options or to the exercise of same (to the extent not already exercised) shall automatically terminate and have no further force or effect whatsoever. "**Closing Date**" is defined to mean (x) the closing date of the amalgamation, merger, consolidation, sale or license transaction in the case of clause (i) above; (y) the first expiry date of the takeover bid on which each of the offeror's conditions are either satisfied or waived in the case of clause (ii) above; or (z) the date on which it is publicly announced that holders of greater than 50% of our then outstanding Common Shares have tendered their Common Shares to a takeover bid in the case of clause (iii) above.

The Stock Option Plan provides that the following amendments may be made to the plan only upon approval of each of the Board and our shareholders as well as receipt of all required regulatory approvals:

- any amendment to Section 3.2 of the Stock Option Plan (which sets forth the limit on the number of options that may be granted to insiders) that would have the effect of permitting, without having to obtain shareholder approval on a "disinterested vote" at a duly convened shareholders' meeting, the grant of any option(s) under the Stock Option Plan otherwise prohibited by Section3.2;

- any amendment to the number of securities issuable under the Stock Option Plan (except for certain permitted adjustments, such as in the case of stock splits, consolidations or reclassifications);

- any amendment that would permit any option granted under the Stock Option Plan to be transferable or assignable other than by will or in accordance with the applicable laws of estates and succession;

- the addition of a cashless exercise feature, payable in cash or securities, which does not provide for a full deduction of the number of underlying securities from the Stock Option Plan reserve;

- the addition of a deferred or restricted share unit component or any other provision that results in employees receiving securities while no cash consideration is received by us;

- with respect to any Participant, whether or not such Participant is an "insider" and except in respect of certain permitted adjustments, such as in the case of stock splits, consolidations or reclassifications:

    - any reduction in the exercise price of any option after the option has been granted; or

    - any cancellation of an option and the re-grant of that option under different terms;

- any extension to the term of an option beyond its Outside Expiry Date to a Participant who is an "insider" (except for extensions made in the context of a "blackout period");

- any amendment to the method of determining the exercise price of an option granted pursuant to the Stock Option Plan;

- the addition of any form of financial assistance or any amendment to a financial assistance provision which is more favorable to employees; and

- any amendment to the foregoing amending provisions requiring Board, shareholder and regulatory approvals.

The Stock Option Plan further provides that the following amendments may be made to the Stock Option Plan upon approval of the Board and upon receipt of all required regulatory approvals, but without shareholder approval:

- amendments of a "housekeeping" or clerical nature or to clarify the provisions of the Stock Option Plan;

- amendments regarding any vesting period of an option;

- amendments regarding the extension of an option beyond an Early Expiry Date in respect of any Participant, or the extension of an option beyond the Outside Expiry Date in respect of any Participant who is a "non-insider";

- adjustments to the number of issuable Common Shares underlying, or the exercise price of, outstanding options resulting from a split or a consolidation of the Common Shares, a reclassification, the payment of a stock dividend, the payment of a special cash or non-cash distribution to our shareholders on a *pro rata* basis provided such distribution is approved by our shareholders in accordance with applicable law, a recapitalization, a reorganization or any other event which necessitates an equitable adjustment to the outstanding options in proportion with corresponding adjustments made to all outstanding Common Shares;

- discontinuing or terminating the Stock Option Plan; and any other amendment which does not require shareholder approval under the terms of the Stock Option Plan.

Summary of the Long-Term Incentive Plan

The purpose of the Long-Term Incentive Plan is to (i) promote our long-term financial interests and growth by attracting and retaining management and other personnel and key service providers with the training, experience and ability to enable them to make a substantial contribution to the success of our business; (ii) motivate management personnel by means of growth-related incentives to achieve long-range goals; and (iii) further the alignment of interests of participants with those of our shareholders through opportunities for

increased share ownership in the Corporation.

The NGCC is the administrator of the Long-Term Incentive Plan (the "**Administrator**"). At any time, the Board may serve as the Administrator of the Long-Term Incentive Plan, in lieu of, or in addition, to the NGCC. Except as provided otherwise under the Long-Term Incentive Plan, the Administrator has plenary authority to grant awards pursuant to the terms of the Long-Term Incentive Plan to eligible individuals, determine the types of awards and the number of shares to be covered by the awards, establish the terms and conditions for awards, including the exercise price and term of awards, and take all other actions necessary or desirable to carry out the purpose and intent of the Long-Term Incentive Plan.

Participation in the Long-Term Incentive Plan is generally open to all officers, employees and other individuals, including Outside Directors. However, any individual whose services to the Corporation or any of its subsidiaries are limited to capital-raising transactions, or the promotion and maintenance of a market for the Corporation securities, are ineligible to participate in the Long-Term Incentive Plan. Prospective officers, employees and other service providers who have accepted offers to provide services to the Corporation may also participate in the Long-Term Incentive Plan.

The Long-Term Incentive Plan enables the grant of stock options, stock appreciation rights ("**SARs**"), stock awards, stock unit awards, performance shares, cash-based performance units and other stock-based awards, each of which may be granted separately or in tandem with other awards.

The maximum number of Common Shares issuable under the Long-Term Incentive Plan is fixed at 11.4% of the issued and outstanding Common Shares at any given time, less the number of Common Shares issuable pursuant to stock options granted at such time under the Stock Option Plan. There were 1,367,968 awards outstanding under the Long-Term Incentive Plan representing approximately 1.1% of all issued and outstanding Common Shares as of December 31, 2021. As of December 31, 2021, there were 12,329,890 Common Shares unallocated and available for future grants of awards that are settled in Common Shares under the Long-Term Incentive Plan. See above for a complete description of the Stock Option Plan.

The burn rate for the LTIP for the most recently completed fiscal year is set out below:

LTIP			
Year End	Awards Granted	Weighted Average Shares Outstanding	Burn Rate[(1)]
December 31, 2021	860,000	114,924,497	0.7%
December 31, 2020	300,000	41,083,163	0.7%
December 31, 2019	335,000	17,494,472	1.9%

Notes:

(1) Annual burn rate is expressed as a percentage and is calculated by dividing the number of securities granted under the LTIP by the weighted average number of securities outstanding for the applicable fiscal year.

The number of securities issuable to insiders, at any time, or issued within any one-year period, under all of our security-based compensation arrangements, cannot exceed 10% of our issued and outstanding securities and no single participant may hold options to purchase, from time to time, more than 5% of our issued and outstanding Common Shares.

The aggregate fair value of options granted under all of our security-based compensation arrangements to any one of our Outside Directors entitled to receive a benefit under the Long-Term Incentive Plan, within any one-year period, cannot exceed $100,000 valued on a Black-Scholes basis and as determined by the NGCC; and the aggregate number of securities issuable to all of our Outside Directors entitled to receive a benefit under the Long-Term Incentive Plan, within any one-year period, under all of our security-based compensation arrangements, cannot exceed 1% of its issued and outstanding securities.

Except as provided below or within an award agreement, each award granted under the Long-Term Incentive Plan (other than a performance unit that cannot be paid in shares) will be subject to a minimum vesting period or minimum restriction period as follows: (i) each stock option or SAR will be subject to a minimum vesting period of 12 months from the date of grant, (ii) each award of stock, stock units, performance shares, performance units payable in shares and other stock- based awards ("**Full Value Awards**") granted to non-employee directors will be subject to a minimum restriction period of 12 months from the date of grant, and (iii) each Full Value Award granted to a participant other than a non-employee director will be subject to a minimum restriction period of 12 months from the date of grant if vesting of or lapse of restrictions on such award is based on the satisfaction of performance goals and a minimum restriction period of 36 months from the date of grant, applied in either pro rata installments or a single installment, if vesting of or lapse of restrictions on such award is based solely on the participant's satisfaction of specified service requirements with us (provided that no such Full Value Awards will vest or have its restrictions lapse during the first 12 months following the date of grant). If the grant of a performance award is conditioned on satisfaction of performance goals, the performance period must not be less than 12 months' duration, but no additional minimum restriction period need apply to such award. The minimum vesting period or minimum restriction period will not apply in the case of death or disability of a participant or in the event of a change in control. Awards that result in the issuance of an aggregate of up to 5% of the share pool under the Long-Term Incentive Plan may be granted without regard to such minimum vesting period or minimum restriction period.

A SAR is the right to receive a payment equal to the excess of the Fair Market Value (as defined below) of a specified number of shares on the date the SAR is exercised over the base price per share specified in the award agreement. The base price for each SAR cannot be less than 100% of the Fair Market Value of Common Shares on the grant date and the term of a SAR cannot be more than 10 years from the grant date, unless required otherwise by applicable law. At the discretion of the Administrator, the payment upon a SAR exercise may be in cash, shares or a combination of the two. The "Fair Market Value" means the official closing price per Common Share for the regular market session on the day of determination.

Awards granted under the Long-Term Incentive Plan shall not be subject in any manner to alienation, anticipation, sale, transfer, assignment, pledge, or encumbrance, except as otherwise determined by the Administrator; provided, however, that this restriction shall not apply to the Common Shares received in connection with an award after the date that the restrictions on transferability of such shares set forth in the applicable award agreement have lapsed.

Except as provided in the applicable award agreement or otherwise determined by the Administrator, and subject to the minimum vesting period or minimum restriction period described above, upon termination of service (as defined in the Long-Term Incentive Plan):

- Stock options or stock appreciation rights shall be forfeited, to the extent stock options or stock appreciation rights are not vested and exercisable;

- During the applicable restriction period, restricted stock and any accrued but unpaid dividends that are at that time subject to restrictions shall be forfeited; and

- During the applicable deferral period or portion thereof to which forfeiture conditions apply, or upon failure to satisfy any other conditions precedent to the delivery of Common Shares or cash to which RSUs, performance shares or performance units relate, all performance shares, performance units and RSUs and any other accrued but unpaid dividend equivalents with respect to such RSUs that are then subject to deferral or restriction shall be forfeited.

In the event of a change in control (as defined in the Long-Term Incentive Plan) of the Corporation, outstanding awards will terminate upon the effective time of the change in control unless provision is made for the continuation, assumption or substitution of awards by the surviving or successor entity or its parent. Unless an award agreement says otherwise, the following will occur with respect to awards that terminate in connection with a change in control of the Corporation:

- stock options and SARs, whether vested or unvested, will become fully exercisable and holders of these awards will be permitted immediately before the change in control to exercise them;

- restricted stock and RSUs with time-based vesting (i.e., not subject to achievement of performance goals) will become fully vested immediately before the change in control, and RSUs will be settled as promptly as is practicable in accordance with applicable law; and

- restricted stock, RSUs, performance shares, and performance units that vest based on the achievement of performance goals will become fully vested and earned based on the target performance level as to the performance goals, such that 100% of the target award is earned as of the date of the change of control; and the RSUs and performance units will be settled as promptly as is practicable in accordance with applicable law. The Long-Term Incentive Plan will terminate on the earlier of (i) the earliest date as of which all awards granted under the Long-Term Incentive Plan have been satisfied in full or terminated and no shares approved for issuance under the Long-Term Incentive Plan remain available to be granted under new awards, or (ii) the tenth anniversary of date the Long-Term Incentive Plan, as amended and restated, is approved by our shareholders.

The Administrator may amend, alter or discontinue the Long-Term Incentive Plan, but no amendment, alteration or discontinuation will be made that would materially impair the rights of a participant with respect to a previously granted award without his or her consent, except such an amendment made to comply with applicable law or rule of any securities exchange or market on which our Common Shares are listed or admitted for trading or to prevent adverse tax or accounting consequences to the Corporation or the participant. In no event, however, will an amendment be made without the approval of our shareholders to the extent such amendment would (i) materially increase the benefits accruing to participants under the Long-Term Incentive Plan, (ii) increase the number of shares that may be issued under the Long-Term Incentive Plan or to a participant, (iii) materially expand the eligibility for participation in the Long-Term Incentive Plan, (iv) eliminate or modify the prohibition on repricing of stock options and SARs, (v) lengthen the maximum term or lower the minimum exercise price or base price permitted for stock options and SARs, (vi) modify the prohibition on the issuance of reload or replenishment options, (vii) amend the amendment provisions in the Long-Term Incentive Plan, or (viii) amend the Long-Term Incentive Plan to remove or exceed the 10% insider participation limit.

Outstanding Option-Based Awards and Share-Based Awards

The following table shows all awards outstanding to our Named Executive Officers as of December 31, 2021:

	Option-based Awards					Share-based Awards			
Name	Issuance Date (mm/dd/yyyy)	Number of Securities Underlying Unexercised Options[1] (#)	Option Exercise Price ($)	Option Expiration Date (mm/dd/yyyy)	Value of Unexercised In-the-money Options[2] ($)	Issuance Date	Number of Shares or Units of shares that have Not Vested (#)	Market or Payout Value of Share-based Awards that have Not Vested ($)	Market or payout value of vested share-based awards not paid out or distributed ($)
Paulini, Klaus	12/06/2016	2,500	3.45	12/06/2023	—	—	—	—	—
	08/15/2019	25,000	2.15	08/15/2026	—	—	—	—	—
	11/11/2019	35,000	1.05	11/11/2026	—	—	—	—	—
	12/14/2020	35,000	0.366	12/14/2027	—	—	—	—	—
	12/17/2021	100,000	0.42	12/17/2028	—	—	—	—	—
Auld, Leslie	—	—	—	—	—	—	—	—	—
	12/21/2015	5,000	4.58	12/21/2022	—	—	—	—	—
Gerlach, Matthias	12/06/2016	15,000	3.45	12/06/2023	—	—	—	—	—
	12/04/2019	20,000	0.87	12/04/2026	—	—	—	—	—
	12/14/2020	25,000	0.366	12/14/2027	—	—	—	—	—
	12/17/2021	50,000	0.42	12/17/2028	—	—	—	—	—
	12/21/2015	5,000	4.58	12/21/2022	—	—	—	—	—
	11/08/2016	398	3.50	11/08/2023	—	—	—	—	—
Guenther, Eckhard	12/06/2016	10,000	3.45	12/06/2023	—	—	—	—	—
	12/04/2019	25,000	0.87	12/04/2026	—	—	—	—	—
	12/14/2020	25,000	0.366	12/14/2027	—	—	—	—	—
	12/17/2021	50,000	0.42	12/17/2027	—	—	—	—	—
	12/06/2016	10,000	3.45	12/06/2023	—	—	—	—	—
Ammer, Nicola	12/04/2019	25,000	0.87	12/04/2026	—	—	—	—	—
	12/14/2020	25,000	0.366	12/14/2027	—	—	—	—	—
	12/17/2021	50,000	0.42	12/17/2027	—	—	—	—	—

(1) The number of securities underlying unexercised options represents all awards outstanding at December 31, 2021.
(2) "Value of unexercised in-the-money options" at financial year-end is calculated based on the difference between the closing price of the Common Shares on the NASDAQ on the last trading day of the fiscal year (December 31, 2021) of $0.36 and the exercise price of the options, multiplied by the number of unexercised options.

There were no share-based awards outstanding to our Named Executive Officers at December 31, 2021.

Incentive Plan Awards - Value Vested or Earned During the Year

The following table shows the incentive plan awards value vested or earned for each Named Executive Officer for the financial year ended December 31, 2021:

Name	Option-based awards — Value vested during the year[1] ($)	Share-based awards — Value vested during the year ($)	Non-equity incentive plan compensation — Value earned during the year[2] ($)
Paulini, Klaus	—	—	162,530
Auld, Leslie	—	—	—
Gerlach, Matthias	—	—	55,319
Guenther, Eckhard	—	—	67,021
Ammer, Nicola	—	—	53,191

(1) Represents the aggregate dollar value that would have been realized if the options had been exercised on the vesting date, based on the difference between the closing price of the Common Shares on the NASDAQ and the exercise price on such vesting date. If closing price of the Common Shares on the NASDAQ on the vesting date was lower than the exercise price, then $nil was considered realized.

(2) During 2021, each of Dr. Paulini, Dr. Gerlach, Dr. Guenther and Dr. Ammer were paid bonuses granted in 2021 for activities related to 2020 and will be paid in 2022 bonuses granted in 2020 for activities related to 2021.

Summary Compensation Table

The Summary Compensation Table set forth below shows compensation information for each of the Named Executive Officers for services rendered in all capacities during each of the financial years ended December 31, 2021, 2020 and 2019. All amounts in the table below are in U.S. dollars. Ms. Auld's cash payments were made in Canadian dollars. All cash amounts paid to Dr. Paulini, Dr. Guenther, Dr. Gerlach and Dr. Ammer were made in Euros.

SUMMARY COMPENSATION TABLE

Name and principal position	Years	Salary ($)	Share based awards ($)	Option based awards ($)	Non-equity incentive plan compensation[1] ($)		Pension Value ($)[2]	All other compensation ($)	Total compensation ($)
					Annual incentive plan	Long-term incentive plans			
Paulini, Klaus[3]									
President and Chief Executive	2021	374,496	—	35,298	162,530	—	213,700	—	786,024
Officer; Managing	2020	306,086	—	9,503	183,580	—	292,983	—	792,152
Director AEZS Germany	2019	197,282	—	66,781	22,400	—	191,572	—	478,035
Auld, Leslie	2021	163,038	—	—	—	—	—	—	163,038
Senior Vice President,	2020	166,834	—	—	—	—	—	—	166,834
Chief Financial Officer	2019	194,060	—	—	—	—	—	—	194,060
Guenther, Eckhard									
Senior Vice President Business Development and Alliance	2021	238,737	—	17,649	67,021	—	5,019	—	328,426
Management; Managing	2020	218,966	—	6,788	85,460	—	97,937	—	409,151
Director AEZS Germany	2019	169,438	—	14,792	12,443	—	124,866	—	321,539
Gerlach, Matthias									
Senior Vice	2021	203,276	—	17,649	55,319	—	16,314	—	292,558
President Manufacturing	2020	185,379	—	6,788	70,810	—	14,827	—	277,803
and Supply Chain	2019	159,862	—	11,834	22,400	—	11,368	—	205,464
Ammer, Nicola									
Chief Medical Officer and	2021	182,787	—	17,649	53,191	—	2,400	—	256,027
Senior Vice President	2020	154,512	—	6,788	64,880	—	2,266	—	228,446
Clinical Development	2019	139,802	—	14,792	20,608	—	2,164	—	177,366

(1) Non-equity incentive plan compensation includes cash bonuses. During 2021, each of Dr. Paulini, Dr. Gerlach, Dr. Guenther and Dr. Ammer were paid for bonuses granted in 2020 for activities related to 2020 and will be paid in 2022 bonuses granted in 2021 for activities related to 2021.

(2) Dr. Paulini and Dr. Guenther participate in the DUPK (as defined below), a defined-contribution pension plan maintained by Unterstützungskasse Degussa e.V. that was introduced for employees who began their employment with AEZS Germany (or its predecessors) prior to December 31, 1999. The DUPK includes indirect obligations through a funded multi-employer contribution plan as well as direct unfunded defined benefit plans obligations. Dr. Gerlach participates in RUK 1 (as defined below), a defined-contribution pension plan maintained by Unterstützungskasse Degussa e.V. Dr. Ammer participates in RUK 2 (as defined below), a defined-contribution pension plan maintained by Unterstützungskasse Degussa e.V.

(3) Dr. Paulini did not receive any compensation in his role as a managing director of GmbH or as an executive director.

The value of option-based awards set out in the table above represents the closing price of the Common Shares on the NASDAQ on the last trading day preceding the date of grant multiplied by the Black-Scholes factor as at such date and the number of stock options granted on such date. For 2021, the Black-Scholes valuation model values the options based on the following assumptions: a 5.71-year expected life, 115.80% expected volatility, risk-free annual interest rate of 1.23% per annum and an expected dividend yield of 0%. See the consolidated financial statements for the Corporation for the years ended December 31, 2019, 2018 and 2017 and for the years ended December 31, 2018, 2017 and 2016 for the assumptions applied to the Black-Scholes option pricing model in previous years. The Corporation used the Black-Scholes valuation model as it most accurately captured the fair value of such options. The following table sets forth the value of the option-based awards and the corresponding Black-Scholes factor:

Date of Grant	Value of Grant	Black-Scholes Factor
November 9, 2016	$ 3.50	80.35%
December 6, 2016	$ 3.45	80.57%
December 16, 2016	$ 3.80	80.68%
August 15, 2017	$ 2.05	78.86%

April 2, 2018	$	1.46	77.57%
June 22, 2018	$	2.11	80.86%
August 15, 2019	$	2.15	79.22%
November 11, 2019	$	1.05	67.13%
December 4, 2019	$	0.87	68.01%
December 14, 2020	$	0.366	74.19%
December 17, 2021	$	0.42	83.94%

Compensation of the Chief Executive Officer

The compensation of our President and Chief Executive Officer is governed by our executive compensation policy described in the section titled "Compensation of Executive Officers", and the President and Chief Executive Officer participates, together with the other Named Executive Officers, in all our incentive plans.

Dr. Paulini's total earnings during the financial year ended December 31, 2021 was $786,023, including an incentive bonus in the amount of $162,530.

For the financial year ended December 31, 2021, the Board approved an award of 100,000 stock options at an exercise price of $0.42 to Dr. Paulini on December 17, 2021 in accordance with the Long-Term Incentive Plan.

See "Long-Term Equity Compensation Plan of Executive Officers - Summary of the Stock Option Plan", for a complete description of the Stock Option Plan. See "Long-Term Equity Compensation Plan of Executive Officers - Summary of the Long-Term Incentive Plan", for a complete description of the Long-Term Incentive Plan.

Pension, retirement or similar benefits

Each of our Named Executive Officers who are employed with AEZS Germany participate in defined-contribution pension plans. The terms of these pension plans are described below.

Degussa Pensionskasse ("**DUPK**")

Dr. Paulini and Dr. Guenther participate in the DUPK, a defined-contribution pension plan maintained by Unterstützungskasse Degussa e.V. that was introduced for employees who began their employment with AEZS Germany (or its predecessors) prior to December 31, 1999. The DUPK includes indirect obligations through a funded multi-employer contribution plan as well as direct unfunded defined benefit plans obligations.

Under the funded multi-employer contribution portion of the DUPK, the contributions by AEZS Germany and the employee are calculated based on the employee's total salary during the prior year. The employee contributes 2% of his or her monthly average salary and AEZS Germany contributes an amount of 1.784 times the employee's contribution. The contributions are limited to the social security contribution assessment ceiling. In 2021, the social security contribution assessment ceiling is €7,100 per month. Accordingly, the employee will contribute at most €142.00 monthly and AEZS Germany will contribute at most €253.33 monthly.

Under the unfunded defined benefit portion of the DUPK, the employee earns additional claims for future pension payments for the part of the employee's salary that exceeds the social security contribution assessment ceiling ("**Supplementary Pensions**") that are unfunded and are presented as a pensions benefit obligation on the balance sheet of the Company. The Supplementary Pensions amount to 1.25% annually of a fictional salary peak, which is a percentage of the social security contribution assessment ceiling. Further, the employee is entitled to annual Christmas benefits ("**Christmas Benefits**"), which amount to 1.4% of the last pensionable monthly income for each year of service, limited by the social security contribution assessment ceiling. The employee's contribution and AEZS Germany's contribution are transferred monthly to the pension fund, and AEZS Germany's contribution is calculated with the salary payments and treated as provision for pension payment. We are liable to the employees for the pension benefits that have been promised if the private pension provider does not, or cannot, pay the promised pension payments. Employees will receive a pension payment based on the contributions that were made during their employment, and will also receive the Supplementary Pensions and Christmas Benefits, after they have reached the statutory retirement age, independent of whether they work with AEZS Germany until such age. All direct pension obligations as well as pension obligations from deferred compensation are included and have been included in the pensions benefit obligation of the Company.

Rückgedeckte Unterstützungskasse 1 ("**RUK 1**")

Dr. Gerlach participates in RUK 1, a defined-contribution pension plan maintained by Unterstützungskasse Degussa e.V. Under RUK 1, AEZS Germany contributes 2.4% of Dr. Gerlach's monthly gross salary and Dr. Gerlach contributes 2% of his monthly gross salary. The contributions are limited to the social security contribution assessment ceiling. However, AEZS Germany provides an additional contribution of 18% of his monthly gross salary for the part of his salary that exceeds the social security contribution assessment ceiling. In 2021, the social security contribution assessment ceiling is €7,100 per month. Accordingly, AEZS Germany will contribute at most €1,232.40 (which includes the additional contribution of 18%) monthly and Dr. Gerlach will contribute at most €142.00 monthly. Both contributions are calculated with the monthly salary accounting and transferred to the relief fund monthly. We are liable to Dr. Gerlach for the pension benefits that have been promised if the private pension provider does not, or cannot, pay the promised pension payments. Dr. Gerlach will receive a pension payment based on the contributions that were made during his employment after he has reached the statutory retirement age, independent of whether he works with AEZS Germany until such age.

Rückgedeckte Unterstützungskasse 2 ("**RUK 2**")

Dr. Ammer participates in RUK 2, a defined-contribution pension plan maintained by Unterstützungskasse Degussa e.V. Under RUK 2, AEZS Germany contributes 2.4% of Dr. Ammer's monthly gross salary and Dr. Ammer contributes 3% of her monthly gross salary. The contributions are limited to the social security contribution assessment ceiling. In 2021, the social security contribution assessment ceiling is €7,100 per month. Accordingly, AEZS Germany will contribute at most €170.40 monthly and Dr. Ammer will contribute at most €213.00 monthly. Both contributions are calculated with the monthly salary accounting and transferred to the relief fund monthly. We are liable to Dr. Ammer for the pension benefits that have been promised if the private pension provider does not, or cannot, pay the promised pension payments. Dr. Ammer will receive a pension payment based on the contributions that were made during her employment after she has reached the statutory retirement age, independent of whether she works with AEZS Germany until such age.

***

The table below includes the following information about each Named Executive Officer participating in the DUPK, the Company's only benefit plan with a defined benefit component:

- years of credited service as at December 31, 2021;
- estimated annual benefit accrued, or earned, for service to December 31, 2021 and to the normal retirement age of 65; and

- a reconciliation of the accrued obligation from December 31, 2020 to December 31, 2021.

Name	Number of years credited service (#)[1]	Annual benefits payable ($)[2]		Opening present value of defined benefit obligation ($)[3]	Compensatory change ($)[4]	Non-compensatory change ($)	Closing present value of defined benefit obligation ($)[3]
		At year end	At age 65				
Paulini, Klaus	24	34,085	104,447	855,633	210,131	31,548	1,097,312
Guenther, Eckhard	31	54,219	54,219	899,891	1,450	33,180	934,521

(1) The number of years of credited service as at December 31, 2021 corresponds to the actual years of service with AEZS Germany.

(2) For each Named Executive Officer, the amount of annual benefits payable at December 31, 2021 is the pension the Named Executive Officer would be entitled to starting at age 65 based on termination of employment at December 31, 2021. For each Named Executive Officer, the annual benefits payable at age 65 is the annual benefits payable at December 31, 2021 increased to reflect estimated credited service at age 65.

(3) The present value is the estimated value of the pension obligation to the date indicated using the actuarial assumptions and methods that are consistent with those used in determining pension liabilities as disclosed in the Company's consolidated financial statements.

(4) Compensatory change represents the change in the pension liability between December 31, 2020 and 2021 for each Named Executive Officer.

(5) The calculations of reported amounts use the same actuarial assumptions and methods that are used for calculating accrued benefit obligations and annual expenses, as disclosed in the Company's 2021 and 2020 consolidated financial statements in Note 18, and as prescribed by International Financial Reporting Standards. The methods and assumptions used to determine estimated amounts will not be identical to the methods and assumptions used by other issuers so, as a result, the figures may not be directly comparable across issuers. All amounts shown above are based on assumptions and represent contractual entitlements that may change over time.

The table below includes amounts from AEZS Germany's defined-contribution plans. Any difference between (i) the sum of the Accumulated Value at Start of Year column plus the Compensatory column and (ii) the Accumulated Value at End of Year column is attributable to the employee's contributions to the pension plan during the year ended December 31, 2021, as well as changes in the foreign exchange rate, each employee's contributions being made in Euros.

Name	Accumulated value at start of year ($)	Compensatory ($)	Accumulated value at year end ($)
Paulini, Klaus	96,086	3,569	105,229
Gerlach, Matthias	212,972	16,314	239,090
Guenther, Eckhard	116,059	3,569	125,895
Ammer, Nicola	25,784	5,400	32,128

C. Board practices

Our Articles provide that our Board shall be composed of a minimum of five (5) and a maximum of fifteen (15) directors. Directors are elected annually by our shareholders, but the directors may from time to time appoint one or more directors, provided that the total number of directors so appointed does not exceed one-third of the number of directors elected at the last annual meeting of shareholders. Each elected director will remain in office until termination of the next annual meeting of the shareholders or until his or her successor is duly elected or appointed, unless his or her post is vacated earlier. We do not have service agreements with our independent directors.

See Item 6A. for information about the period of service of each of our directors and senior corporate officers.

Standing Committees of the Board of Directors

Our Board has established an Audit Committee and a NGCC.

Audit Committee

The Audit Committee assists the Board in fulfilling its oversight responsibilities. The Audit Committee reviews the financial reporting process, the system of internal control, the audit process, and our process for monitoring compliance with laws and regulations and with our Code of Ethical Conduct. In performing its duties, the Audit Committee will maintain effective working relationships with the Board, management, and the external auditors. To effectively perform his or her role, each committee member will obtain an understanding of the detailed responsibilities of committee membership as well as our business, operations and risks.

The function of the Audit Committee is oversight and while it has the responsibilities and powers set forth in its charter (incorporated by reference to Exhibit 11.3 to this Annual Report on Form 20-F), it is neither the duty of the committee to plan or to conduct audits or to determine that our financial statements are complete, accurate and in accordance with generally accepted accounting principles, nor to maintain internal controls and procedures.

The current members of the Audit Committee are Dennis Turpin (Chair), Peter G. Edwards, and Gilles Gagnon.

NGCC

The compensation of executive officers of the Corporation and its subsidiaries is recommended to the Board by the NGCC. The NGCC is responsible for, among other matters, (i) assisting the Board in developing our approach to corporate governance issues, (ii) proposing new Board nominees, (iii) overseeing the assessment of the effectiveness of the Board and its committees, their respective chairs and individual directors and (iv) making recommendations to the Board with respect to board member nominees and directors' compensation, as well as serving in a leadership role for our corporate governance practices. It is also responsible for taking all reasonable actions to ensure that appropriate human resources policies, procedures and systems, e.g., recruitment and retention policies, competency and performance metrics and measurements, training and development programs, and market-based, competitive compensation and benefits structures, are in place so that we can attract, motivate and retain the quality of personnel required to achieve our business objectives. The NGCC also assists the Board in discharging its responsibilities relating to the recruitment, retention, development, assessment, compensation and succession planning for our executive and senior management members.

Thus, the NGCC recommends the appointment of senior officers, including the terms and conditions of their appointment and termination, and reviews the evaluation of the performance of our senior officers, including recommending their compensation and overseeing risk identification and management in relation to executive compensation policies and practices. The Board, which includes the members of the NGCC, reviews the Chief Executive Officer's corporate strategy, goals and performance objectives and evaluates and measures his or her performance and compensation against the achievement of such goals and objectives.

The NGCC recognizes that the industry, regulatory and competitive environment in which we operate requires a balanced level of risk-taking to promote and achieve the performance expectations of executives of a specialty biopharmaceutical company. The NGCC is of the view that our executive compensation program should not encourage senior executives to take inappropriate or unreasonable risk. In this regard, the NGCC recommends the implementation of compensation methods that appropriately connect a portion of senior executive compensation with our short-term and longer-term performance, as well as that of each individual executive officer and that take into account the advantages and risks associated with such compensation methods. The NGCC is also responsible for establishing compensation policies that are intended to reward the creation of shareholder value while reflecting a balance between our short-term and longer-term performance and that of each executive officer.

The NGCC is currently composed of Ms. Carolyn Egbert (Chair), Mr. Peter G. Edwards and Mr. Gilles Gagnon, each of whom is independent. The Board believes that the members of the NGCC collectively have the knowledge, experience and background required to fulfill its mandate:

D. Employees

As at December 31, 2021, we had a total of 17 active employees, of which 16 are based in Frankfurt, Germany. In addition, there was one employee based in the U.S. and our CFO was based in Toronto, Canada.

Our current employees are engaged in the following activities: (i) six are engaged in research and development, regulatory affairs and quality assurance; (ii) five are involved in commercial operations and business development; and (iii) six are involved in various administrative functions, including finance and accounting. We do not employ any sales representatives. As at December 31, 2020, we had a total of 11 active employees, of which 10 were based in Frankfurt, Germany. In addition, there was one employee based in the U.S. and our CFO was based in Toronto, Canada.

We have agreements with our employees covering confidentiality, loyalty, non-competition and assignment of all intellectual property rights developed during the employment period.

E. Share ownership

The table below sets forth information as of March 15, 2022 provided to us by our current directors and named executive officers concerning their ownership of Common Shares and stock options of the Company:

Name	No. of Common Shares owned or held	Percent[(1)]	No. of stock options held[(2)]	No. of currently exercisable options
Ammer, Nicola	—	—	110,000	35,001
Egbert, Carolyn	31,920	*	77,850	77,850
Edwards, Peter G.	—	—	—	—
Gagnon, Gilles	—	—	—	—
Gerlach, Matthias	—	—	115,000	41,668
Guenther, Eckhard	—	—	115,398	40,399
Paulini, Klaus	55,000	*	197,500	54,168
Turpin, Dennis[(3)]	32,000	—	—	—
Total	118,920	*	620,350	249,086

* Less than 1%

(1) Based on 121,397,007 Common Shares outstanding as at March 25, 2022.
(2) For information regarding option expiration dates and exercise price refer to the tables included under the caption "Outstanding Option-Based Awards and Share-Based Awards".
(3) Mr. Turpin joined the Board on May 5, 2021.

Item 7. Major Shareholders and Related Party Transactions

A. Major shareholders

We are not directly or indirectly owned or controlled by another corporation or by any foreign government. Based on filings with the SEC and the Canadian securities regulatory authorities, as at March 25, 2022, no individual or entity, other than as set out below, beneficially owned, directly or indirectly, or exercised control or direction over our Common Shares carrying more than 5% of the voting rights attached to all our Common Shares (to whom we refer as our major shareholders).

Changes in Percentage Ownership by Major Shareholders

We had no major shareholders in 2017. During 2018, J. Goldman & Co., L.P. J., Goldman Capital Management, Inc., and Jay G. Goldman (collectively, "Goldman") became major shareholders due to the acquisition of over 5% of our outstanding Common Shares, and as of December 31, 2019, Goldman ceased to be the beneficial owner of more than 5% of our Common Shares, based solely on a Schedule 13G filed with the SEC on February 14, 2020. On February 18, 2020, Armistice Capital Master Fund, LTD became a major shareholder of the Company due to the acquisition of over 5% of our outstanding Common Shares, but as of December 31, 2020 ceased to beneficially own more than 5% of our Common Shares, based solely on a Schedule 13G filed with the SEC on February 16, 2021. On July 1, 2020, Intracoastal Capital LLC became a major shareholder due to the acquisition of over 5% of our outstanding Common Shares, but as of December 31, 2021 ceased to beneficially own more than 5% of our Common Shares, based solely on a Schedule 13G filed with the SEC on February 11, 2022. On July 2, 2020, Lind Global Macro Fund, LP became a major shareholder due to the acquisition of over 5% of our outstanding Common Shares, but as of December 31, 2021 ceased to beneficially own more than 5% of our Common Shares, based solely on a Schedule 13G filed with the SEC on February 11, 2022.

United States Shareholders

Based on a review of the information provide to us by our transfer agent, as at March 21, 2022, there were 14 holders of record of our Common Shares, of which two were registered with an address in the U.S., holding in the aggregate approximately 99% of our outstanding Common Shares. We believe that the number of beneficial owners of our Common Shares is substantially greater than the number of record holders, because the overwhelming majority of our Common Shares are held in broker "street names".

B. Related party transactions

Other than employment agreements and indemnification agreements with our management, there are no related party transactions.

C. Interests of experts and counsel

Not required.

Item 8. Financial Information

A. Consolidated statements and other financial information

The consolidated financial statements filed as part of this Annual Report on Form 20-F are presented under "Item 17. – Financial Statements".

B. Significant changes

No significant changes occurred since the date of our annual consolidated financial statements included elsewhere in this Annual Report on Form 20-F.

Item 9. The Offer and Listing

A. Offer and listing details

Not applicable, except for Item 9A(4). Our Common Shares are listed on both the NASDAQ and the TSX under the symbol "AEZS". The following table indicates, for the relevant periods, the high and low closing prices of our Common Shares on the NASDAQ and on the TSX as of December 31, 2021:

	NASDAQ (US$)		TSX (CAN$)	
	High	Low	High	Low
2019	5.43	0.77	7.26	1.02
2020	1.44	0.30	1.87	0.39
2021	3.34	0.36	4.25	0.64
Fourth quarter	0.77	0.36	0.96	0.455
Third quarter	0.88	0.59	1.10	0.76
Second quarter	1.14	0.83	1.42	1.02
First quarter	3.34	0.51	4.25	0.64
2020				
Fourth quarter	0.44	0.30	0.56	0.39
Third quarter	0.55	0.34	0.73	0.46
Second quarter	1.17	0.45	1.71	0.66
First quarter	1.44	0.42	1.87	0.59
2019				
Fourth quarter	1.08	0.77	1.45	1.02
Third quarter	2.97	1.00	3.86	1.33
Second quarter	5.43	2.04	7.26	2.73
First quarter	4.65	3.03	6.25	4.12

B. Plan of distribution

Not applicable.

C. Markets

Our Common Shares are listed and posted for trading on both the NASDAQ and the TSX under the symbol "AEZS".

D. Selling shareholders

Not applicable.

E. Dilution

Not applicable.

F. Expenses of the issue

Not applicable.

Item 10. Additional Information

A. Share capital

Not required.

B. Memorandum and articles of association

We are governed by our restated articles of incorporation (the "**Restated Articles of Incorporation**") under the CBCA and by articles of amendment dated October 2, 2012,

November 17, 2015, and May 9, 2019 (together with the Restated Articles of Incorporation, the "**Articles**") and by our bylaws, as amended and restated on March 21, 2013 (the "**bylaws**"). Our Articles are on file with Corporations Canada under Corporation Number 264271-9. The Articles do not include a stated purpose and do not place any restrictions on the business that we may carry on.

Inspection Rights of Shareholders

Under the CBCA, shareholders are entitled to be provided with a copy of the list of our registered shareholders. In order to obtain the shareholder list, a shareholder must provide to us an affidavit including, among other things, a statement that the list will only be used for the purposes permitted by the CBCA. These permitted purposes include an effort to influence the voting of our shareholders, an offer to acquire our securities and any other matter relating to our affairs. We are entitled to charge a reasonable fee for the provision of the shareholder list and must deliver that list no more than ten days after receipt of the affidavit described above.

Under the CBCA, shareholders have the right to inspect certain corporate records, including our Articles and bylaws and minutes of meetings and resolutions of the shareholders. Shareholders have no statutory right to inspect minutes of meetings and resolutions of our directors. Our shareholders have the right to certain financial information respecting us. In addition to the annual and quarterly financial statements required to be filed under applicable securities laws, we are required by the CBCA to place before every annual meeting of shareholders our audited comparative annual financial statements. In addition, shareholders have the right to examine the financial statements of each of our subsidiaries and any other corporate entity whose accounts are consolidated in our financial statements.

Directors

The minimum number of directors we must have is five (5) and the maximum number is fifteen (15). In accordance with the CBCA, at least 25% of our directors must be residents of Canada. In order to serve as a director, a person must be a natural person at least 18 years of age, of sound mind, not bankrupt, and must not be prohibited by any court from holding the office of director. None of the Articles, the bylaws and the CBCA impose any mandatory retirement requirements for directors.

The directors are elected by a majority of the votes cast at the annual meeting at which an election of directors is required, to hold office until the election of their successors, except in the case of resignations or if their offices become vacant by death or otherwise. Subject to the provisions of our bylaws, all directors may, if still qualified to serve as directors, stand for re-election. The Board is not replaced at staggered intervals but is elected annually.

There is no provision in our bylaws or Articles that requires that a director must be a shareholder.

The directors are entitled to remuneration as shall from time to time be determined by the Board or by a committee to which the Board may delegate the power to do so. Under the mandate of the NGCC, such committee, comprised of at least a majority of independent directors, is tasked with making recommendations to the Board concerning director remuneration.

The CBCA provides that a director who is a party to, or who is a director or officer of, or has a material interest in, any person who is a party to a material contract or transaction or proposed material contract or transaction with us must disclose to us the nature and extent of his or her interest at the time and in the manner provided by the CBCA, or request that same be entered in the minutes of the meetings of the Board, even if such contract, in connection with our normal business activity, does not require the approval of either the directors or the shareholders. At the request of the president or any director, the director placed in a situation of conflict of interest must leave the meeting while the Board discusses the matter. The CBCA prohibits such a director from voting on any resolution to approve the contract or transaction unless the contract or transaction:

- relates primarily to his or her remuneration as our director, officer, employee or agent or as a director, officer, employee or agent of an affiliate of us;
- is for indemnity or insurance for director's liability as permitted by the CBCA; or
- is with our affiliate.

The CBCA provides that the Board may, on our behalf and without authorization of our shareholders:

- borrow money upon our credit;
- issue, reissue, sell or pledge our debt obligations;
- give a guarantee on our behalf to secure performance of an obligation of any person; and
- mortgage, hypothecate, pledge or otherwise create a security interest in all or any of our property, owned or subsequently acquired, to secure any of our obligations.

The shareholders have the ability to restrict such powers through our Articles or bylaws (or through a unanimous shareholder agreement), but no such restrictions are in place.

The CBCA prohibits the giving of a guarantee to any of our shareholders, directors, officers or employees or of an affiliated corporation or to an associate of any such person for any purpose or to any person for the purpose of or in connection with a purchase of a share issued or to be issued by us or our affiliates, where there are reasonable grounds for believing that we are or, after giving the guarantee, would be unable to pay our liabilities as they become due, or the realizable value of our assets in the form of assets pledged or encumbered to secure a guarantee, after giving the guarantee, would be less than the aggregate of our liabilities and stated capital of all classes. These borrowing powers may be varied by our bylaws or Articles. However, our bylaws and Articles do not contain any restrictions on or variations of these borrowing powers.

Pursuant to the CBCA, our directors manage and administer our business and affairs and exercise all such powers and authority as we are authorized to exercise pursuant to the CBCA, the Articles and the bylaws. The general duties of our directors and officers under the CBCA are to act honestly and in good faith with a view to our best interests and to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. Any breach of these duties may lead to liability to us and our shareholders for breach of fiduciary duty. In addition, a breach of certain provisions of the CBCA, including the improper payment of dividends or the improper purchase or redemption of shares, will render the directors who authorized such action liable to account to us for any amounts improperly paid or distributed.

Our bylaws provide that the Board may, from time to time, appoint from amongst their number committees of the Board, and delegate to any such committee any of the powers of the Board except those which pursuant to the CBCA a committee of the Board has no authority to exercise. As such, the Board has two standing committees: the Audit Committee and the Nominating, Governance and Compensation Committee, or the NGCC.

Subject to the limitations provided by the CBCA, our bylaws provide that we shall, to the full extent provided by law, indemnify a director or an officer, a former director or officer or a person who acts or acted at our request as a director or officer of a body corporate of which we are or were a shareholder or creditor, and his or her heirs and legal representatives, against all costs, losses, charges and expenses, including an amount paid to settle an action or satisfy a judgment, reasonably incurred by him or her in respect of any civil, criminal or administrative action or proceeding to which he or she is made a party by reason of having been our director or officer or such body corporate, provided: (a)

he or she acted in good faith in our best interests and (b) in the case of a criminal or an administrative action or proceeding that is enforced by a monetary penalty, he or she had reasonable grounds to believe that his or her conduct was lawful.

Our directors are authorized to indemnify from time to time any director or other person who has assumed or is about to assume in the normal course of business any liability for us or for any corporation controlled by us and to secure such director or other person against any loss by the pledge of all or part of our movable or immovable property through the creation of a hypothec or any other real right in all or part of such property or in any other manner.

We have also agreed to indemnify and save harmless our directors and senior corporate officers as well as the managing directors of our German subsidiary pursuant to various Director and Officer Indemnification Agreements against certain charges, damages, awards, settlements, liabilities, interest, judgments, fines, penalties, statutory obligations, professional fees and retainers and other expenses of whatever nature or kind, provided that any such costs, charges, professional fees and other expenses are reasonable (collectively, "**Expenses**") and from and against all Expenses sustained or incurred by the indemnified party as a result of serving as a director, officer or employee of the Company (or its subsidiary) in respect of any act, matter, deed or thing whatsoever made, done, committed, permitted, omitted or acquiesced in by the indemnified party as a director, officer or employee of the Company (or its subsidiary).

Share Capitalization

Our authorized share capital structure consists of an unlimited number of shares of the following classes (all classes are without nominal or par value): Common Shares; and first preferred shares (the "**First Preferred Shares**") and second preferred shares (the "**Second Preferred Shares**" and, together with the First Preferred Shares, the "**Preferred Shares**"), both issuable in series. As at March 25, 2022, there were approximately 121,397,007 Common Shares outstanding. No Preferred Shares have been issued to date. We have also issued warrants to acquire Common Shares in connection with certain equity financings.

Common Shares

The holders of the Common Shares are entitled to one vote for each Common Share held by them at all meetings of shareholders, except meetings at which only shareholders of a specified class of shares are entitled to vote. In addition, the holders are entitled to receive dividends if, as and when declared by our Board on the Common Shares. Finally, the holders of the Common Shares are entitled to receive our remaining property upon any liquidation, dissolution or winding-up of our affairs, whether voluntary or involuntary. Shareholders have no liability to further capital calls as all shares issued and outstanding are fully paid and non-assessable.

Preferred Shares

The First and Second Preferred Shares are issuable in series with rights and privileges specific to each class. The holders of Preferred Shares are generally not entitled to receive notice of or to attend or vote at meetings of shareholders. The holders of First Preferred Shares are entitled to preference and priority to any participation of holders of Second Preferred Shares, Common Shares or shares of any other class of shares of our share capital ranking junior to the First Preferred Shares with respect to dividends and, in the event of our liquidation, the distribution of our property upon our dissolution or winding-up, or the distribution of all or part of our assets among the shareholders, to an amount equal to the value of the consideration paid in respect of such shares outstanding, as credited to our issued and paid-up share capital, on an equal basis, in proportion to the amount of their respective claims in regard to such shares held by them. The holders of Second Preferred Shares are entitled to preference and priority to any participation of holders of Common Shares or shares of any other class of shares of our share capital ranking junior to the Second Preferred Shares with respect to dividends and, in the event of our liquidation, the distribution of our property upon our dissolution or winding-up, or the distribution of all or part of our assets among the shareholders, to an amount equal to the value of the consideration paid in respect of such shares outstanding, as credited to our issued and paid-up share capital, on an equal basis, in proportion to the amount of their respective claims in regard to such shares held by them.

Our Board may, from time to time, provide for additional series of Preferred Shares to be created and issued, but the issuance of any Preferred Shares is subject to the general duties of the directors under the CBCA to act honestly and in good faith with a view to our best interests and to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances.

Warrants

For a description of our Warrants, see note 19 – share capital, warrants and other capital, to the audited consolidated financial statements included in Item 17 of this Annual Report on Form 20-F.

Shareholder Actions

The CBCA provides that our shareholders may, with leave of a court, bring an action in our name and on our behalf for the purpose of prosecuting, defending or discontinuing an action on our behalf. In order to grant leave to permit such an action, the CBCA provides that the court must be satisfied that our directors were given adequate notice of the application, the shareholder is acting in good faith and that it appears to be in our best interests that the action be brought.

Shareholder Rights Plan

The Board of the Company approved an amended and restated shareholder rights plan of the Company on March 29, 2019, which was approved, ratified and confirmed by the shareholders at the annual and special meeting of shareholders of the Company on May 8, 2019 (the "**Rights Plan**"). The Rights Plan amended and restated the Company's shareholder rights plan originally implemented in 2016 and was implemented to ensure, to the extent possible, that all shareholders of the Company are treated fairly in connection with any take-over offer or other acquisition of control of the Company.

Objectives and Background of the Rights Plan

The fundamental objectives of the Rights Plan are to provide adequate time for our Board and shareholders to assess an unsolicited take-over bid for us, to provide the Board with sufficient time to explore and develop alternatives for maximizing shareholder value if a take-over bid is made, and to provide shareholders with an equal opportunity to participate in a take-over bid.

The Rights Plan encourages a potential acquiror who makes a take-over bid to proceed either by way of a "Permitted Bid", as described below, which requires a take-over bid to satisfy certain minimum standards designed to promote fairness, or with the concurrence of our Board. If a take-over bid fails to meet these minimum standards and the Rights Plan is not waived by the Board, the Rights Plan provides that holders of Common Shares, other than the acquiror, will be able to purchase additional Common Shares at a significant discount to market, thus exposing the person acquiring Common Shares to substantial dilution of its holdings.

Summary of the Rights Plan

The following is a summary of the principal terms of the Rights Plan, which summary is qualified in its entirety by reference to the terms thereof. Capitalized terms not otherwise defined in this summary shall have the meaning ascribed to such terms in the Rights Plan. A draft of the Rights Plan is available at the following websites: www.zenataris.com, www.sedar.com and www.sec.gov.

For the purposes of this summary and as set out in the Rights Plan, the term "NI 62-104" refers to National Instrument 62-104-*Take-Over Bids and Issuer Bids* adopted by the Canadian securities regulatory authorities, as now in effect or as the same may from time to time be amended, re-enacted or replaced and including for greater certainty any successor instrument thereto.

Operation of the Rights Plan

Pursuant to the terms of the Rights Plan, one right was issued in respect of each common share outstanding at 5:01 p.m. on March 29, 2016 (the "**Record Time**"). In addition, we will issue one right for each additional Common Share issued after the Record Time and prior to the earlier of the Separation Time (as defined below) and the Expiration Time (as defined below). The rights have an initial exercise price equal to the Market Price (as defined below) of the Common Shares as determined at the Separation Time, multiplied by five, subject to certain anti-dilution adjustments (the "**Exercise Price**"), and they are not exercisable until the Separation Time. Upon the occurrence of a Flip-in Event (as defined below), each right will entitle the holder thereof, other than an Acquiring Person or any other person whose rights are or become void pursuant to the provisions of the Rights Plan, to purchase from us, effective at the close of business on the eighth trading day after the Stock Acquisition Date (as defined below), upon payment to us of the Exercise Price, Common Shares having an aggregate Market Price equal to twice the Exercise Price on the date of consummation or occurrence of such Flip-in Event, subject to certain anti-dilution adjustments.

Definition of Market Price

Market Price is generally defined in the Rights Plan, on any given day on which a determination must be made, as the volume weighted average trading price of the Common Shares for the 20 consecutive trading days (i.e. days on which the TSX or another stock exchange or national securities quotation system on which the Common Shares are traded (including for greater certainty, each of the Nasdaq Global Select Market, the Nasdaq Global Market and the Nasdaq Capital Market) is open for the transaction of business, subject to certain exceptions), through and including the trading day immediately preceding such date of determination, subject to certain exceptions.

Trading of Rights

Until the Separation Time (or the earlier termination or expiration of the rights), the rights trade together with the Common Shares and are represented by the same share certificates as the Common Shares or an entry in our securities register in respect of any outstanding Common Shares. From and after the Separation Time and prior to the Expiration Time, the rights are evidenced by rights certificates and trade separately from the Common Shares. The rights do not carry any of the rights attaching to the Common Shares such as voting or dividend rights.

Separation Time

The rights will separate from the Common Shares to which they are attached and become exercisable at the time (the "**Separation Time**") of the close of business on the eighth business day after the earliest to occur of:

1. the first date (the "**Stock Acquisition Date**") of a public announcement of facts indicating that a person has become an Acquiring Person; and

2. the date of the commencement of, or first public announcement of the intention of any person (other than us or any of our subsidiaries) to commence a take-over bid or a share exchange bid for more than 20% of our outstanding Common Shares other than a Permitted Bid or a Competing Permitted Bid (as defined below), so long as such take-over bid continues to satisfy the requirements of a Permitted Bid or a Competing Permitted Bid, as the case may be.

The Separation Time can also be such later time as may from time to time be determined by the Board, provided that if any such take-over bid expires, or is canceled, terminated or otherwise withdrawn prior to the Separation Time, without securities deposited thereunder being taken up and paid for, it shall be deemed never to have been made and if the Board determines to waive the application of the Rights Plan to a particular Flip-in Event, the Separation Time in respect of such Flip-in Event shall be deemed never to have occurred.

From and after the Separation Time and prior to the Expiration Time, each right entitles the holder thereof to purchase one Common Share upon payment of the Exercise Price to us.

Flip-in Event

The acquisition by a person (an "**Acquiring Person**"), including others acting jointly or in concert with such person, of more than 20% of the outstanding Common Shares, other than by way of a Permitted Bid, a Competing Permitted Bid or in certain other limited circumstances described in the Rights Plan, is referred to as a "Flip-in Event".

In the event that, prior to the Expiration Time, a Flip-in Event that has not been waived occurs (see "Waiver and Redemption" below), each right (other than those held by or deemed to be held by the Acquiring Person) will thereafter entitle the holder thereof, effective as at the close of business on the eighth trading day after the Stock Acquisition Date, to purchase from us, upon payment of the Exercise Price and otherwise exercising such right in accordance with the terms of the Rights Plan, that number of Common Shares having an aggregate Market Price on the date of consummation or occurrence of the Flip-in Event equal to twice the Exercise Price, for an amount in cash equal to the Exercise Price (subject to certain anti-dilution adjustments described in the Rights Plan).

A bidder may enter into Permitted Lock-up Agreements with our shareholders ("**Locked-up Persons**") who are not affiliates or associates of the bidder and who are not, other than by virtue of entering into such agreement, acting jointly or in concert with the bidder, whereby such shareholders agree to tender their Common Shares to the take-over bid (the "**Lock-up Bid**") without the bidder being deemed to beneficially own the Common Shares deposited pursuant to the Lock-up Bid. Any such agreement must include a provision that permits the Locked-up Person to withdraw the Common Shares to tender to another take-over bid or to support another transaction that will either provide greater consideration to the shareholder than the Lock-up Bid or provide for a right to sell a greater number of shares than the Lock-up Bid contemplates (provided that the Permitted Lock-up Agreement may require that such greater number exceed the number of shares under the Locked-up Bid by a specified percentage not to exceed 7%).

A Permitted Lock-up Agreement may require that the consideration under the other transaction exceed the consideration under the Lock-up Bid by a specified amount. The specified amount may not be greater than 7%. For greater certainty, a Permitted Lock-up Agreement may contain a right of first refusal or require a period of delay (or other similar limitation) to give a bidder an opportunity to match a higher price in another transaction as long as the limitation does not preclude the exercise by the Locked-up Person of the right to withdraw the Common Shares during the period of the other take-over bid or transaction.

The Rights Plan requires that any Permitted Lock-up Agreement be made available to us and the public. The definition of Permitted Lock-up Agreement also provides that under a Permitted Lock-up Agreement, no "break up" fees, "topping" fees, penalties, expenses or other amounts that exceed in aggregate the greater of (i) 2.5% of the price or value of the aggregate consideration payable under the Lock-up Bid, and (ii) 50% of the amount by which the price or value of the consideration received by a Locked-up Person under another take-over bid or transaction exceeds what such Locked-up Person would have received under the Lock-up Bid, can be payable by such Locked-up Person if the Locked-up Person fails to deposit or tender Common Shares to the Lock-up Bid or withdraws Common Shares previously tendered thereto in order to deposit such Common Shares to another take-over bid or support another transaction.

Permitted Bid Requirements

The requirements of a Permitted Bid include the following:

1. the take-over bid must be made by means of a take-over bid circular;

2. the take-over bid must be made to all holders of Common Shares wherever resident, on identical terms and conditions, other than the bidder;

3. the take-over bid must not permit Common Shares tendered pursuant to the bid to be taken up or paid for:

   a) prior to the close of business on a date that is not less than 105 days following the date of the relevant take-over bid or such shorter minimum period that a take-over bid (that is not exempt from any of the requirements of Division 5 (Bid Mechanics of NI 62-104)) must remain open for deposits of securities thereunder, in the applicable circumstances at such time, pursuant to NI 62-104;

   b) then only if at the close of business on the date Common Shares (and/or "Convertible Securities", as defined in the Rights Plan) are first taken up or paid for under such take-over bid, outstanding Common Shares and Convertible Securities held by shareholders other than any other Acquiring Person, the bidder, the bidder's affiliates or associates, persons acting jointly or in concert with the bidder and any employee benefit plan, deferred profit-sharing plan, stock participation plan or trust for the benefit of our employees or the employees of any of our subsidiaries, unless the beneficiaries of such plan or trust direct the manner in which the Common Shares are to be voted or direct whether the Common Shares are to be tendered to a take-over bid (collectively, "**Independent Shareholders**") that represent more than 50% of the aggregate of (I) then outstanding Common Shares and (II) Common Shares issuable upon the exercise of Convertible Securities, have been deposited or tendered pursuant to the take-over bid and not withdrawn;

4. the take-over bid must allow Common Shares and/or Convertible Securities to be deposited or tendered pursuant to such take-over bid, unless such take-over bid is withdrawn, at any time prior to the close of business on the date Common Shares and/or Convertible Securities are first taken up or paid for under the take-over bid;

5. the take-over bid must allow Common Shares and/or Convertible Securities to be withdrawn until taken up and paid for; and

6. in the event the requirement set forth in clause 3.b) above is satisfied, the bidder must make a public announcement of that fact and the take-over bid must remain open for deposits and tenders of Common Shares for not less than ten days from the date of such public announcement.

A Permitted Bid need not be a bid for all outstanding Common Shares not held by the bidder, i.e., a Permitted Bid may be a partial bid. The Rights Plan also allows a competing Permitted Bid (a "**Competing Permitted Bid**") to be made while a Permitted Bid is in existence. A Competing Permitted Bid must satisfy all the requirements of a Permitted Bid other than the requirement set out in clause 3.a) above and must not permit Common Shares tendered or deposited pursuant to the bid to be taken up or paid for prior to the close of business on the last day of the minimum initial deposit period that such take-over bid must remain open for deposits of securities thereunder pursuant to NI 62-104 after the date of the take-over bid constituting the Competing Permitted Bid; provided, however, that a take-over bid that has qualified as a Competing Permitted Bid shall cease to be a Competing Permitted Bid at any time and as soon as such time as when such take-over bid ceases to meet any or all of the foregoing provisions of the definition of "Competing Permitted Bid" and any acquisition of Common Shares and/or Convertible Securities made pursuant to such take-over bid that qualified as a Competing Permitted Bid, including any acquisition of Common Shares and/or Convertible Securities made before such take-over bid ceased to be a Competing Permitted Bid, will not be a "Permitted Bid Acquisition" (as defined in the Rights Plan).

Waiver and Redemption

The Board may, prior to the occurrence of a Flip-in Event, waive the dilutive effects of the Rights Plan in respect of, among other things, a particular Flip-in Event resulting from a take-over bid made by way of a take-over bid circular to all holders of our Common Shares. In such an event, such waiver shall also be deemed to be a waiver in respect of any other Flip-in Event occurring under a take-over bid made by way of a take-over bid circular to all holders of Common Shares prior to the expiry of the first mentioned take-over bid.

The Board may, with the approval of a majority of Independent Shareholders (or, after the Separation Time has occurred, holders of rights, other than rights which are void pursuant to the provisions of the Rights Plan or which, prior to the Separation Time, are held otherwise than by Independent Shareholders), at any time prior to the occurrence of a Flip-in Event which has not been waived, elect to redeem all, but not less than all, of the then outstanding rights at a price of CAN$0.00001 each, appropriately adjusted as provided in the Rights Plan (the "**Redemption Price**").

Where a take-over bid that is not a Permitted Bid or Competing Permitted Bid is withdrawn or otherwise terminated after the Separation Time has occurred and prior to the occurrence of a Flip-in Event, the Board may elect to redeem all the outstanding rights at the Redemption Price without the consent of the holders of the Common Shares or the rights and reissue rights under the Rights Plan to holders of record of Common Shares immediately following such redemption. Upon the rights being so redeemed and reissued, all the provisions of the Rights Plan will continue to apply as if the Separation Time had not occurred, and the Separation Time will be deemed not to have occurred and we shall be deemed to have issued replacement rights to the holders of its then outstanding Common Shares.

Amendment to the Rights Plan

The Rights Plan may be amended to correct any clerical or typographical error or to make such changes as are required to maintain the validity of the Rights Plan as a result of any change in any applicable legislation, regulations or rules thereunder, without the approval of the holders of the Common Shares or rights. Prior to the Separation Time, we may, with the prior consent of the holders of Common Shares, amend, vary or delete any of the provisions of the Rights Plan in order to effect any changes which the Board, acting in good faith, considers necessary or desirable. We may, with the prior consent of the holders of rights, at any time after the Separation Time and before the Expiration Time, amend, vary or delete any of the provisions of the Rights Plan.

Protection Against Dilution

The Exercise Price, the number and nature of securities which may be purchased upon the exercise of rights and the number of rights outstanding are subject to adjustment from time to time to prevent dilution in the event of stock dividends, subdivisions, consolidations, reclassifications or other changes in the outstanding Common Shares, pro rata distributions to holders of Common Shares and other circumstances where adjustments are required to appropriately protect the interests of the holders of rights.

Fiduciary Duty of Board

The Rights Plan will not detract from or lessen the duty of the Board to act honestly and in good faith with a view to our best interests and the best interests of our shareholders. The Board will continue to have the duty and power to take such actions and make such recommendations to our shareholders as are considered appropriate.

Exemptions for Investment Advisors

Fund managers, investment advisors (for fully-managed accounts), trust companies (acting in their capacities as trustees and administrators), statutory bodies whose business includes the management of funds, and administrators of registered pension plans are exempt from triggering a Flip-in Event, provided that they are not making, or are not part of a group making, a take-over bid.

Term

The Rights Plan will expire on the earlier of (i) the Termination Time; and (ii) the Close of Business on the date on which the annual meeting of the Company to be held in 2022 and at every third annual meeting of the Company thereafter (each such annual meeting being a "**Reconfirmation Meeting**") occurs and at which the Rights Plan is not reconfirmed or presented for reconfirmation as contemplated in the Rights Plan (the "**Expiration Time**").

Action Necessary to Change Rights of Shareholders

In order to change the rights of our shareholders, we would need to amend our Articles to effect the change. Such an amendment would require the approval of holders of two-thirds of the issued and outstanding shares cast at a duly called special meeting. For certain amendments, a shareholder is entitled under the CBCA to dissent in respect of such a resolution amending the Articles and, if the resolution is adopted and we implement such changes, demand payment of the fair value of its shares.

Disclosure of Share Ownership

In general, under applicable securities regulation in Canada, a person or company who beneficially owns, or who directly or indirectly exercises control or direction over voting securities of a reporting issuer, voting securities of an issuer or a combination of both, carrying more than ten percent of the voting rights attached to all the issuer's outstanding voting securities is an insider and must, within ten days of becoming an insider, file a report in the required form effective the date on which the person became an insider, disclosing any direct or indirect beneficial ownership of, or control or direction over, securities of the reporting issuer.

Additionally, securities regulation in Canada provides for the filing of a report by an insider of a reporting issuer whose holdings change, which report must be filed within five days from the day on which the change takes place.

Section 13 of the Exchange Act imposes reporting requirements on persons who acquire beneficial ownership (as such term is defined in the Rule 13d-3 under the Exchange Act) of more than five percent of a class of an equity security registered under Section 12 of the Exchange Act. Our Common Shares are so registered. In general, such persons must file, within ten days after such acquisition, a report of beneficial ownership with the SEC containing the information prescribed by the regulations under Section 13 of the Exchange Act. This information is also required to be sent to the issuer of the securities and to each exchange where the securities are traded.

Meeting of Shareholders

An annual meeting of shareholders is held each year for the purpose of considering the financial statements and reports, electing directors, appointing auditors and fixing or authorizing the Board to fix their remuneration and for the transaction of other business as may properly come before a meeting of shareholders. Any annual meeting may also constitute a special meeting to take cognizance and dispose of any matter of which a special meeting may take cognizance and dispose. Under the bylaws, our Chief Executive Officer or our President has the power to call a meeting of shareholders.

The CBCA provides that the holders of not less than 5% of our outstanding voting shares may requisition our directors to call a meeting of shareholders for the purpose stated in the requisition. Except in limited circumstances, including where a meeting of shareholders has already been called and a notice of meeting already given or where it is clear that the primary purpose of the requisition is to redress a personal grievance against us or our directors, officers or shareholders, our directors, on receipt of such requisition, must call a meeting of shareholders. If the directors fail to call a meeting of shareholders within twenty-one days after receiving the requisition, any shareholder who signed the requisition may call the meeting of shareholders and, unless the shareholders resolve otherwise at the meeting, we shall reimburse the shareholders for the expenses reasonably incurred by them in requisitioning, calling and holding the meeting of shareholders.

The CBCA also provides that, except in limited circumstances, a resolution in writing signed by all of the shareholders entitled to vote on that resolution at a meeting of shareholders is as valid as if it had been passed at a meeting of shareholders.

A quorum of shareholders is present at an annual or special meeting of shareholders, regardless of the number of persons present in person at the meeting, if the holder(s) of shares representing at least 10% of the outstanding voting shares at such meeting are present in person or represented in accordance with our bylaws. In the case where the CBCA, our Articles or our bylaws require or permit the vote by class of holders of a given class of shares of our share capital, the quorum at any meeting will be one or more persons representing 10% of the outstanding shares of such class.

Notice of the time and place of each annual or special meeting of shareholders must be given not less than 21 days, nor more than 50 days, before the date of each meeting to each director, to the auditor and to each shareholder entitled to vote thereat. If the address of any shareholder, director or auditor does not appear in our books, the notice may be sent to such address as the person sending the notice may consider to be most likely to reach such shareholder, director or auditor promptly. Every person who, by operation of the CBCA, transfers or by any other means whatsoever, becomes entitled to any share, shall be bound by every notice given in respect of such share which, prior to the entry of his or her name and address on our register, is given to the person whose name appears on the register at the time such notice is sent. Notice of meeting of shareholders called for any other purpose other than consideration of the financial statements and auditor's report, election of directors and reappointment of the incumbent auditor, must state the nature of the business in sufficient detail to permit the shareholder to form a reasoned judgment on and must state the text of any special resolution or bylaw to be submitted to the meeting.

Our bylaws include an advance notice provision (the "**Advance Notice Requirement**"). The Advance Notice Requirement applies in certain circumstances where nominations of persons for election to the Board are made by our shareholders other than pursuant to: (a) a requisition of a meeting made pursuant to the provisions of the CBCA; or (b) a shareholder proposal made pursuant to the provisions of the CBCA.

Among other things, the Advance Notice Requirement fixes a deadline by which shareholders must submit a notice of director nominations to us prior to any annual or special meeting of shareholders where directors are to be elected and sets forth the information that a shareholder must include in the notice for it to be valid. In the case of an annual meeting of shareholders, we must be given not less than 30 nor more than 65 days' notice prior to the date of the annual meeting; provided, however, that in the event that the annual meeting is to be held on a date that is less than 50 days after the date on which the first public announcement of the date of the annual meeting was made, notice may be made not later than the close of business on the 10th day following such public announcement. In the case of a special meeting of shareholders (which is not also an annual meeting), we must be given notice not later than the close of business on the 15th day following the day on which the first public announcement of the date of the special meeting was made.

The Board may, in its sole discretion, waive any requirement of the Advance Notice Requirement.

Limitations on Right to Own Securities

Neither Canadian law nor our Articles or bylaws limit the right of a non-resident to hold or vote our Common Shares, other than as provided in the *Investment Canada Act* (the "**Investment Act**").

The Investment Act requires any person that is a "non-Canadian" (as defined in the Investment Act) who acquires "control" (as defined in the Investment Act) of an existing Canadian business to file either a pre-closing application for review or a post-closing notification with Innovation, Science and Economic Development Canada.

As of February 15, 2020, the threshold for review of a direct acquisition of control of a non-cultural Canadian business by a World Trade Organization member country investor that is not a state-owned enterprise is an enterprise value of assets that exceeds CAN$1.075 billion. For "trade agreement investors" that are not state-owned enterprises (as defined in the Investment Act), which as of March 2020 include investors ultimately controlled by nationals of Australia, Chile, Colombia, EU member states, Honduras, Japan, Korea, Mexico, New Zealand, Panama, Peru, Singapore, the U.S. or Vietnam, the threshold for review of a direct acquisition of control of a non-cultural Canadian business is an enterprise value of assets that exceeds CAN$1.613 billion. The enterprise value review thresholds for both World Trade Organization member countries and trade agreement investors are indexed to annual GDP growth and are adjusted accordingly each year. For purposes of a publicly traded company, the "enterprise value" of the assets of the Canadian business is equal to the market capitalization of the entity, plus its liabilities (excluding its operating liabilities), minus its cash and cash equivalents.

As such, under the Investment Act, the acquisition of control of us (either through the acquisition of our Common Shares or all or substantially all our assets) by a non-Canadian who is a World Trade Organization member country investor or a trade agreement investor, including a U.S. investor, would be reviewable only if the enterprise value of our assets exceeds the specified threshold for review.

Where the acquisition of control is a reviewable transaction, the Investment Act generally prohibits the implementation of the reviewable transaction unless, after review, the relevant Minister is satisfied or deemed to be satisfied that the acquisition is likely to be of net benefit to Canada.

The acquisition of a majority of the voting interests of an entity is deemed to be acquisition of "control" of that entity. The acquisition of less than a majority but one-third or more of the total number of votes attached to all of the voting shares of a corporation or of an equivalent undivided ownership interest in the total number of votes attached to all of the voting shares of the corporation is presumed to be an acquisition of control of that corporation unless it can be established that, on the acquisition, the corporation is not controlled in fact by the acquiror through the ownership of voting shares. The acquisition of less than one-third of the total number of votes attached to all of the voting shares of a corporation is deemed not to be acquisition of control of that corporation subject to certain discretionary rights relative to investments involving state-owned enterprises. Other than in connection with a "national security" review, discussed below, certain transactions in relation to our Common Shares would be exempt from the Investment Act including:

- the acquisition of our Common Shares by a person in the ordinary course of that person's business as a trader or dealer in securities;
- the acquisition or control of us in connection with the realization of security granted for a loan or other financial assistance and not for any purpose related to the provisions of the Investment Act, if the acquisition is subject to approval under the Bank Act, the Cooperative Credit Associations Act, the Insurance Companies Act or the Trust and Loan Companies Act; and
- the acquisition or control of us by reason of an amalgamation, merger, consolidation or corporate reorganization following which the ultimate direct or indirect control in fact of us, through the ownership of our voting interests, remains unchanged.

Under the national security regime in the Investment Act, review on a discretionary basis may also be undertaken by the federal government in respect of a much broader range of investments by a non-Canadian to "acquire, in whole or in part, or to establish an entity carrying on all or any part of its operations in Canada". The relevant test is whether such an investment by a non-Canadian could be "injurious to national security". The Minister of Innovation, Science and Economic Development has broad discretion to determine whether an investor is a non-Canadian and therefore may be subject to national security review. Review on national security grounds is at the discretion of the federal government and may occur on a pre- or post-closing basis.

There is no law, governmental decree or regulation in Canada that restricts the export or import of capital, or which would affect the remittance of dividends or other payments by us to non-resident holders of our Common Shares, other than withholding tax requirements.

C. Material contracts

The following are the only material agreements of the Company that are in effect as of the date hereof (other than certain agreements entered into in the ordinary course of business):

- the United States and Canada License Agreement (as described below); and
- the Licensing Agreement with Consilient Health (as described below).

United States and Canada License Agreement

On January 16, 2018, the Company, through AEZS Germany, entered into a License Agreement with Strongbridge, to carry out development, manufacturing, registration and commercialization of Macrilen™ (macimorelin) in the U.S. and Canada, and received a cash payment of $24 million (the "**2018 Agreement**").

Effective December 19, 2018, Strongbridge sold its rights to Macrilen™ (macimorelin) in Canada and the U.S. to Novo, and Novo agreed to fund Strongbridge' s Macrilen™ (macimorelin) field organization as a contract field force to promote the product in the U.S. for up to three years. This service agreement was terminated as of December 1, 2019.

On November 16, 2020, the Company announced that, through a wholly owned subsidiary, it had entered into an amendment (the "**Amendment**") of its existing License Agreement with Novo related to the development and commercialization of macimorelin. Under the terms of the original License Agreement, Novo was granted the exclusive right to commercialize macimorelin in the U.S. and Canada. Novo is currently marketing macimorelin in the U.S. under the tradename Macrilen™ for the diagnosis of AGHD. The Amendment was intended to amend the 2018 Agreement to, among others:

- Reflect the updated supply arrangement between the parties relating to the supply of the API Macimorelin acetate;
- Grant Novo a joint ownership interest in the Aeterna Patent Rights and Trademarks;
- Amend responsibility between the Parties for the pediatric clinical trial for the Pediatric Indication (100% cost reimbursement up to EUR 9 million and 50% of exceeding costs per the Amendment, as compared to a total of 70% of costs in the 2018 Agreement); and

- Modify the future payment obligations, i.e. reduction of royalty rate and waiver by the Company of the future regulatory milestone payment on FDA approval of Pediatric Indication.

Under the Amendment, Aeterna continued to retain all rights to macimorelin outside of the U.S. and Canada, but Novo agreed to make an upfront payment to Aeterna of $6,109 (€5,000), which the Company received in December 2020. Under the Amendment, the royalty payment Aeterna receives on sales in the U.S. and Canada was reduced from 15% to 8.5% for annual net sales up to U.S.$40 million and returns to 15% or more for annual net sales of macimorelin over U.S.$40 million. Additionally, the $5 million variable payment owing to Aeterna by Novo, upon FDA approval of the pediatric indication, was waived. Under the Amendment, Novo and Aeterna agreed that solely Aeterna will conduct the pivotal Study P02 in partnership with a contract research organization ("CRO"). Given the transfer of development activities to Aeterna, the percentage of Study P02 clinical trial costs that Novo is required to reimburse to Aeterna was adjusted from 70% to 100% of costs up to €9,000 (approximately $10,980). Any additional external jointly approved Study P02 trial costs incurred over €9,000 will be shared equally between Novo and Aeterna. In addition, certain changes to rights and responsibilities of the joint steering committee were made

Under the Amendment, both companies will continue to closely coordinate the activities related to the development and commercialization of macimorelin in the U.S. and Canada through a joint steering committee, with each party having decision rights in certain areas. Novo will also receive co-ownership of the U.S. and Canadian patents and trademarks owned by Aeterna on macimorelin but will be required to transfer co-ownership in those patents back to Aeterna on the occurrence of certain termination events.

In addition, upon regulatory approval of macimorelin in the U.S. for the diagnosis of CGHD, if Novo determines not to commercialize macimorelin in Canada, then Aeterna has the option to exclusively license rights to macimorelin in Canada (but not in U.S.) to a third party. The Amendment also confirms that Aeterna has the right to use the results from Study P02, if successful, to support Aeterna in seeking regulatory approval and in its ongoing efforts to seek partnering opportunities for macimorelin in Europe and other regions outside of the two countries licensed to Novo, the U.S. and Canada.

Under the Amendment, for as long as Macrilen™ (macimorelin) is patent-protected, the Company will be entitled to a 8.5% royalty on net sales up to $40 million, 15% royalty on net sales between $40 million and $75 million, and an 18% royalty on net sales above $75 million. Following the end of patent protection in the U.S. or Canada for Macrilen™ (macimorelin), the Company will be entitled to a 5% royalty on net sales in that country.

In addition, the Company will also receive one-time payments from Novo following the first achievement of the following commercial milestone events:

- $4 million on achieving $25 million annual net sales,
- $10 million on achieving $50 million annual net sales,
- $20 million on achieving $100 million annual net sales,
- $40 million on achieving $200 million annual net sales, and
- $100 million on achieving $500 million annual net sales.

The Amendment will expire at the end of a defined royalty period in each of the U.S. and Canada, at which time the license that the Company granted will become irrevocable, fully paid-up, perpetual and royalty-free in such country. The licensee has the right to terminate the Amendment if there is a safety concern related to Macrilen™ (macimorelin), withdrawal of regulatory approval for Macrilen™ (macimorelin) in the U.S. believed to be permanent, two hundred and seventy (270) days prior written notice, or if the Company commits a material breach of any term of the Amendment that it fails to cure within ninety (90) days after receiving written notice of the breach. The Company has the right to terminate the Amendment if the licensee commits a material breach of any term of the Amendment that it fails to cure within ninety (90) days after receiving written notice of the breach. If the breach relates to Canada then the Company shall only have the right to terminate the Amendment in relation to Canada. If the breach relates to the U.S., then the Company shall have the right to terminate the Amendment in its entirety. If Novo terminates the Amendment early or the Company terminates because of a material breach by Novo, then the joint ownership rights will be returned to the Company.

The Amendment contains customary provisions related to, among other things, confidentiality and non-disclosure, representations and warranties, indemnity and dispute resolution. The Amendment is governed by the laws of Switzerland.

European Economic Area and United Kingdom License Agreement

On December 7, 2020, the Company entered into an exclusive licensing agreement with Consilient Health Limited ("CH") for the commercialization of macimorelin (the "Licensed Product") in the European Economic Area and the United Kingdom (the "CH License Agreement").

Under the terms of the CH License Agreement, CH agreed to make a non-refundable, non-creditable upfront payment to the Company of $1,209 (€1.0 million), which the Company received in January 2021. The Company also is eligible to receive additional consideration, including regulatory milestones related to agreed-upon pricing and reimbursement parameters; net sales milestones; and royalties, ranging from 10%-20% of net sales of macimorelin, subject to reduction in certain cases, or sublicense income recorded by CH. Also on December 7, 2020, the Company and CH entered into an exclusive supply agreement, pursuant to which the Company agreed to provide the Licensed Product to CH, with such Licensed Product to be manufactured by third-party manufacturers for a period of ten years, subject to renewal (the "CH Supply Agreement").

As consideration for the right to commercialise the licensed product, CH has agreed certain milestones as summarized below:

<u>One-time payment (non-refundable and non-creditable)</u>

- Payment of Euro 1 million thirty (30) days after the effective date of the Licensing Agreement;

<u>Paediatric Use Regulatory payment (non-refundable and non-creditable)</u>

- Grant of first marketing authorization from the European Commission for Paediatric Use of Euro 500,000.

<u>Regulatory payments (non-refundable and non-creditable)</u>

- Upon receipt of pricing and reimbursement approval in France, Germany, Italy, Spain and the United Kingdom upon price per test of:
  - Above Euro 300: Euro 200,000 per country;
  - Euro 250 to Euro 300: Euro 100,000 per country; and
  - Achievement of a mean average reimbursement price of above Euro 300 in France, Germany, Italy, Spain and UK of Euro 500,000.

Commercial milestones (non-refundable and non-creditable)

- Annual net sales reaching Euro 4 million for payment of Euro 250,000;
- Annual net sales reaching Euro 6 million for payment of Euro 400,000;
- Annual net sales reaching Euro 8 million for payment of Euro 600,000; and
- Annual net sales reaching Euro 10 million for payment of Euro 1,000,000.

Royalties

- 10.0% for up to Euro 2 million annual net sales;
- 12.5% between Euro 2 million and Euro 3 million net sales;
- 15.0% between Euro 3 million and Euro 4 million net sales; and
- 20.0% for above Euro 4 million net sales.

Sublicense Income Royalty

- 10.0% on any form of consideration other than running royalties on net sales

The license remains in full force and effect (i) as long as the licensed product is covered by a valid claim in any country covered by the licensing agreement; (ii) the expiration of any regulatory marketing exclusivity period or other statutory designation that provides similar exclusivity for the commercialisation of the licensed product in any country covered by the licensing agreement; or (iii) on a country by country of the covered territory, and licensed product by licensed product basis, for a period of ten (10) years after the first commercial sale date in the respective country, whichever term is longer, subject to renewal. The licensee has the right to terminate the license in certain circumstances.

Employment and Service Agreements

We, or one of our subsidiaries, had entered into an employment agreement and, in some cases, a change of control agreement with each of our Named Executive Officers.

Klaus Paulini

We entered into an employment agreement with Dr. Klaus Paulini, effective as of October 4, 2019 (the "**Employment Agreement**") for his position as Chief Executive Officer of the Corporation. The Corporation, through AEZS Germany, also entered into a service agreement with Dr. Klaus Paulini effective as of July 26, 2019 (the "**Services Agreement**") for his position as Managing Director of AEZS Germany. The Employment Agreement provides that we will pay Dr. Paulini (the "**Executive**") an initial base salary of €260,000 per annum, which includes payment for his service as Managing Director of AEZS Germany. Additionally, pursuant to the Employment Agreement, we provided the Executive with an initial grant of 35,000 stock options in November 2019. Under the terms of the Services Agreement, the Executive may receive subsequent grants of stock options at the discretion of the Board of Directors or the NGCC, an annual bonus subject to the determination and approval of the NGCC and participation in an employer sponsored pension scheme.

If there is a termination of the Executive's employment by us without "Cause", then the Executive will be entitled to receive a severance payment in the amount equal to €300,000.

The Employment Agreement contains customary confidentiality, intellectual property and non-disparagement covenants.

For the purposes of the Employment Agreement, termination of employment for "Cause" includes (but is not limited to) (i) if the Executive commits any fraud, theft, embezzlement or other criminal act of a similar nature, and (ii) if the Executive has committed serious misconduct or willful negligence in the performance of his duties.

Leslie Auld

We entered into a consulting agreement with Leslie Auld, Senior Vice President, Chief Financial Officer, effective as of September 24, 2018 (the "**Consulting Agreement**"). The Consulting Agreement provides that Ms. Auld (the "**Consultant**") will perform specified services for us for up to 120 hours per month. The Consultant will be paid CAN$150 per hour (plus HST) (the "**base fees**") for these services. Additionally, the Consultant will be paid for up to eight (8) hours of travel time per round trip, at a rate of CAN$150 per hour.

The Consulting Agreement may be terminated by either party for convenience, upon thirty (30) days written notice. The Consulting Agreement may also be terminated by us upon the material breach or default of any provision of the Consulting Agreement by the Consultant, immediately upon the Consultant's death or upon the parties' mutual agreement. In the event of termination, the Consultant will be entitled to receive any outstanding base fees and reimbursement for incurred expenses to the effective date of termination.

The Consulting Agreement provides the Consultant indemnifies us from and against any and all claims, costs, liabilities, damages, charges and expenses arising out of the Consulting Agreement or the services, including in respect of misclassification.

Ms. Auld concluded her Consulting Agreement effective March 31, 2022.

Matthias Gerlach

AEZS Germany entered into an employment agreement in January 2001 with Dr. Gerlach, Vice President Manufacturing and Supply Chain. In accordance with the terms of his employment agreement, Dr. Gerlach will receive a pension payment after he has reached the statutory retirement age, independent of whether he works with AEZS Germany until such age, in an amount to be based on the contributions that were made during his employment with AEZS Germany.

Eckhard Guenther

AEZS Germany entered into an employment agreement in 1990 with Dr. Guenther, Vice President Business Development & Alliance Management. In accordance with the terms of his employment agreement, Dr. Guenther will receive a pension payment after he has reached the statutory retirement age, independent of whether he works with AEZS Germany until such age, in an amount to be based on the contributions that were made during his employment with AEZS Germany.

Nicola Ammer

AEZS Germany entered into an employment agreement in April 2015 with Dr. Ammer, Chief Medical Officer and Senior Vice President Clinical Development. In accordance with the terms of her employment agreement, Dr. Ammer will receive a pension payment after she has reached the statutory retirement age, independent of whether she works with AEZS Germany until such age, in an amount to be based on the contributions that were made during her employment with AEZS Germany.

Name	Termination Provisions Value ($)[1] [2]
Ammer, Nicola	0
Auld, Leslie	0
Gerlach, Matthias	0
Guenther, Eckhard	0
Paulini, Klaus	354,600

(1) The termination values assume that the triggering event took place on the last business day of our financial year-end (December 31, 2021).

(2) Value of earned/unused vacation, if applicable, and amounts owing for expense reimbursement are not included as they are not considered as "incremental" payments made in connection with termination of employment.

D. Exchange controls

Canada has no system of exchange controls. There are no exchange restrictions on borrowing from foreign countries or on the remittance of dividends, interest, royalties and similar payments, management fees, loan repayments, settlement of trade debts or the repatriation of capital.

E. Taxation

THE FOLLOWING SUMMARY IS OF A GENERAL NATURE ONLY AND IS NOT INTENDED TO BE, NOR SHOULD IT BE CONSTRUED TO BE, LEGAL OR TAX ADVICE TO ANY PARTICULAR HOLDER. CONSEQUENTLY, HOLDERS ARE URGED TO CONSULT THEIR OWN TAX ADVISORS FOR ADVICE AS TO THE TAX CONSEQUENCES OF AN INVESTMENT IN THE COMMON SHARES HAVING REGARD TO THEIR PARTICULAR CIRCUMSTANCES.

Material Canadian Income Tax Considerations

The following summary describes the principal Canadian federal income tax considerations applicable to a holder of Common Shares and who, for the purposes of the Canadian federal Income Tax Act, R.S.C. 1985, as amended (the "**Tax Act**"), and at all relevant times, deals at arm's length with, and is not affiliated with, the Company and holds their Common Shares as capital property (a "**holder**"). Common Shares will generally be considered to be capital property to a holder for purposes of the Tax Act unless either the holder holds such Common Shares in the course of carrying on a business of trading or dealing in securities, or the holder has held or acquired such Common Shares in a transaction or transactions considered to be an adventure in the nature of trade.

This summary is not applicable to a holder (i) that is a "financial institution", as defined in the Tax Act for purposes of the mark-to- market rules, (ii) that is a "specified financial institution", as defined in the Tax Act, (iii) an interest in which would be a "tax shelter investment" as defined in the Tax Act, (iv) that has made a functional currency reporting election for purposes of the Tax Act, (v) that has entered or will enter into a "derivative forward agreement", as defined in the Tax Act, in respect of Common Shares, or (vi) that receives dividends on Common Shares under or as part of a dividend rental arrangement as defined in the Tax Act. Such holders should consult their own tax advisors.

Additional considerations, not discussed herein, may be applicable to a holder that is a corporation resident in Canada, and is, or becomes, or does not deal at arm's length for purposes of the Tax Act with a corporation resident in Canada that is or becomes, as part of a transaction or series of transactions or events that includes the acquisition of the Common Shares, controlled by a non-resident person or a group of non-resident persons not dealing with each other at arm's length for the purposes of the "foreign affiliate dumping" rules in section 212.3 of the Tax Act. Such holders should consult their tax advisors with respect to the consequences of acquiring Common Shares.

This summary is based upon the current provisions of the Tax Act and the regulations promulgated thereunder (the "**Regulations**") and the Company's understanding of the current published administrative policies and assessing practices of the Canada Revenue Agency ("**CRA**"). It also takes into account all proposed amendments to the Tax Act and the Regulations publicly released by the Minister of Finance (Canada) prior to the date hereof ("**Tax Proposals**"), and assumes that all such Tax Proposals will be enacted as currently proposed. No assurance can be given that the Tax Proposals will be enacted in the form proposed or at all. This summary does not otherwise take into account or anticipate any changes in law or administrative or assessing practice or policy of the CRA, whether by legislative, regulatory, judicial or administrative action or interpretation, nor does it address any provincial, local, territorial or foreign tax considerations.

For purposes of the Tax Act, all amounts, including dividends, adjusted cost base and proceeds of disposition, must generally be determined in Canadian dollars. Amounts denominated in a foreign currency must be converted to Canadian currency using exchange rates determined in accordance with the Tax Act. The amount of any capital gain or any capital loss to a holder with respect to the Common Shares may be affected by fluctuations in Canadian dollar exchange rates.

Holders Not Resident in Canada

The following discussion applies to a holder who, at all relevant times, for purposes of the Tax Act, is neither resident nor deemed to be resident in Canada and does not, and is not deemed to, use or hold Common Shares in carrying on a business or part of a business in Canada (a "**Non-Resident holder**"). In addition, this discussion does not apply to an insurer who carries or is deemed to carry on, an insurance business in Canada and elsewhere.

Disposition of Common Shares

A Non-Resident holder generally will not be subject to tax under the Tax Act in respect of any capital gain realized by such Non- Resident holder on a disposition or deemed disposition of Common Shares unless such shares constitute "taxable Canadian property" (as defined in the Tax Act) of the Non-Resident holder at the time of disposition and the gain is not exempt from tax pursuant to the terms of an applicable income tax treaty or convention. As long as the Common Shares are listed on a designated stock exchange (which currently includes the NASDAQ and the TSX) at the time of their disposition, the Common Shares generally will not constitute taxable Canadian property of a Non-Resident holder, unless (a) at any time during the 60-month period immediately preceding the disposition (i) one or any combination of (A) the Non-Resident holder, (B) persons with whom the Non-Resident holder did not deal at arm's length, and (C) partnerships in which the Non-Resident holder or a person described in (B) holds a membership interest directly or indirectly through one or more partnerships, owned 25% or more of the issued shares of any class or series of shares of the Company; and (ii) more than 50% of the fair market value of the shares of the Company was derived directly or indirectly from one or any combination of real or immovable property situated in Canada, "Canadian resource properties" (as defined in the Tax Act), "timber resource properties" (as defined in the Tax Act) or options in respect of, or interests in, or for civil law rights in, any such property whether or not such property exists or (b) the Common Shares are otherwise deemed to be taxable Canadian property to the Non-Resident holder.

A Non-Resident holder's capital gain (or capital loss) in respect of Common Shares that constitute or are deemed to constitute taxable Canadian property (and are not "treaty-protected property" as defined in the Tax Act) will generally be computed in the manner described below under the heading "Holders Resident in Canada - Disposition of Common Shares". If the Common Shares were to cease being listed on the NASDAQ, the TSX or another "recognized stock exchange" (as defined in the Tax Act), a Non-Resident holder who disposes of Common Shares that are taxable Canadian property may be required to fulfill the requirements of section 116 of the Tax Act, unless the Common Shares are "treaty-protected property" (as defined in the Tax Act) of the disposing Non-Resident holder.

Non-Resident holders whose Common Shares are taxable Canadian property should consult their own tax advisors.

Taxation of Dividends on Common Shares

Dividends paid or credited or deemed to be paid or credited to a Non-Resident holder by the Company are subject to Canadian withholding tax at the rate of 25% unless reduced by the terms of an applicable tax treaty or convention. Under the Canada - United States Tax Convention (1980) (the "**Convention**") as amended, the rate of withholding tax on dividends paid or credited to a Non-Resident holder who is the beneficial owner of the dividends, is resident in the U.S. for purposes of the Convention and entitled to the benefits of the Convention (a "**U.S. holder**") is generally limited to 15% of the gross amount of the dividend (or 5% in the case of a U.S. holder that is a company beneficially owning at least 10% of the Company's voting shares). Non-Resident holders should consult their own tax advisors.

Holders Resident in Canada

The following discussion applies to a holder of Common Shares who, at all relevant times, for purposes of the Tax Act, is or is deemed to be resident in Canada (a "**Canadian holder**"). Certain Canadian holders whose Common Shares might not otherwise qualify as capital property may, in certain circumstances, treat the Common Shares and every other "Canadian security" (as defined in the Tax Act) owned by the Canadian holder as capital property by making an irrevocable election provided by subsection 39(4) of the Tax Act. Canadian holders should consult their own tax advisors for advice as to whether an election under subsection 39(4) of the Tax Act is available and/or advisable in their particular circumstances.

Taxation of Dividends on Common Shares

Dividends received or deemed to have been received on the Common Shares will be included in a Canadian holder's income for purposes of the Tax Act. Such dividends received or deemed to have been received by a Canadian holder that is an individual (other than certain trusts) will be subject to the gross-up and dividend tax credit rules generally applicable under the Tax Act in respect of dividends received on shares of taxable Canadian corporations. Generally, a dividend will be eligible for the enhanced gross-up and dividend tax credit if the Company designates the dividend as an "eligible dividend" (within the meaning of the Tax Act) in accordance with the provisions of the Tax Act. There may be limitations on the ability of the Company to designate dividends as eligible dividends. A Canadian holder that is a corporation will be required to include such dividends in computing its income and will generally be entitled to deduct the amount of such dividends in computing its taxable income. In certain circumstances, subsection 55(2) of the Tax Act may treat a taxable dividend received by a Canadian holder that is a corporation as proceeds of disposition or a capital gain. A Canadian holder that is a "private corporation" or a "subject corporation" (as such terms are defined in the Tax Act), may be liable under Part IV of the Tax Act to pay a refundable tax on dividends received or deemed to have been received on the Common Shares to the extent such dividends are deductible in computing the holder's taxable income.

Disposition of Common Shares

A disposition, or a deemed disposition, of a Common Share by a Canadian holder will generally give rise to a capital gain (or a capital loss) equal to the amount by which the proceeds of disposition of the share, net of any reasonable costs of disposition, exceed (or are less than) the adjusted cost base of the share to the holder. Such capital gain (or capital loss) will be subject to the treatment described below under "Taxation of Capital Gains and Capital Losses".

Additional Refundable Tax

A Canadian holder that is a "Canadian-controlled private corporation" (as such term is defined in the Tax Act) may be liable to pay an additional refundable tax on certain investment income including amounts in respect of "Taxable Capital Gains", as defined below.

Taxation of Capital Gains and Capital Losses

In general, one half of any capital gain (a "**Taxable Capital Gain**") realized by a Canadian holder in a taxation year will be included in the holder's income in the year. Subject to and in accordance with the provisions of the Tax Act, one half of any capital loss (an "**Allowable Capital Loss**") realized by a Canadian holder in a taxation year must be deducted from Taxable Capital Gains realized by the holder in the year and Allowable Capital Losses in excess of Taxable Capital Gains may be carried back and deducted in any of the three preceding taxation years or carried forward and deducted in any subsequent taxation year against net Taxable Capital Gains realized in such years. The amount of any capital loss realized by a Canadian holder that is a corporation on the disposition or deemed disposition of a Common Share may be reduced by the amount of dividends received or deemed to have been received by it on such Common Share (or on a share for which the Common Share has been substituted) to the extent and under the circumstances prescribed by the Tax Act. Similar rules may apply where a corporation is a member of a partnership or a beneficiary of a trust that owns Common Shares, directly or indirectly, through a partnership or a trust.

Alternative Minimum Tax

A Taxable Capital Gain realized and taxable dividends received or deemed to have been received by a Canadian holder who is an individual (including a trust, other than certain specified trusts) may give rise to liability for alternative minimum tax.

Material U.S. Federal Income Tax Considerations

The following discussion is a summary of the material U.S. federal income tax consequences applicable to the purchase, ownership and disposition of Common Shares by a U.S. Holder (as defined below), but does not purport to be a complete analysis of all potential U.S. federal income tax effects. This summary is based on the Internal Revenue Code of 1986, as amended (the "**Code**"), U.S. Treasury regulations promulgated thereunder, IRS rulings and judicial decisions in effect on the date hereof. All of these are subject to change, possibly with retroactive effect, or different interpretations. This summary does not discuss the potential effects, whether adverse or beneficial, of any proposed legislation that, if enacted, could be applied on a retroactive basis. This summary is not binding on the IRS, and the IRS is not precluded from taking a position that is different from, and contrary to, the positions taken in this summary.

This summary does not address all aspects of U.S. federal income taxation that may be relevant to particular U.S. Holders in light of their specific circumstances (for example, U.S. Holders subject to the alternative minimum tax or the Medicare contribution tax on net investment income under the Code) or to holders that may be subject to special rules under U.S. federal income tax law, including:

- dealers in stocks, securities or currencies;
- securities traders that use a mark-to-market accounting method;
- banks and financial institutions;
- insurance companies;
- regulated investment companies;
- real estate investment trusts;
- tax-exempt organizations;
- retirement plans, individual plans, individual retirement accounts and tax-deferred accounts;
- partnerships or other pass-through entities for U.S. federal income tax purposes and their partners or members;
- persons holding Common Shares as part of a hedging or conversion transaction straddle or other integrated or risk reduction transaction;
- persons who or that are, or may become, subject to the expatriation provisions of the Code;
- persons whose functional currency is not the U.S. dollar; and
- direct, indirect or constructive owners of 10% or more of the total combined voting power of all classes of our voting stock or 10% or more of the total value of shares of all classes of our stock.

This summary also does not address the tax consequences of holding, exercising or disposing of warrants in the Company. If the Company is a PFIC, as described below, U.S. Holders of its warrants will be subject to adverse tax rules and will not be able to make the mark-to-market or the QEF election described below with respect to such warrants. U.S. Holders of warrants should consult their tax advisors with regard to the U.S. federal income tax consequences of holding, exercising or disposing of warrants in the Company, including in the situation in which the Company is classified as a PFIC.

This summary also does not discuss any aspect of state, local or foreign law, or estate or gift tax law as applicable to U.S. Holders. In addition, this discussion is limited to U.S. Holders holding Common Shares as capital assets. For purposes of this summary, "U.S. Holder" means a beneficial holder of Common Shares who or that for U.S. federal income tax purposes is:

- an individual citizen or resident of the U.S.;
- a corporation or other entity classified as a corporation for U.S. federal income tax purposes created or organized in or under the laws of the U.S., any state thereof or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust, if (a) a court within the U.S. is able to exercise primary supervision over the administration of such trust and one or more "U.S. persons" (within the meaning of the Code) have the authority to control all substantial decisions of the trust, or (b) a valid election is in effect to be treated as a U.S. person for U.S. federal income tax purposes.

If a partnership or other entity or arrangement classified as a partnership for U.S. federal income tax purposes holds Common Shares, the U.S. federal income tax treatment of a partner generally will depend on the status of the partner and the activities of the partnership. This summary does not address the tax consequences to any such partner. Such a partner should consult its own tax advisor as to the tax consequences of the partnership purchasing, owning and disposing of Common Shares.

U.S. HOLDERS SHOULD CONSULT THEIR OWN TAX ADVISORS WITH REGARD TO THE APPLICATION OF THE TAX CONSEQUENCES DESCRIBED BELOW TO THEIR PARTICULAR SITUATIONS AS WELL AS THE APPLICATION OF ANY STATE, LOCAL, FOREIGN OR OTHER TAX LAWS, INCLUDING GIFT AND ESTATE TAX LAWS.

*Tax Consequences if we are a Passive Foreign Investment Company ("**PFIC**")*

A foreign corporation will be classified as a PFIC for any taxable year in which, after taking into account the income and assets of the corporation and certain subsidiaries pursuant to applicable "look-through rules", either (i) at least 75% of its gross income is "passive income" or (ii) at least 50% of the average quarterly value of its assets is attributable to assets which produce passive income or are held for the production of passive income. Passive income generally includes dividends, interest, rents and royalties (other than certain rents and royalties derived in the active conduct of a trade or business), annuities and gains from assets that produce passive income. If a non-U.S. corporation owns at least 25% by value of the stock of another corporation, the non-U.S. corporation is treated for purposes of the PFIC tests as owning its proportionate share of the assets of the other corporation and as receiving directly its proportionate share of the other corporation's income.

The Company believes it was a PFIC for the 2015 taxable year, but not for the 2016, 2017, 2018, 2019 or 2020 taxable years. However, the fair market value of the Company's assets may be determined in large part by the market price of the Common Shares, which is likely to fluctuate, and the composition of the Company's income and assets will be affected by how, and how quickly, the Company spends any cash that is raised in any financing transaction. Thus, no assurance can be provided that the Company will not be classified as a PFIC for the 2021 taxable year or any future taxable year. U.S. Holders should consult their tax advisors regarding the Company's PFIC status.

If the Company is classified as a PFIC for any taxable year during which a U.S. Holder owns Common Shares, the U.S. Holder, absent certain elections (including the mark-to-market and QEF elections described below), will generally be subject to adverse rules (regardless of whether the Company continues to be classified as a PFIC) with respect to (i) any "excess distributions" (generally, any distributions received by the U.S. Holder on the Common Shares in a taxable year that are greater than 125% of the average annual distributions received by the U.S. Holder in the three preceding taxable years or, if shorter, the U.S. Holder's holding period for the Common Shares) and (ii) any gain realized on the sale or other disposition of the Common Shares.

Under these adverse rules (a) the excess distribution or gain will be allocated ratably over the U.S. Holder's holding period, (b) the amount allocated to the current taxable year and any taxable year prior to the first taxable year in which the Company is classified as a PFIC will be taxed as ordinary income and (c) the amount allocated to each of the other taxable years during which the Company was classified as a PFIC will be subject to tax at the highest rate of tax in effect for the applicable category of taxpayer for that year and an interest

charge will be imposed with respect to the resulting tax attributable to each such other taxable year. A U.S. Holder that is not a corporation will be required to treat any such interest paid as "personal interest", which is not deductible.

U.S. Holders can avoid the adverse rules described above in part by making a mark-to-market election with respect to the Common Shares, provided that the Common Shares are "marketable". The Common Shares will be marketable if they are "regularly traded" on a "qualified exchange" or other market within the meaning of applicable U.S. Treasury regulations. For this purpose, the Common Shares generally will be considered to be regularly traded during any calendar year during which they are traded, other than in de minimis quantities, on at least 15 days during each calendar quarter. The Common Shares are currently listed on the NASDAQ, which constitutes a qualified exchange; however, there can be no assurance that the Common Shares will be treated as regularly traded for purposes of the mark-to-market election on a qualified exchange. If the Common Shares were not regularly traded on the NASDAQ or were delisted from the NASDAQ and were not traded on another qualified exchange for the requisite time period described above, the mark-to-market election would not be available.

A U.S. Holder that makes a mark-to-market election must include in gross income, as ordinary income, for each taxable year an amount equal to the excess, if any, of the fair market value of the U.S. Holder's Common Shares at the close of the taxable year over the U.S. Holder's adjusted tax basis in the Common Shares. An electing U.S. Holder may also claim an ordinary loss deduction for the excess, if any, of the U.S. Holder's adjusted tax basis in the Common Shares over the fair market value of the Common Shares at the close of the taxable year, but this deduction is allowable only to the extent of any net mark-to-market gains previously included in income. A U.S. Holder that makes a mark-to-market election generally will adjust such U.S. Holder's tax basis in the Common Shares to reflect the amount included in gross income or allowed as a deduction because of such mark-to-market election. Gains from an actual sale or other disposition of the Common Shares will be treated as ordinary income, and any losses incurred on a sale or other disposition of the Common Shares will be treated as ordinary losses to the extent of any net mark-to-market gains previously included in income.

If the Company is classified as a PFIC for any taxable year in which a U.S. Holder owns Common Shares but before a mark-to-market election is made, the adverse PFIC rules described above will apply to any mark-to-market gain recognized in the year the election is made. Otherwise, a mark-to-market election will be effective for the taxable year for which the election is made and all subsequent taxable years. The election cannot be revoked without the consent of the IRS unless the Common Shares cease to be marketable, in which case the election is automatically terminated.

If the Company is classified as a PFIC, a U.S. Holder of Common Shares will generally be treated as owning stock owned by the Company in any direct or indirect subsidiaries that are also PFICs and will be subject to similar adverse rules with respect to distributions to the Company by, and dispositions by the Company of, the stock of such subsidiaries. A mark-to-market election is not permitted for the shares of any subsidiary of the Company that is also classified as a PFIC. U.S. Holders should consult their tax advisors regarding the availability of, and procedure for making, a mark-to-market election.

In some cases, a shareholder of a PFIC can avoid the interest charge and the other adverse PFIC consequences described above by making a QEF election to be taxed currently on its share of the PFIC's undistributed income. We will endeavor to satisfy the record keeping requirements that apply to a QEF and to supply requesting U.S. Holders with the information that such U.S. Holders are required to report under the QEF rules. However, there can be no assurance that the Company will satisfy the record keeping requirements or provide the information required to be reported by U.S. Holders.

A U.S. Holder that makes a timely and effective QEF election for the first tax year in which its holding period of its Common Shares begins generally will not be subject to the adverse PFIC consequences described above with respect to its Common Shares. Rather, a U.S. Holder that makes a timely and effective QEF election will be subject to U.S. federal income tax on such U.S. Holder's pro rata share of (a) the Company's net capital gain, which will be taxed as long-term capital gain to such U.S. Holder, and (b) the Company's ordinary earnings, which will be taxed as ordinary income to such U.S. Holder, in each case regardless of which such amounts are actually distributed to the U.S. Holder by the Company. Generally, "net capital gain" is the excess of (i) net long-term capital gain over (ii) net short-term capital loss, and "ordinary earnings" are the excess of (A) "earnings and profits" over (B) net capital gain.

A U.S. Holder that makes a timely and effective QEF election with respect to the Company generally (a) may receive a tax-free distribution from us to the extent that such distribution represents "earnings and profits" that were previously included in income by the U.S. Holder because of such QEF election and (b) will adjust such U.S. Holder's tax basis in the Common Shares to reflect the amount included in income or allowed as a tax-free distribution because of such QEF election. In addition, a U.S. Holder that makes a QEF election generally will recognize capital gain or loss on the sale or other taxable disposition of Common Shares.

The QEF election is made on a shareholder-by-shareholder basis. Once made, a QEF election will apply to the tax year for which the QEF election is made and to all subsequent tax years, unless the QEF election is invalidated or terminated or the IRS consents to revocation of the QEF election. In addition, if a U.S. Holder makes a QEF election, the QEF election will remain in effect (although it will not be applicable) during those tax years in which the Company is not a PFIC.

If the Company is classified as a PFIC and then ceases to be so classified, a U.S. Holder may make an election (a "**deemed sale election**") to be treated for U.S. federal income tax purposes as having sold such U.S. Holder's Common Shares on the last day of the taxable year of the Company during which it was a PFIC. A U.S. Holder that made a deemed sale election would then cease to be treated as owning stock in a PFIC by reason of ownership of Common Shares in the Company. However, gain recognized as a result of making the deemed sale election would be subject to the adverse rules described above and loss would not be recognized.

If the Company is a PFIC in any year with respect to a U.S. Holder, the U.S. Holder will be required to file an annual information return on IRS Form 8621 regarding distributions received on Common Shares and any gain realized on the disposition of Common Shares.

In addition, if the Company is a PFIC, U.S. Holders will generally be required to file an annual information return with the IRS (also on IRS Form 8621, which PFIC shareholders are required to file with their U.S. federal income tax or information returns) relating to their ownership of Common Shares.

U.S. Holders should consult their tax advisors regarding the potential application of the PFIC regime and any reporting obligations to which they may be subject under that regime.

Dividends

Subject to the PFIC rules discussed above, any distributions paid by the Company out of current or accumulated earnings and profits (as determined for U.S. federal income tax purposes), before reduction for any Canadian withholding tax paid with respect thereto, will generally be taxable to a U.S. Holder as foreign source dividend income, and generally will not be eligible for the dividends received deduction generally allowed to corporations.

Distributions in excess of current and accumulated earnings and profits will be treated as a non-taxable return of capital to the extent of the U.S. Holder's adjusted tax basis in the Common Shares and thereafter as capital gain. The Company does not, however, intend to calculate its earnings and profits under U.S. federal income tax principles. Therefore, U.S. Holders should expect that any distribution from the Company generally will be treated for U.S. federal income tax purposes as a dividend. U.S. Holders should consult their own tax advisors with respect to the appropriate U.S. federal income tax treatment of any distribution received from the Company.

Dividends paid to non-corporate U.S. Holders by the Company in a taxable year in which it is treated as a PFIC, or in the immediately following taxable year, will not be eligible for the special reduced rates normally applicable to long-term capital gains. In all other taxable years, dividends paid by the Company should be taxable to a non-corporate U.S. Holder at the special reduced rates normally applicable to long-term capital gains, provided that certain conditions are satisfied. (including a minimum holding period requirement). The

Company believes it was not a PFIC for the 2020 taxable year. However, no assurance can be provided that the Company will not be classified as a PFIC for 2021 and, therefore, no assurance can be provided that a U.S. Holder will be able to claim a reduced rate for dividends paid in 2021 or 2022 (if any). Please see the subsection above entitled "Material U.S. Federal Income Tax Considerations—'Tax Consequences if we are a Passive Foreign Investment Company'" for a more detailed discussion.

Under current law, payments of dividends by the Company to non-Canadian investors are generally subject to a 25% Canadian withholding tax. The rate of withholding tax applicable to U.S. Holders that are eligible for benefits under the Canada-United States Tax Convention (the "**Convention**") is reduced to a maximum of 15%. This reduced rate of withholding will not apply if the dividends received by a U.S. Holder are effectively connected with a permanent establishment of the U.S. Holder in Canada. For U.S. federal income tax purposes, U.S. Holders will be treated as having received the amount of Canadian taxes withheld by the Company, and as then having paid over the withheld taxes to the Canadian taxing authorities. As a result of this rule, the amount of dividend income included in gross income for U.S. federal income tax purposes by a U.S. Holder with respect to a payment of dividends may be greater than the amount of cash actually received (or receivable) by the U.S. Holder from the Company with respect to the payment.

Subject to certain limitations, a U.S. Holder will generally be entitled, at the election of the U.S. Holder, to a credit against its U.S. federal income tax liability, or a deduction in computing its U.S. federal taxable income, for Canadian income taxes withheld by the Company. This election is made on a year-by-year basis and applies to all foreign taxes paid (whether directly or through withholding) by a U.S. Holder during a year. For purposes of the foreign tax credit limitation, dividends paid by the Company generally will constitute foreign source income in the "passive category income" basket. The foreign tax credit rules are complex and U.S. Holders should consult their tax advisors concerning the availability of the foreign tax credit in their particular circumstances.

Dividends paid in Canadian dollars will be included in the gross income of a U.S. Holder in a U.S. dollar amount calculated by reference to the exchange rate in effect on the date the U.S. Holder (actually or constructively) receives the dividend, regardless of whether such Canadian dollars are actually converted into U.S. dollars at that time. If the Canadian dollars received are not converted into U.S. dollars on the date of receipt, a U.S. Holder will have a tax basis in the Canadian dollars equal to their U.S. dollar value on the date of receipt. Gain or loss, if any, realized on a sale or other disposition of the Canadian dollars will generally be U.S. source ordinary income or loss to a U.S. Holder.

The Company generally does not pay any dividends and does not anticipate paying any dividends in the foreseeable future.

Sale, Exchange or Other Taxable Disposition of Common Shares

Subject to the PFIC rules discussed above, upon a sale, exchange or other taxable disposition of Common Shares, a U.S. Holder generally will recognize capital gain or loss for U.S. federal income tax purposes equal to the difference, if any, between the amount realized on the sale, exchange or other taxable disposition and the U.S. Holder's adjusted tax basis in the Common Shares.

This capital gain or loss will be long-term capital gain or loss if the U.S. Holder's holding period in the Common Shares exceeds one year. The deductibility of capital losses is subject to limitations. Any gain or loss will generally be U.S. source for U.S. foreign tax credit purposes.

Information Reporting and Backup Withholding

Payments made within the U.S., or by a U.S. payor or U.S. middleman, of dividends on, and proceeds arising from sales or other dispositions of Common Shares, generally will be reported to the IRS and to the U.S. Holder as required under applicable regulations. Backup withholding tax may apply to these payments if the U.S. Holder fails to timely provide in the appropriate manner an accurate taxpayer identification number or otherwise fails to comply with, or establish an exemption from, such backup withholding tax requirements. Certain U.S. Holders are not subject to the information reporting or backup withholding tax requirements described herein. U.S. Holders should consult their tax advisors as to their qualification for exemption from backup withholding tax and the procedure for establishing an exemption.

Backup withholding tax is not an additional tax. U.S. Holders generally will be allowed a refund or credit against their U.S. federal income tax liability for amounts withheld, provided the required information is timely furnished to the IRS.

Subject to certain exceptions and future guidance, a U.S. Holder that is a "specified individual" or a "specified domestic entity" (as defined in the instructions to IRS Form 8938) must report annually to the IRS on IRS Form 8938 such U.S. Holder's interests in stock or securities issued by a non-U.S. person (such as the Company). U.S. Holders should consult their tax advisors regarding the information reporting obligations that may arise from their acquisition, ownership or disposition of Common Shares.

F. Dividends and paying agents

Not required.

G. Statement by experts

Not required.

H. Documents on display

In addition to placing our audited consolidated annual financial statements before every annual meeting of shareholders as described above, we are subject to the information requirements of the Securities Exchange Act of 1934, as amended. In accordance with these requirements, we file and furnish reports and other information with the SEC. These materials, including this Annual Report on Form 20-F and the exhibits hereto, may be inspected and copied at the SEC's Public Reference Room at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. The public may obtain information on the operation of the SEC's Public Reference Room by calling the SEC in the U.S. at 1-800-SEC-0330. The SEC also maintains a website at www.sec.gov that contains reports, proxy statements and other information regarding registrants that file electronically with the SEC. Our annual reports and some of the other information we submitted to the SEC may be accessed through this website. In addition, material we filed can be inspected on the Canadian Securities Administrators' electronic filing system, SEDAR, accessible at the website www.sedar.com. This material includes our Management Information Circular for our annual meeting of shareholders to be held in 2022 to be furnished to the SEC on Form 6-K, which provides information including directors' and officers' remuneration and indebtedness and principal holders of securities. Additional financial information is provided in our audited annual financial statements for the year ended December 31, 2021 and our MD&A relating to these statements included elsewhere in this Annual Report on Form 20-F. These documents are also accessible on SEDAR (www.sedar.com) and on EDGAR (www.sec.gov).

I. Subsidiary information

Not required.

Item 11. Quantitative and Qualitative Disclosures About Market Risk

Fair value

The Company classifies its financial instruments in the following categories: "Financial assets at amortized cost"; and "Financial liabilities at amortized cost".

- The Company's financial assets at amortized cost are comprised of cash and cash equivalents, trade and other receivables and restricted cash equivalents.
- Financial liabilities at amortized cost include payables and accrued liabilities, and lease liability.

The carrying values of all of the aforementioned financial instruments approximate their fair values due to their short-term maturity or to the prevailing interest rates of these instruments which are comparable to those of the market.

The Black-Scholes valuation methodology uses inputs in calculating fair value, as defined in IFRS 13, which establishes a hierarchy that prioritizes the inputs used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurement) and the lowest priority to unobservable inputs (Level 3 measurement).

Financial risk factors

The following provides disclosures relating to the nature and extent of the Company's exposure to risks arising from financial instruments, including credit risk, liquidity risk and foreign exchange risk and how the Company manages those risks.

(a) Credit risk

Credit risk is the risk of an unexpected loss if a customer or counterparty to a financial instrument fails to meet its contractual obligations. The Company regularly monitors credit risk exposure and takes steps to mitigate the likelihood of this exposure resulting in losses. The Company's exposure to credit risk currently relates to the financial assets at amortized cost in the table above. The Company holds its available cash in amounts that are readily convertible to known amounts of cash and deposits its cash balances with financial institutions that have an investment grade rating of at least "P-2" or the equivalent. This information is supplied by independent rating agencies where available and, if not available, the Company uses publicly available financial information to ensure that it invests its cash in creditworthy and reputable financial institutions. Once there are indicators that there is no reasonable expectation of recovery, such financial assets are written off but are still subject to enforcement activity.

As at December 31, 2021, trade accounts receivable for an amount of approximately $0.9 million were with three counterparties of which $0.1 million was past due and impaired and fully provided for (2020 - $1.2 million with three counterparties and $0.1 million past due and impaired and fully provided for).

Generally, the Company does not require collateral or other security from customers for trade accounts receivable; however, credit is extended following an evaluation of creditworthiness. In addition, the Company performs ongoing credit reviews of all of its customers and determines expected credit losses. On this basis, as at December 31, 2021, the Company has provided for all outstanding and unpaid amounts relating to its operations before its licensing of Macrilen™.

The maximum exposure to credit risk approximates the amount recognized in the Company's consolidated statement of financial position.

(b) Liquidity risk

Liquidity risk is the risk that the Company will not be able to meet its financial obligations as they become due. The Company manages this risk through the management of its capital structure. It also manages liquidity risk by continuously monitoring actual and projected cash flows.

A portion of the Company's cash is held in AEZS Germany, which is the counter-party to various license and distribution agreements for the Company's only approved product. In September 2019 and February, July and August of 2020 and February of 2021 the Company completed financings resulting in total funding (net of transaction costs) of $55,905. Net cash proceeds were deposited in AEZS Canada accounts and such funds can be provided to its German subsidiary, if and when needed. During 2020, AEZS Germany signed agreements with Novo and CH whereby AEZS Germany received cash payments of $6.1 million (€5.0 million) in fiscal 2020 and $1.2 million (€1.0 million) in January 2021, respectively, and expects to use this cash to fund its operations directly.

The Board of Directors reviews and approves the Company's operating and capital budgets, as well as any material transactions occurring outside of the ordinary course of business. The Company has adopted an investment policy in respect of the safety and preservation of its capital to ensure the Company's liquidity needs are met. The instruments are selected with regard to the expected timing of expenditures and prevailing interest rates.

(c) Foreign exchange risk

Entities using the Euro as their functional currency

The Company is exposed to foreign exchange risk due to its investments in foreign operations whose functional currency is the Euro. As at December 31, 2021, if the US dollar had increased or decreased by 10% against the Euro, with all other variables held constant, net loss for the year ended December 31, 2021 would have been lower or higher by approximately $0.3 million (2020 - $0.1 million and 2019 - $0.8 million).

Item 12. Description of Securities Other than Equity Securities

A. Debt securities

Not required.

B. Warrants and rights

Not required.

C. Other securities

Not required.

D. American depositary shares

Not applicable.

PART II

Item 13. Defaults, Dividend Arrearages and Delinquencies

None.

Item 14. Material Modifications to the Rights of Security Holders and Use of Proceeds

None.

Item 15. Controls and Procedures

Under the supervision and with the participation of our management, including the Chief Executive Officer and the Chief Financial Officer, we have evaluated the effectiveness of our disclosure controls and procedures as at December 31, 2021. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer have concluded that these disclosure controls and procedures were not effective as of December 31, 2021 due to a material weakness in internal control over financial reporting, as described below.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with IFRS as issued by the IASB.

Our internal control over financial reporting includes those policies and procedures that: (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of Aeterna Zentaris; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with IFRS, and that receipts and expenditures of the Company are being made only in accordance with authorizations of Company management; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of Company assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management conducted an evaluation of the effectiveness of our internal control over financial reporting based on the criteria established in *Internal Control – Integrated Framework: 2013* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, management has concluded that our internal control over financial reporting was not effective as of December 31, 2021 because a material weakness in internal control over financial reporting existed as of that date, as described below.

Management identified a control deficiency that constitutes a material weakness. A material weakness is a control deficiency, or a combination of control deficiencies in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our interim or annual consolidated financial statements or related disclosures will not be prevented or detected on a timely basis.

The material weakness resulted from a failure in the design and implementation of review controls over the accounting for license and collaboration agreements under IFRS and the related revenue recognition. Specifically, our review control was not sufficiently designed to adequately review and assess an accounting analysis for revenue recognition for complex revenue arrangements. This resulted in a restatement of our previously issued condensed interim consolidated financial statements as at and for the quarters and year-to-date periods ended March 31, 2021, June 30, 2021 and September 30, 2021, with respect to revenue recognition on one agreement. As a result, Management determined that a material weakness existed as described above.

We have developed and commenced implementation of a remediation plan to address the material weakness discussed above and to improve our internal control over financial reporting. The remediation plan includes:

- strengthening our revenue recognition and financial reporting controls by adding new or additional resources with adequate technical knowledge and training, including the hiring of a new Chief Financial Officer in January 2022, and utilizing the services of an external professional with requisite knowledge and experience in the area of revenue recognition and of IFRS more broadly.
- designing and implementing effective internal controls related to the involvement of appropriate finance and accounting staff in the review of strategic and complex transactions, such as license and collaboration agreements, including as those transactions are negotiated and executed, to ensure that any matters with accounting ramifications are addressed on a timely basis; and
- ensuring that all non-routine transactions, including those requiring the application of significant judgment or analysis, are thoroughly researched at the appropriate level and are sufficiently documented by qualified accounting and finance personnel (including third-party subject matter experts as necessary), with such documentation to be approved in a timely manner by the Company's Chief Financial Officer.

There can be no assurance that the measures we take in response to the material weakness will be sufficient to remediate such material weakness or to avoid potential future material weakness or significant deficiencies.

Changes in Internal Controls over Financial Reporting

There were no changes in our internal control over financial reporting during the year ended December 31, 2021 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting, except as described above.

Item 16A. Audit Committee Financial Expert

Our Board has determined that we have at least one audit committee financial expert (as defined in paragraph (b) of Item 16A to Form 20-F). The name of the audit committee financial expert is Mr. Dennis Turpin, the Audit Committee's Chairman. In accordance with Item 16A, paragraph (d) of Form 20-F, the designation of Mr. Turpin as our audit committee financial expert does not: (i) make Mr. Turpin an "expert" for any purpose, including without limitation for purposes of Section 11 of the Securities Act of 1933, as amended, as a result of this designation; (ii) impose any duties, obligations or liability on Mr. Turpin that are greater than those imposed on him as a member of the Audit Committee and the Board in the absence of such designation; or (iii) affect the duties, obligations or liability of any other member of the Audit Committee or the Board. The other current members of the Audit Committee are Peter G. Edwards and Gilles Gagnon each of whom, along with Dennis Turpin (Chair), is independent, as that term is defined in the NASDAQ listing standards. For a description of their respective education and experience, please refer to "Item 6. – Directors, Senior Management and Employees".

Item 16B. Code of Ethics

On December 16, 2017, the Board adopted a "Code of Conduct and Business Ethics", which replaced the then existing Code of Ethical Conduct as of January 1, 2018. The Code of Conduct and Business Ethics was amended on January 24, 2018. The Code of Conduct and Business Ethics expanded on the previous Code of Ethical Conduct to provide additional details of expected conduct of all employees and directors of the Company, including specific obligations the Company and its employees has as a member of the healthcare industry. We selected an independent third party supplier to provide a confidential and anonymous communication channel for reporting concerns about possible violations to our Code of Ethical Conduct as well as financial and/or accounting irregularities or fraud. A copy of the Code of Ethical Conduct, as amended, is incorporated by reference as Exhibit 11.1 to this Annual Report on Form 20-F and is also available on our Web site at www.zentaris.com under the Investors - Corporate Governance tab. The Code of Ethical Conduct is a "code of ethics" as defined in paragraph (b) of Item 16B to Form 20- F. The Code of Ethical Conduct applies to all of our employees, directors and officers, including our principal executive officer, principal financial officer, and principal accounting officer or controller, or persons performing similar functions, and includes specific provisions dealing with integrity in accounting matters, conflicts of interest and compliance with applicable laws and regulations. On December 4, 2014, our Board adopted a "Code of Business Conduct and Ethics for Members of the Board of Directors", which is incorporated by reference as Exhibit 11.2 to this Annual Report on Form 20-F. We will provide these documents without charge to any person or company upon request to our Corporate Secretary, at our head office at 315 Sigma Drive, Summerville, South Carolina 29486.

Item 16C. Principal Accountant Fees and Services

(All amounts are in U.S. dollars)

The current auditors of the Company are Ernst & Young LLP. Following a comprehensive review of the Company's external audit services, the Audit Committee sought proposals to provide audit services for the financial year ending on December 31, 2021. After careful review of the proposals received and due consideration of all relevant factors, the Audit Committee recommended to the Board that Ernst & Young LLP, and not PricewaterhouseCoopers LLP, be proposed for appointment as auditors of the Company for the financial year ending on December 31, 2021. Ernst & Young LLP was appointed as the Company's auditor and PricewaterhouseCoopers LLP resigned as the Company's auditor effective March 25, 2021.

(a) Audit Fees

During the financial year ended December 31, 2021, the Company's principal accountant, Ernst & Young LLP, billed $242,986 for the audit of the Company's annual consolidated financial statements and for services rendered in connection with statutory and regulatory filings. During the financial year ended December 31, 2020, the Company's principal accountant, PricewaterhouseCoopers LLP, billed $578,288, for the audit of the Company's annual consolidated financial statements and for services rendered in connection with statutory and regulatory filings.

(b) Audit-related Fees

During the financial year ended December 31, 2021, the Company's principal accountant, Ernst & Young LLP, billed $nil, for audit or attest services not required by statute or regulation, for accounting consultations on proposed transactions, for the review of prospectuses and prospectus supplements, including the delivery of customary consent and comfort letters in connection therewith. During the financial year ended December 31, 2020, the Company's principal accountant, PricewaterhouseCoopers LLP, billed $70,535, for audit or attest services not required by statute or regulation, for accounting consultations on proposed transactions, for the review of prospectuses and prospectus supplements, including the delivery of customary consent and comfort letters in connection therewith.

(c) Tax Fees

During the financial year ended December 31, 2021, the Company's principal accountants, Ernst & Young LLP, billed $45,054, for services related to tax compliance, tax planning and tax advice. During the financial years ended December 31, 2020, the Company's principal accountants, PricewaterhouseCoopers LLP, billed $47,514, for services related to tax compliance, tax planning and tax advice.

(d) All Other Fees

During the financial years ended December 31, 2021, the Company's principal accountant, Ernst & Young LLP, billed us $3,987 for services not included in audit fees, audit-related fees and tax fees. During the financial years ended December 31, 2020, the Company's principal accountant, PricewaterhouseCoopers LLP, did not bill us for services not included in audit fees, audit-related fees and tax fees.

(e) Audit Committee Pre-Approval Policies and Procedures

Under applicable Canadian securities regulations, we are required to disclose whether our Audit Committee has adopted specific policies and procedures for the engagement of non-audit services and to prepare a summary of these policies and procedures. The Audit Committee Charter (incorporated by reference as Exhibit 11.3 to this Annual Report on Form 20-F) provides that it is such committee's responsibility to approve all audit engagement fees and terms as well as reviewing policies for the provision of non-audit services by the external auditors and, when required, the framework for pre-approval of such services. The Audit Committee delegates to its Chairman the pre-approval of such non-audit fees. The pre-approval by the Chairman is then presented to the Audit Committee at its first scheduled meeting following such pre-approval.

For each of the years ended December 31, 2021 and 2020, there were no non-audit services provided by our external auditor that required the approval from the Audit Committee.

Item 16D. Exemptions from the Listing Standards for Audit Committees

None.

Item 16E. Purchases of Equity Securities by the Issuer and Affiliated Purchasers

None.

Item 16F. Change in Registrant's Certifying Accountant

Following a comprehensive review of the Company's external audit services, the Audit Committee sought proposals to provide audit services for the financial year ending on December 31, 2021. After careful review of the proposals received and due consideration of all relevant factors, the Audit Committee recommended to the Board that Ernst & Young LLP, and not PricewaterhouseCoopers LLP, be proposed for appointment as auditors of the Company for the financial year ending on December 31, 2021. Ernst & Young LLP was appointed as the Company's auditor and PricewaterhouseCoopers LLP resigned as the Company's auditor effective March 25, 2021.

Item 16G. Corporate Governance

We are generally in compliance with the corporate governance requirements of the NASDAQ except as described below and in the risk factor entitled "Our Common Shares may be delisted from the NASDAQ or the TSX, which could affect their market price and liquidity. If our Common Shares were to be delisted, investors may have difficulty in disposing

their Common Shares" in Item 3.D above. We are not in compliance with the NASDAQ requirement that a quorum for a meeting of the holders of our Common Shares be no less than 33 1/3% of such outstanding shares. Our bylaws provide that a quorum for purposes of any meeting of our shareholders consists of at least 10% of the outstanding voting shares. We benefit from an exemption from the NASDAQ from this quorum requirement because the quorum provided for in our bylaws complies with the requirements of the CBCA, our governing corporate statute, and with the rules of the TSX, the home country exchange on which our voting shares are traded. In accordance with applicable current NASDAQ requirements, we have in the past, and upon request, provided to the NASDAQ letters from outside counsel certifying that these practices are not prohibited by our home country law.

Item 16H. Mine Safety Disclosure

None.

Item 16I. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 17 Financial Statements

The financial statements appear on pages **[123]** to **[178].**

Item 18. Financial Statements

Not applicable.

Aeterna Zentaris Inc.

Consolidated Financial Statements
As of December 31, 2021 and December 31, 2020 and for the years ended
December 31, 2021, 2020 and 2019

Report of independent registered public accounting firm

To the shareholders and the board of directors of
Aeterna Zentaris Inc.

Opinion on the financial statements

We have audited the accompanying consolidated statement of financial position of **Aeterna Zentaris Inc. (**the Company) as of December 31, 2021, the related consolidated statement of changes in shareholders' equity (deficiency), comprehensive loss, and cash flows, for the year ended December 31, 2021, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2021, and its financial performance and its cash flows for the year ended December 31, 2021, in conformity with International Financial Reporting Standards ("IFRSs") as issued by the International Accounting Standards Board.

Basis for opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audit, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audit included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audit provides a reasonable basis for our opinion.

Critical audit matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by

communicating the critical audit matters below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which they relate.

Revenue from License and Collaboration Arrangements

Description of the matter	As described in Note 2, Note 3 and Note 5, the Company enters into license and collaboration arrangements that may include non-refundable upfront license fees, the provision of development services, milestone payments, royalties on future product sales and supply arrangements. The Company has recorded $5.3 million of total revenues during the year ended December 31, 2021 and $6.3 million as deferred revenues as of December 31, 2021. Management analyzes each agreement and applies significant judgment to determine whether contracts entered into at or near the same time should be accounted for as a single arrangement and whether all parts of the contract fall within the scope of IFRS 15. In addition, each agreement is analyzed to identify all performance obligations and to determine whether a performance obligation is distinct or should be combined with other promised goods and services, determine and allocate the transaction price on a relative stand-alone selling price basis, determine whether a performance obligation is satisfied at a point in time or over time, and, for performance obligations satisfied over time, in concluding upon the appropriate method of measuring progress to be applied for purposes of recognizing revenue. Auditing the Company's accounting for revenues from the license and collaboration arrangements was complex given the significant judgment required in evaluating the terms and multiple elements of the related agreements. A high degree of auditor judgment and effort was required in performing procedures to evaluate the reasonableness of management's assessment to identify all performance obligations and to determine whether a performance obligation is distinct or should be combined with other promised goods and services.
How we addressed the matter in our audit	To test the Company's accounting for revenue from license and collaboration arrangements, our audit procedures included, among others, obtaining and evaluating management's accounting analyses for all significant arrangements. We inspected the Company's agreements and we evaluated whether management's assessments considered all relevant terms included in the agreements. We assessed management's consideration of whether contracts should be accounted for as a single arrangement and whether all elements fall within the scope of IFRS 15. We assessed management's identification of performance obligations and whether they are distinct or combined with other promised goods and services. We evaluated the reasonableness of management's recognition of revenue based on when each performance obligation will be satisfied in conformity with the Company's accounting policies.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2021.

Montreal, Canada
March 28, 2022

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Aeterna Zentaris Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated statement of financial position of Aeterna Zentaris Inc. and its subsidiaries (together, the Company) as of December 31, 2020, and the related consolidated statements of changes in shareholders' equity (deficiency), comprehensive loss and cash flows for each of the two years in the period ended December 31, 2020, including the related notes (collectively referred to as the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2020, and its financial performance and its cash flows for each of the two years in the period ended December 31, 2020 in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits of these consolidated financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/PricewaterhouseCoopers LLP

Chartered Professional Accountants, Licensed Public Accountants

Toronto, Canada
March 24, 2021

We served as the Company's auditor from 1993 to 2021.

PricewaterhouseCoopers LLP
PwC Tower, 18 York Street, Suite 2600, Toronto, Ontario, Canada M5J
0B2 T: +1 416 863 1133, F: +1 416 365 8215

"PwC" refers to PricewaterhouseCoopers LLP, an Ontario limited liability partnership.

Aeterna Zentaris Inc.
Consolidated Statements of Financial Position
(in thousands of US dollars)

	December 31, 2021 $	December 31, 2020 $
ASSETS		
Current assets		
Cash and cash equivalents (note 6)	**65,300**	24,271
Trade and other receivables (note 7)	**1,314**	1,681
Inventory (note 8)	**73**	21
Income taxes receivable (note 22)	**2,361**	601
Prepaid expenses and other current assets (note 9)	**1,772**	1,040
Total current assets	**70,820**	27,614
Restricted cash equivalents (note 10)	**335**	338
Property, plant and equipment (note 11)	**42**	22
Right of use assets (note 12)	**150**	157
Identifiable intangible assets (note 13)	**625**	59
Goodwill (note 14)	**8,130**	8,815
Total assets	**80,102**	37,005
LIABILITIES		
Current liabilities		
Payables and accrued liabilities (note 15)	**2,672**	2,199
Current portion of provisions (note 16)	**34**	92
Income taxes payable (note 22)	**115**	123
Current portion of deferred revenues (note 5)	**4,815**	2,193
Current portion of lease liabilities (note 17)	**130**	135
Total current liabilities	**7,766**	4,742
Deferred revenues (note 5)	**1,493**	3,289
Deferred gain (note 13)	**98**	—
Lease liabilities (note 17)	**31**	49
Employee future benefits (note 18)	**17,485**	15,435
Provisions (note 16)	**243**	279
Total liabilities	**27,116**	23,794
SHAREHOLDERS' EQUITY		
Share capital (note 19)	**293,410**	235,008
Warrants (note 19)	**5,085**	12,402
Other capital (note 19)	**89,788**	89,505
Deficit	**(334,619)**	(322,659)
Accumulated other comprehensive loss	**(678)**	(1,045)
Total shareholders' equity	**52,986**	13,211
Total liabilities and shareholders' equity	**80,102**	37,005

Commitments and contingencies (note 27)

The accompanying notes are an integral part of these consolidated financial statements.

Approved by the Board of Directors

/s/ Carolyn Egbert	*/s/ Dennis Turpin*
Carolyn Egbert	Dennis Turpin
Chair of the Board	Director

Aeterna Zentaris Inc.
Consolidated Statements of Changes in Shareholders' Equity (Deficiency)
(in thousands of US dollars, except share data)

	Common shares (number of)[1]	Share capital $	Warrants $	Other capital $	Deficit $	Accumulated other comprehensive income (loss) $	Total $
Balance - January 1, 2019	16,440,760	222,335	—	89,342	(309,781)	11	1,907
Net loss	—	—	—	—	(6,042)	—	(6,042)
Other comprehensive loss:			—				
Foreign currency translation adjustments	—	—	—	—	—	83	83
Actuarial loss on defined benefit plans (note 18)	—	—	—	—	(1,068)	—	(1,068)
Comprehensive loss	—	—	—	—	(7,110)	83	(7,027)
Share issuance from the exercise of warrants, stock options and deferred share units	228,750	906	—	(329)	—	—	577
Issuance of common shares and warrants, net (note 19)	3,325,000	1,287	—	—	—	—	1,287
Share-based compensation costs	—	—	—	793	—	—	793
Balance - December 31, 2019	19,994,510	224,528	—	89,806	(316,891)	94	(2,463)
Net loss	—	—	—	—	(5,118)	—	(5,118)
Other comprehensive loss:							

Foreign currency translation adjustments	—	—	—	—	—	(1,139)	(1,139)
Actuarial loss on defined benefit plan (note 18)	—	—	—	—	(650)	—	(650)
Comprehensive loss	—	—	—	—	(5,768)	(1,139)	(6,907)
Reclassification of warrants to equity (note 19)	—	—	7,377	—	—	—	7,377
Issuance of common shares and warrants, net of transaction costs (note 19)	42,684,103	10,480	5,025	(362)	—	—	15,143
Share-based compensation costs (note 19)	—	—	—	61	—	—	61
Balance - December 31, 2020	**62,678,613**	**235,008**	**12,402**	**89,505**	**(322,659)**	**(1,045)**	**13,211**
Net loss	—	—	—	—	**(8,368)**	—	**(8,368)**
Other comprehensive loss:							
Foreign currency translation adjustments	—	—	—	—	—	**367**	**367**
Actuarial loss on defined benefit plan (note 18)	—	—	—	—	**(3,592)**	—	**(3,592)**
Comprehensive loss	—	—	—	—	**(11,960)**	**367**	**(11,593)**
Issuance of common shares and warrants, net of transaction costs (note 19)	**23,586,207**	**29,082**	**1,897**	—	—	—	**30,979**
Exercise of warrants (note 19)	**35,111,187**	**29,833**	**(9,746)**	—	—	—	**20,087**
Transfer of warrant issuance costs upon exercise of warrants (note 19)	—	**(532)**	**532**	—	—	—	—
Exercise of deferred share units (note 19)	**21,000**	**19**	—	**(28)**	—	—	**(9)**
Share-based compensation costs (note 19)	—	—	—	**311**	—	—	**311**
Balance - December 31, 2021	**121,397,007**	**293,410**	**5,085**	**89,788**	**(334,619)**	**(678)**	**52,986**

1 Issued and paid in full.

The accompanying notes are an integral part of these consolidated financial statements.

Aeterna Zentaris Inc.
Consolidated Statements of Comprehensive Loss
(in thousands of US dollars, except share and per share data)

	Years ended December 31,		
	2021	**2020**	**2019**
	$	**$**	**$**
Revenues (notes 5 and 25)			
License fees	**1,670**	911	74
Development services	**3,337**	—	—
Product sales	—	2,370	129
Royalties	**68**	67	45
Supply chain revenue	**185**	304	284
Total revenues	**5,260**	3,652	532
Operating expenses (note 20)			
Cost of sales	**90**	2,317	410
Research and development expenses	**6,574**	1,506	1,837
General and administrative expenses	**5,916**	4,759	6,615
Selling expenses	**1,351**	1,134	1,214
Restructuring costs	**—**	—	507
Impairment of right of use asset	**—**	—	22
Gain on modification of building lease (notes 12 and 17)	**—**	(219)	—
(Reversal) impairment of other asset	**—**	(139)	169
Total operating expenses	**13,931**	9,358	10,774
Loss from operations	**(8,671)**	(5,706)	(10,242)
Gains due to changes in foreign currency exchange rates	**215**	572	87
Change in fair value of warrant liability	**—**	1,147	4,518
Other finance costs	**(21)**	(736)	(593)
Net finance income	**194**	983	4,012
Loss before income taxes	**(8,477)**	(4,723)	(6,230)
Income tax recovery (expense) (note 22)	**109**	(395)	188
Net loss	**(8,368)**	(5,118)	(6,042)
Other comprehensive loss:			
Items that may be reclassified subsequently to profit or loss:			
Foreign currency translation adjustments	**367**	(1,139)	83
Items that will not be reclassified to profit or loss:			
Actuarial loss on defined benefit plans	**(3,592)**	(650)	(1,068)
Comprehensive loss	**(11,593)**	(6,907)	(7,027)
Net loss per share (basic) (note 26)	**(0.07)**	(0.12)	(0.35)
Net loss per share (diluted) (note 26)	**(0.07)**	(0.12)	(0.35)
Weighted average number of shares outstanding (note 26)			
Basic	**114,924,497**	41,083,163	17,494,472
Diluted	**114,924,497**	41,083,163	17,494,472

The accompanying notes are an integral part of these consolidated financial statements.

Aeterna Zentaris Inc.
Consolidated Statements of Cash Flows
(in thousands of US dollars, except share data)

	Years ended December 31,		
	2021	2020	2019
	$	$	$
Cash flows from operating activities			
Net loss	**(8,368)**	(5,118)	(6,042)
Items not affecting cash and cash equivalents:			
Change in fair value of warrant liability	**—**	(1,147)	(4,518)
Transaction costs of warrants issued, expensed as finance cost	**—**	732	550
Provision for restructuring and other costs (note 16)	**23**	(383)	511
Impairment of right of use asset	**—**	—	22
(Reversal) impairment of other asset	—	(139)	169
Gain on modification of building lease (notes 12 and 17)	**—**	(219)	—
Depreciation and amortization (notes 11, 12 and 13)	**145**	232	315
Share-based compensation costs (note 19)	**311**	61	793
Employee future benefits (note 18)	**161**	217	262
Amortization of deferred revenues	**(1,670)**	1,257	(74)
Foreign exchange gain on items denominated in foreign currencies	**(179)**	(688)	(87)
(Gain) loss on disposal of property, plant and equipment (note 12)	**(1)**	(2)	10
Other non-cash items	**95**	133	(126)
Interest accretion on lease liabilities (note 17)	**7**	(19)	(66)
Payment of income taxes (note 22)	**(1,605)**	(1,448)	—
Changes in operating assets and liabilities (note 21)	**2,500**	2,402	(2,444)
Net cash used in operating activities	**(8,581)**	(4,129)	(10,725)
Cash flows from financing activities			
Proceeds from issuance of common shares (note 19)	**34,200**	—	—
Proceeds from issuances of common shares and warrants (note 19)	**—**	23,500	4,988
Transaction costs	**(3,221)**	(2,767)	(795)
Proceeds from exercise of warrants, stock options and deferred share units	**20,087**	—	314
Proceeds on deferred gain (note 13)	**98**	—	—
Payments on lease liabilities (note 17)	**(127)**	(265)	(614)
Net cash provided by financing activities	**51,037**	20,468	3,893
Cash flows from investing activities			
Proceeds for disposals of property, plant and equipment (note 11)	**1**	6	—
Purchase of intangible assets (note 13)	**(609)**	—	—
Purchase of property, plant and equipment (note 11)	**(30)**	—	—
(Decrease) increase in restricted cash equivalents	**(20)**	50	50
Net cash (used in) provided by investing activities	**(658)**	56	50
Effect of exchange rate changes on cash and cash equivalents	**(769)**	38	108
Net change in cash and cash equivalents	**41,029**	16,433	(6,674)
Cash and cash equivalents – beginning of year	**24,271**	7,838	14,512
Cash and cash equivalents – end of year (note 6)	**65,300**	24,271	7,838

The accompanying notes are an integral part of these consolidated financial statements.

Aeterna Zentaris Inc.
Notes to Consolidated Financial Statements
As of December 31, 2021 and December 31, 2020 and for the years ended
December 31, 2021, 2020 and 2019
(in thousands of US dollars, except share and per share data and where otherwise noted)

1. Business overview

Summary of business

Aeterna Zentaris (the "Company" or "Aeterna") is a specialty biopharmaceutical company commercializing and developing therapeutics and diagnostic tests. The Company's lead product, Macrilen™ (macimorelin), is the first and only United States ("US") Food and Drug Administration ("FDA") and European Medicines Agency-approved oral test indicated for the diagnosis of patients with adult growth hormone deficiency ("AGHD"). Macrilen™ is currently marketed in the US through a license agreement, as amended, between the Company and Novo Nordisk Health Care AG ("Novo"). The Company is also dedicated to the development of therapeutic assets and has recently taken steps to establish a pre-clinical pipeline to potentially address unmet medical needs across a number of indications with a focus on rare or orphan indications and with the potential for pediatric use.

COVID-19 impact

Coronavirus, or COVID-19, a contagious disease that was characterized by the World Health Organization as a pandemic in early 2020, continues to affect the global community.

The spread of COVID-19 may continue to impact our operations, including the potential interruption of our clinical trial activities and of our supply chain. For example, the rise in the Omicron variant in the COVID-19 pandemic has caused delays in site initiation and patient enrollment in our Phase 3 DETECT clinical trial for diagnostic use in childhood-onset growth hormone deficiency. Additionally, sales activities for Macrilen™ in the US may be impacted due to delays of diagnostic activities on AGHD in the US. Further, the COVID-19 pandemic may also cause some patients to be unwilling to enroll in our trials or be unable to comply with clinical trial protocols if quarantines impede patient movement or interrupt healthcare services, which would delay our ability to conduct clinical trials or release clinical trial results on a timely basis and could delay our ability to obtain regulatory approval and commercialize our product candidates. Management will continue to monitor and assess the impact of the pandemic on its judgments, estimates, accounting policies and amounts recognized in these consolidated financial statements. As of December 31, 2021, the Company assessed the possible impacts of COVID-19 on its consolidated financial results. The Company has evaluated its financial assets, property, plant and equipment, intangible assets, and goodwill for impairment and no changes from the carrying amount were required in the reporting period.

Reporting entity

The accompanying consolidated financial statements include the accounts of Aeterna Zentaris Inc., an entity incorporated under the *Canada Business Corporations Act*, and its wholly owned subsidiaries. The Company and its subsidiaries are collectively referred to as the "Group". Aeterna Zentaris Inc. is the ultimate parent company of the Group. The Company currently has three wholly owned direct and indirect subsidiaries, Aeterna Zentaris GmbH ("AEZS Germany"), based in Frankfurt, Germany, Zentaris IVF GmbH, a wholly owned subsidiary of AEZS Germany, based in Frankfurt, Germany, and Aeterna Zentaris, Inc., an entity incorporated in the state of Delaware and with offices in Summerville, South Carolina, in the US.

The registered office of the Company is located at 222 Bay Street, Suite 3000, P.O. Box 53, Toronto, Ontario M5K 1E7, Canada.

The Company's common shares are listed on both the Toronto Stock Exchange and on the NASDAQ Capital Market.

Basis of presentation

(a) Statement of compliance

These consolidated financial statements as of December 31, 2021 and December 31, 2020 and for the years ended December 31, 2021, 2020 and 2019 have been prepared in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board ("IFRS").

These consolidated financial statements were approved by the Company's Board of Directors, subject to confirmation by the Audit Committee of the Board of Directors, which confirmation was received on March 28, 2022.

The preparation of financial statements in accordance with IFRS requires the use of certain critical accounting estimates and the exercise of management's judgment in applying the Company's accounting policies. Areas involving a high degree of judgment or complexity and areas where assumptions and estimates are significant to the Company's consolidated financial statements are discussed in note 3 - Critical accounting estimates and judgments. Certain comparative figures for the year ended December 31, 2020 were reclassified to conform to the presentation adopted for December 31, 2021.

(b) Basis of measurement

The consolidated financial statements have been prepared under a historical cost convention.

(c) Principles of consolidation

These consolidated financial statements include any entity in which the Company directly or indirectly holds more than 50% of the voting rights or over which the Company exercises control. The Company controls an entity when the Company is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. An entity is included in the consolidation from the date that control is transferred to the Company, while any entities that are sold are excluded from the consolidation from the date that control ceases. All inter-company balances and transactions are eliminated on consolidation.

(d) Foreign currency

Items included in the financial statements of the Group's entities are measured using the currency of the primary economic environment in which the entities operate (the "functional currency") which is the US dollar for the Company and its US subsidiary, Aeterna Zentaris, Inc., and the Euro ("EUR" or "€") for its German subsidiaries.

Assets and liabilities of the German subsidiaries are translated from EUR balances at the period-end exchange rates, and the results of operations are translated from EUR amounts at average rates of exchange for the period. The resulting translation adjustments are included in accumulated other comprehensive loss within shareholders' equity (deficiency).

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the underlying transaction. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation of monetary assets and liabilities not denominated in the functional currency are recognized in the consolidated statements of comprehensive loss.

2. Summary of significant accounting policies

The accounting policies set out below have been applied consistently to all years presented in these consolidated financial statements and have been applied consistently by all Group entities.

Cash and cash equivalents

Cash and cash equivalents consist of unrestricted cash on hand and balances with banks, as well as short-term interest-bearing deposits, such as money market accounts, that are readily convertible to known amounts of cash and are subject to an insignificant risk of changes in value, with a maturity of three months or less from the date of acquisition.

Inventories

Inventories are valued at the lower of cost or net realizable value. Cost is determined using the first-in, first-out method. The Company's policy is to write down inventory that has become obsolete and inventory that has a cost basis in excess of its expected net realizable value. Increases in the reserve are recorded as charges in cost of sales. For product candidates that have not been approved by the FDA, inventory used in clinical trials is written down at the time of production and recorded as research and development ("R&D") costs. For products that have been approved by the FDA, inventory used in clinical trials is expensed at the time the inventory is packaged for the clinical trial. All direct manufacturing costs incurred after approval are capitalized into inventory.

Restricted cash equivalents

Restricted cash equivalents are comprised of bank deposits, which are related to a guarantee for a long-term operating lease obligation, and for corporate credit card programs that cannot be used for current purposes.

Property, plant and equipment and depreciation

Items of property, plant and equipment are recorded at cost, net of accumulated depreciation and impairment charges. Depreciation is calculated using the following methods, annual rates and period:

	Methods	Annual rates and period
Equipment	Declining balance and straight-line	20%
Furniture and fixtures	Declining balance and straight-line	10% to 20%
Computer equipment	Straight-line	25% to 33^{1}/3%
Leasehold improvements	Straight-line	Remaining lease term

Depreciation expense, which is recorded in the consolidated statement of comprehensive loss, is allocated to the appropriate functional expense categories to which the underlying items of property, plant and equipment relate.

Identifiable intangible assets and amortization

Identifiable intangible assets with finite useful lives consist of in-process R&D acquired in business combinations, patents, trademarks, in-licensed technology and rights to serialization equipment located at the Company's third-party macimorelin manufacturer. In-process R&D acquired in business combinations is recognized at fair value at the acquisition date. Patents and trademarks are comprised of costs, including professional fees incurred in connection with the filing of patents and the registration of trademarks for product marketing and manufacturing purposes, net of related government grants, impairment losses and accumulated amortization. Identifiable intangible assets with finite useful lives are amortized beginning at the time at which the assets are available for use, on a straight-line basis over the assets' estimated useful lives, which range from seven to 15 years for in-process R&D and patents and are ten years for trademarks. Amortization expense, which is recorded in the consolidated statement of comprehensive loss, is allocated to the appropriate functional expense categories to which the underlying identifiable intangible assets relate.

Contingent payments

The Company accounts for contingent variable payments for separately acquired intangible assets, such as in-licensed technology, under the cost accumulation approach. Contingent consideration is not considered on initial recognition of the asset but instead is added to the cost of the asset initially recorded, when incurred.

Goodwill

Goodwill is recognized as the fair value of the consideration transferred, including the recognized amount of any non-controlling interest in the acquiree, less the fair value of the net identifiable assets acquired, and liabilities assumed, as of the acquisition date. Subsequent to initial recognition, goodwill is measured at cost less accumulated impairment losses. Goodwill acquired in business combinations is allocated to groups of cash generating units ("CGU") that are expected to benefit from the synergies of the combination.

Impairment of long-lived assets

Items of property, plant and equipment, right of use assets and identifiable intangible assets with finite lives that are subject to depreciation or amortization, respectively, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amounts of the assets may not be recoverable. Intangible assets that are not subject to amortization are tested when there are indications that their carrying value may not be recoverable, or, at a minimum, annually. Management is required to assess at each reporting date whether there is any indication that an asset may be impaired. Where such an indication exists, the asset's recoverable amount is compared to its carrying value, and an impairment loss is recognized for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. For purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows, or CGU. In determining value in use of a given asset or CGU, estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset.

Items of property, plant and equipment and identifiable intangible assets with finite lives that have suffered impairment are reviewed for possible reversal of the impairment if there has been a change, since the date of the most recent impairment test, in the estimates used to determine the impaired asset's recoverable amount. However, an asset's carrying amount, increased due to the reversal of a prior impairment loss, must not exceed the carrying amount that would have been determined, net of depreciation or amortization, had the original impairment not occurred.

Goodwill is not subject to amortization, but instead is tested for impairment annually or more often if there is an indication that the CGU to which the goodwill has been

allocated may be impaired. Impairment is determined for goodwill by assessing whether the carrying value of a CGU, including the allocated goodwill, exceeds the CGU's recoverable amount, which is the higher of fair value less costs to sell and the CGU's value in use. Fair value less costs of disposal is determined based on the Company's market capitalization, as well as relevant market data, such as control premiums, and other assumptions. In the event that the carrying amount of goodwill exceeds its recoverable amount, an impairment loss is recognized in an amount equal to the excess. Impairment losses related to goodwill, which are recorded in the consolidated statement of comprehensive loss, are not subsequently reversed.

Provisions

Provisions represent liabilities to the Company for which the amount or timing is uncertain. Provisions are recognized when the Company has a present legal or constructive obligation as a result of past events, such as organizational restructuring, when it is probable that an outflow of resources will be required to settle the obligation and where the amount can be reliably estimated. Provisions are not recognized for future operating losses.

Provisions are made for any contracts which are deemed onerous. A contract is onerous if the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received under it. Provisions for onerous contracts are measured at the present value of the lower of the expected cost of terminating the contract and the expected net cost of continuing with the contract. Present value is determined based on expected future cash flows that are discounted at a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. The unwinding of the discount is recognized in finance costs.

Leases

At the inception of a contract, the Company assesses whether a contract is or contains a lease. A lease is a contract in which the right to control the use of an identified asset is granted for an agreed-upon period of time in exchange for consideration. The Company assesses whether a contract conveys the right to control the use of an identified asset when there is both the right to direct the use of the asset and obtain substantially all the economic benefits from that use. The Company recognizes a right of use asset and a lease liability at the lease commencement date.

The lease liability is initially measured at the present value of the non-cancellable lease payments over the lease term and discounted at the rate implicit in the lease. If that rate cannot be determined, the Company's incremental borrowing rate, or the rate that Company would have to pay to borrow the funds necessary to obtain an asset of similar value in a similar economic environment with similar terms and conditions, is used. Lease payments include fixed payments and such variable payments that depend on an index or a rate less any lease incentives receivable.

The lease liability is subsequently measured at amortized cost using the effective interest method and is remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a change in the Company's estimate of the amount expected to be payable under a residual value guarantee or if the Company changes its assessment of whether it will exercise a purchase, extension or termination option. When the lease liability is remeasured, a corresponding adjustment is made to the carrying amount of the right of use asset, with any difference recorded in the statement of comprehensive loss.

Right of use assets are measured at cost, which comprises the initial lease liability, lease payments made at or before the lease commencement date, initial direct costs and restoration obligations, less lease incentives. Right of use assets are subsequently measured at amortized cost. The assets are depreciated over the shorter of the assets' useful life and the lease terms on a straight-line basis, less any accumulated impairment losses, and adjusted for any remeasurement of the lease liability. The lease term includes periods covered by an option to extend if the Company is reasonably certain to exercise that option.

The Company accounts for a lease modification as a separate lease if both of the following conditions exist: (a) the modification increases the scope of the lease by adding the right to use one or more underlying assets; and (b) the consideration for the lease increases by an amount equivalent to the standalone price for the increase in scope and any appropriate adjustments to that stand-alone price to reflect the circumstances of the particular contract. Where the Company accounts for a lease modification as a new lease, the separate lease is accounted for in the same way as a new lease, as described above.

Where the Company does not account for a lease modification as a separate lease, the lease liability is remeasured by: (a) decreasing the carrying amount of the right of use asset to reflect the partial or full termination of the lease for lease modifications that decrease the scope of the lease, with any gain or loss relating to the partial or full termination of the lease recorded in the consolidated statement of comprehensive loss; or (b) making a corresponding adjustment to the right of use asset for all other lease modifications.

Payments associated with short-term leases and leases of low-value assets are recognized on a straight-line basis as an expense in the consolidated statement of comprehensive loss.

Employee benefits

Salaries and other short-term benefits

Salaries and other short-term benefit obligations are measured on an undiscounted basis and are recognized in the consolidated statement of comprehensive loss over the related service period or when the Company has a present legal or constructive obligation to make payments as a result of past events and when the amount payable can be estimated reliably.

Post-employment benefits

AEZS Germany provides unfunded and partially funded defined benefit multi-employer pension plans, namely the DUPK pension plan and the RUK 1990 and 2006 pension plans, (the "Pension Benefit Plans") and unfunded post-employment benefit plans for certain groups of employees. Provisions for pension obligations are established for benefits payable in the form of retirement, disability and surviving dependent pensions. The Company also provides a defined contribution plans to some of its employees.

For defined benefit pension plans and other post-employment benefits, net periodic pension expense is actuarially determined on a quarterly basis using the projected unit credit method. The cost of pension and other benefits earned by employees is determined by applying certain assumptions, including discount rates, rate of pension benefit increases, the projected age of employees upon retirement and the expected rate of future compensation.

The employee future benefits liability is recognized at its present value, which is determined by discounting the estimated future cash outflows using interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid and that have terms to maturity approximating the terms of the related future benefit liability. Actuarial gains and losses that arise in calculating the present value of the defined benefit obligation are recognized in other comprehensive loss,

net of tax, and simultaneously reclassified in the deficit in the consolidated statement of financial position in the year in which the actuarial gains and losses arise and without recycling to the consolidated statement of comprehensive loss in subsequent periods.

For defined contribution plans, expenses are recorded in the consolidated statement of comprehensive loss as incurred–namely, over the period that the related employee service is rendered.

Termination benefits

Termination benefits are recognized in the consolidated statement of comprehensive loss when the Company is demonstrably committed, without the realistic possibility of withdrawal, to a formal detailed plan to terminate employment earlier than originally expected. Termination benefit liabilities expected to be settled after 12 months from the end of a given reporting period are discounted to their present value, where material.

Financial instruments

The Company classifies its financial instruments in the following categories: financial assets at fair value through profit or loss ("FVTPL"); financial liabilities at FVTPL; financial assets at amortized cost; financial liabilities at amortized cost and financial assets at fair value through other comprehensive income ("FVTOCI").

Financial assets at FVTPL: Financial assets carried at FVTPL are initially recorded at fair value, and transaction costs directly attributable to issuing the financial assets are expensed in the statement of comprehensive loss. Realized and unrealized gains and losses arising from changes in the fair value of the financial assets held at FVTPL are included in the statement of comprehensive loss in the period in which they arise. As of December 31, 2021 and 2020, the Company did not have any financial assets at FVTPL.

Financial liabilities at FVTPL: These financial liabilities are initially recognized at fair value, and transaction costs directly attributable to issuing the financial liabilities are expensed in the statement of comprehensive loss. Financial liabilities that are required to be measured at FVTPL are re-measured at each reporting date, with changes in fair value reported in the statement of comprehensive loss. As of December 31, 2021 and 2020, the Company did not have any financial liabilities at FVTPL.

Financial assets at amortized cost: A financial asset is measured at amortized cost if the objective of the business model is to hold the financial asset for the collection of contractual cash flows, and the asset's contractual cash flows are comprised solely of payments of principal and interest. Financial assets at amortized cost are classified as current or non-current based on their maturity date and are initially recognized at fair value and subsequently carried at amortized cost, less any impairment.

Financial liabilities at amortized cost: Financial liabilities classified as amortized cost are initially recognized at fair value, less directly attributable transaction costs. After initial recognition, costs are subsequently measured at amortized cost using the effective interest rate method with interest expense recognized on an effective yield basis. The effective interest rate is the rate that discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period. Interest accretion is recorded in interest expense in the consolidated statement of comprehensive loss.

Financial assets at FVTOCI: Investments in equity instruments at FVTOCI are initially recognized at fair value, plus incremental transaction costs. Subsequently, financial assets at FVTOCI are measured at fair value, with gains and losses arising from changes in fair value recognized in other comprehensive loss in the period in which those gains or losses arise. As of December 31, 2021 and 2020, the Company did not have any financial assets at FVTOCI.

Impairment of financial assets at amortized cost: The Company applies the simplified approach on trade receivables, which allows for the use of a lifetime expected credit loss ("ECL") provision considering the probability of default over the expected life of the financial asset. The 12-month ECL only considers default events that are possible within the year following the reporting date. The Company uses a provision matrix to calculate ECLs for trade receivables. The provision matrix is initially based on the Company's historical observed default rates and is subsequently evaluated and updated based on new and forward-looking information.

Share capital

Common shares are classified as equity. Incremental costs that are directly attributable to the issuance of common shares are recognized as a deduction from equity, net of any tax effects.

Where offerings result in the issuance of units (where each unit is comprised of a common share of the Company and a warrant, exercisable in order to purchase a common share or fraction thereof) and the Company does not have the unconditional right to avoid delivering cash to the holders in the future, proceeds received in connection with those offerings are allocated between share capital and warrants. Transaction costs in connection with such offerings are allocated to the liability and equity unit components in proportion to the allocation of proceeds.

Where offerings result in the issuance of units (where each unit is comprised of a common share of the Company and a warrant, exercisable in order to purchase a common share or fraction thereof) and the warrants issued meet the fixed-for-fixed criteria, discussed below, proceeds received in connection with those offerings are allocated between share capital and warrants based on the relative fair value method. Transaction costs in connection with such offerings are allocated to share capital and warrant components within equity in proportion to the allocation of proceeds.

Warrants

Warrants are classified as liabilities when the Company does not have the unconditional right to avoid delivering cash to the holders in the future, or when they can be settled with a variable number of common shares. Each of the Company's warrants contains a written put option, arising upon the occurrence of a fundamental transaction, as that term is defined in the warrants, including a change of control.

The warrant liability is initially measured at fair value, and any subsequent changes in fair value are recognized as gains or losses through profit or loss. Any transaction costs related to the warrants are expensed as incurred. Fair value of such warrants is determined at the issue date using the Black-Scholes option pricing model.

The warrant liability is classified as non-current, unless the underlying warrants will expire or be settled within 12 months from the end of a given reporting period.

When issued warrants meet the fixed-for-fixed criteria under IAS 32, *Financial Instruments*, either upon initial issue or upon subsequent registration of the common shares underlying the warrants, the Company classifies such warrants as equity-settled. Such warrants are accounted for by using the relative fair value method whereby the total gross proceeds from the offering are allocated to each of common shares and warrants based on their relative fair values. Fair value of such warrants is determined at the issue date using the Black-Scholes option pricing model.

Share-based compensation costs

The Company operates an equity-settled share-based compensation plan under which the Company receives services from directors, senior executives, employees and other collaborators as consideration for equity instruments of the Company. The Company accounts for all forms of share-based compensation using the fair value-based method. Fair value of stock options is determined at the date of grant using the Black-Scholes option pricing model, which includes estimates of the number of awards that are expected to vest over the vesting period. Where granted share options vest in installments over the vesting period (defined as graded vesting), the Company treats each installment as a separate share option grant. Share-based compensation expense is recognized over the vesting period, or as specified vesting conditions are satisfied, and credited to other capital. Any consideration received by the Company in connection with the exercise of stock options is credited to share capital. Any other capital component of the share-based compensation is transferred to share capital upon the issuance of shares.

The Company grants deferred share units ("DSUs") to members of its Board of Directors who are not employees or officers of the Company. DSUs cannot be redeemed until the holder is no longer a director of the Company and are considered equity-settled instruments. Under the terms of the DSU agreement, the DSUs vest immediately upon grant. The value attributable to the DSUs is based on the market value of the share price at the time of grant and share based compensation expense is recognized in general and administrative expenses in the consolidated statement of comprehensive loss. At the time of redemption, each DSU may be exchanged for one common share of the Company. Any consideration received by the Company in connection with the exercise of DSUs is credited to share capital. Any other capital component of the share-based compensation is transferred to share capital upon the issuance of shares.

Revenue recognition

The Company generates revenue from license and collaboration agreements with customers (license fees, milestone revenue, royalties), the provision of development services, the sale of certain active pharmaceutical ingredients ("API") and semi-finished goods and finished goods, and from certain supply chain activities, which are comprised largely of oversight or supervisory support services related to stability studies or development activities carried out with respect to API batch production as specified in underlying contracts with customers.

The Company applies the provisions of IFRS 15, *Revenue from Contracts with Customers* ("IFRS 15"), a single, comprehensive set of criteria for revenue recognition. IFRS 15 applies to all contracts with customers except for contracts that are within the scope of other standards. IFRS 15 prescribes a five-step framework through which revenue is recognized when control of promised goods or services is transferred to a customer at an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. Goods and services that are determined not to be distinct are combined with other promised goods or services until a distinct bundle is identified. The Company allocates the transaction price (the amount of consideration to which the Company expects to be entitled in exchange for the promised goods or services) to each performance obligation and recognizes the associated revenue when (or as) each performance obligation is satisfied. The Company's estimate of the transaction price for each contract includes all variable consideration to which the Company expects to be entitled, and that estimate is reassessed at the end of each reporting period. When two or more contracts are entered into with the same customer at or near the same time, the Company evaluates the contracts to determine whether the contracts should be accounted for as a single arrangement.

The transaction price is allocated among the performance obligations on a relative standalone selling price basis, and the applicable revenue recognition criteria are applied to each of the separate performance obligations. Standalone selling prices may be estimated via methods that include, but are not limited to, an adjusted market assessment approach, an expected cost-plus-margin approach or a residual approach. Determining the standalone selling price for performance obligations requires significant judgment.

The Company applies judgment in determining whether a combined performance obligation is satisfied at a point in time or over time, and, for performance obligations satisfied over time, in concluding upon the appropriate method of measuring progress to be applied for purposes of recognizing revenue. The Company evaluates the measure of progress each reporting period and, as estimates related to the measure of progress change, related revenue recognition is adjusted accordingly. Changes in the Company's estimated measure of progress are accounted for on a cumulative catch-up basis as a change in accounting estimate and are recorded in the consolidated statement of comprehensive loss in the period of adjustment.

License fees

If the license to the Company's intellectual property is determined to be distinct from the other promises or performance obligations identified in the arrangement, the Company recognizes revenue from non-refundable, upfront fees allocated to the license when the license is transferred to the customer and the customer is able to use and benefit from the license. In assessing whether a license is distinct from the other promises, the Company considers whether the collaboration partner can benefit from the license for its intended purpose without the receipt of the remaining promises, whether the value of the license is dependent on the unsatisfied promises, whether there are other vendors that could provide the remaining promises and whether it is separately identifiable from the remaining promises. For licenses that are combined with other promises, the Company utilizes judgment to assess the nature of the combined performance obligation and whether the license is the predominant promise within the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue.

Development services

Arrangements that include a promise for the Company to provide development services are assessed to determine whether the services are capable of being distinct, are not highly interdependent or do not significantly modify one another, and if so, the services are accounted for as a separate performance obligation as the services are provided to the customer. Otherwise, when development services are determined not to be capable of being distinct, such services are added to the performance obligation that includes the underlying license. For development services that are combined with other promises, the Company applies judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time. The Company utilizes judgment to determine the appropriate method of measuring progress for purposes of recognizing revenue, which is generally an input measure such as costs incurred.

Milestone payments

At the inception of any contracts with a customer that includes milestone payments, which are oftentimes payable upon the successful achievement of development or regulatory events, the Company evaluates whether the milestones are considered probable of being reached and estimates the amount to be included in the transaction price using the most likely amount method. If the Company concludes it is highly probable that a significant revenue reversal will not occur, the associated milestone payment is included in the transaction price. Milestone payments that are not within the control of the Company or the licensee, such as regulatory approvals, are generally not considered probable of being achieved until those approvals are received. The transaction price is then allocated to each performance obligation on a relative stand-alone selling price basis, for which the Company recognizes revenue when (or as) the performance obligations under the contract are satisfied. At the end of each subsequent reporting period, the Company reassesses the probability of achievement of milestones and any related constraints, and, if necessary, adjusts the estimate of the overall transaction price on a cumulative catch-up basis.

Royalty payments

For arrangements that include sales-based royalties, including milestone payments based on the level of sales, and when the license is deemed to be the predominant item to which the royalties relate, the Company recognizes revenue at the later of (a) when the related sales occur, or (b) when the performance obligation to which some or all of the royalty has been allocated has been satisfied or partially satisfied.

Product sales

The Company recognizes revenue from the sale of certain API and semi-finished goods, including Macrilen™, upon delivery of such items to its customer.

Supply chain revenue

Supply chain services are contracted with fixed fees and are provided over a period of time. The Company recognizes revenue on a straight-line basis over time as it best represents the pattern of performance of the services.

While providing services, the Company incurs certain direct costs for subcontractors and other expenses that are recoverable directly from its customers. The recoverable amounts of these direct costs are included in the Company's operating expenses as the Company controls the services before they are transferred to the customer and acts as a principal in these arrangements.

Contract costs

The Company recognizes as an asset the incremental costs of obtaining a contract with a customer if the costs are expected to be recovered, and any capitalized contract costs are amortized on a systematic basis that is consistent with the transfer to the customer of the goods or services to which the asset relates. As a practical expedient, the Company recognizes the incremental costs of obtaining a contract as an expense when incurred if the amortization period of the asset that it otherwise would have recognized is one year or less. To date, the Company has not incurred any incremental costs of obtaining a contract with a customer.

Contract modifications

Contract modifications are defined in IFRS 15 as changes in the scope or price (or both) of a contract that are approved by the parties to the contract, such as a contract amendment. Contract modifications exist when the parties to a contract approve a modification that either creates new or changes existing enforceable rights and obligations of the parties to the contract. Depending on facts and circumstances, the Company accounts for a contract modification in one of the following ways: (a) as a separate contract; (b) as a termination of the existing contract and a creation of a new contract; or (c) as a combination of the preceding treatments. A contract modification is accounted for as a separate contract if the scope of the contract increases because of the addition of promised goods or services that are distinct and the price of the contract increases by an amount of consideration that reflects the Company's standalone selling prices of the additional promised goods or services. When a contract modification is not considered a separate contract and the remaining goods or services are distinct from the goods or services transferred on or before the date of the contract modification, the Company accounts for the contract modification as a termination of the existing contract and a creation of a new contract. When a contract modification is not considered a separate contract and the remaining goods or services are not distinct, the Company accounts for the contract modification as an add-on to the existing contract and as an adjustment to revenue on a cumulative catch-up basis.

Income tax

Income tax on profit or loss comprises current and deferred tax. Tax is recognized in profit or loss, except that a change attributable to an item of income or expense recognized as other comprehensive loss or directly in equity is also recognized directly in other comprehensive loss or directly in equity. Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation and establishes provisions where appropriate on the basis of amounts expected to be paid to the tax authorities.

The current income tax charge is calculated in accordance with tax rates and laws that have been enacted or substantively enacted by the reporting date in the countries where the Company's subsidiaries operate and generate taxable income.

Deferred income tax is recognized on temporary differences (other than, where applicable, temporary differences associated with unremitted earnings from foreign subsidiaries and associates, to the extent that the investment is essentially permanent in duration, and temporary differences associated with the initial recognition of goodwill) arising between the tax bases of assets and liabilities and their carrying amounts in the consolidated financial statements and on unused tax losses or R&D non-refundable tax credits in the Group. Deferred income tax is determined using tax rates and laws that have been enacted or substantively enacted by the reporting date.

Deferred income tax assets are recognized only to the extent that it is probable that future taxable profit will be available against which the temporary differences can be utilized.

Deferred income tax assets and liabilities are offset when there is a legally enforceable right to offset current tax assets against current tax liabilities and when the deferred income taxes assets and liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities where there is an intention to settle the balances on a net basis.

The Company provides reserves for potential payments of tax to various tax authorities related to uncertain tax positions and other issues. Reserves are based on a determination of whether and how much of a tax benefit taken by the Company in its tax filing is more likely than not to be realized following resolution of any potential contingencies present related to the tax benefit.

Research and development expenses

Research costs are expensed as incurred. Development costs are expensed as incurred, except for those that meet the criteria for deferral, in which case the costs are capitalized and amortized to operations over the estimated period of benefit. No development costs have been capitalized during any of the periods presented.

Net loss per share

Basic net loss per share is calculated using the weighted average number of common shares outstanding during the year.

Diluted net loss per share is calculated based on the weighted average number of common shares outstanding during the year, plus the effects of dilutive common share equivalents, such as stock options and warrants. This method requires that diluted net loss per share be calculated using the treasury stock method, as if all common share equivalents had been exercised at the beginning of the reporting period, or period of issuance, as the case may be, and that the funds obtained thereby were used to purchase common shares of the Company at the average trading price of the common shares during the period.

3. Critical accounting estimates and judgments

The preparation of consolidated financial statements in accordance with IFRS requires management to make judgments, estimates and assumptions that affect the reported amounts of the Company's assets, liabilities, revenues, expenses and related disclosures. Judgments, estimates and assumptions are based on historical experience, expectations, current trends and other factors that management believes to be relevant at the time at which the Company's consolidated financial statements are prepared.

Management reviews, on a regular basis, the Company's accounting policies, assumptions, estimates and judgments in order to ensure that the consolidated financial statements are presented fairly and in accordance with IFRS. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

Critical accounting estimates and assumptions are those that have a significant risk of causing material adjustment and are often applied to matters or outcomes that are inherently uncertain and subject to change. As such, management cautions that future events often vary from forecasts and expectations and that estimates routinely require adjustment.

The following discusses the most significant accounting estimates and assumptions that the Company has made in the preparation of the consolidated financial statements.

Accounting for a contract modification

The Novo Amendment, as defined and discussed in note 5 – License, supply and distribution arrangements, and which was determined to be a modification pursuant to the provisions of IFRS 15, required management to apply significant judgments, including: assessment of any increases to the scope of the license agreement; assessment of whether the remaining goods or services are distinct from goods or services transferred before the modification; and assessment as to whether a portion of the changes in the transaction price was attributable to the amount of variable consideration promised before the modification. Any changes in the judgments or assumptions applied to account for this agreement could have a significant impact on the Company's revenue and deferred revenue.

License and collaboration arrangements with multiple elements

The Company enters into licensing and supply agreements related to the licensing, development, supply and distribution for macimorelin in various territories. Each agreement may contain specific terms or clauses that require careful analysis by management under IFRS 15 in order to ensure the appropriate accounting treatment is reached. The agreements may include non-refundable upfront payments and licensing fees, the provision of development services, pre- and post-commercialization milestone payments, royalties on future product sales derived from such license agreements, and supply arrangements. Management analyzes each agreement and applies significant judgment to determine whether contracts entered into at or near the same time should be accounted for as a single arrangement, whether all parts of the contract are scoped within IFRS 15, to identify all performance obligations, determine whether a performance obligation is distinct or should be combined with other promised goods and services, determine and allocate the transaction price on a relative stand-alone selling price basis, determine whether a combined performance obligation is satisfied at a point in time or over time, and, for performance obligations satisfied over time, in concluding upon the appropriate method of measuring

progress to be applied for purposes of recognizing revenue. Any changes in the judgments or assumptions applied can give rise to a significant impact on the Company's revenues and deferred revenues

Impairment of goodwill

The annual impairment assessment related to goodwill requires management to estimate the recoverable amount, which has been determined using fair value less cost of disposal. The Company has a single cash generating unit and reportable segment, and management monitors goodwill based on an overall entity basis. The carrying amount of its consolidated net assets is compared to its overall market capitalization less estimated cost of disposal. Based on this calculation, including a control premium, management determined that goodwill was not impaired. Future events could cause the assumptions utilized in the impairment tests to change, resulting in a potentially adverse effect on the Company's future results due to increased impairment charges.

Employee future benefits

The determination of expenses and obligations associated with employee future benefits requires the use of assumptions, such as the discount rate to measure obligations, rate of pension benefit increases, the projected age of employees upon retirement and the expected rate of future compensation. Because the determination of the costs and obligations associated with employee future benefits requires the use of various assumptions, there is measurement uncertainty inherent in the actuarial valuation process. Actual results will differ from results that are estimated based on the aforementioned assumptions. Additional information is included in note 18 - Employee future benefits.

Research and development accrual

As part of the process of preparing our financial statements, we are required to estimate accrued expenses including those pertaining to our research and development expenses. This process involves reviewing open contracts and purchase orders, communicating with our personnel to identify services that have been performed on our behalf and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the accrued or prepaid expense balance accordingly. Although the Company does not expect estimates to be materially different from amounts actually incurred, if those estimates of the status and timing of services performed differ from the actual status and timing of services performed, the Company may report amounts that are too high or too low in any particular period.

4. Recent accounting pronouncements

IFRS Pronouncements issued but not yet effective

(a) IAS 37, *Provisions, Contingent Liabilities and Contingent Assets* ("IAS 37")

The amendment to IAS 37 clarifies the meaning of costs to fulfil a contract and that before a separate provision for an onerous contract is established, an entity recognizes any impairment loss that has occurred on assets used in fulfilling the contract, rather than on assets dedicated to the contract. This amendment will be effective for annual periods beginning on or after January 1, 2022. The Company is currently evaluating this guidance and the impacts that the amendments may have on the Company's consolidated financial statements.

5. License, supply and distribution arrangements

License and supply agreements for Macrilen™ - United States and Canada

On January 16, 2018, the Company, through AEZS Germany, entered into License Agreement with Strongbridge Ireland Limited ("Strongbridge") to carry out development, manufacturing, registration, regulatory and supply chain services for the commercialization of Macrilen™ (macimorelin) in the U.S. and Canada, which provides for (i) a right to use license relating to the adult indication (the "Adult Indication"); (ii) a license for a future FDA-approved pediatric indication (the "Pediatric Indication"); (iii) the licensee to fund 70% of the costs of a pediatric clinical trial submitted for approval to the EMA and FDA to be run by the Company with oversight from a joint steering committee (the "PIP"); and (iv) for an Interim Supply Arrangement. In January 2018, the Company received a cash payment of $24,000 from Strongbridge and on July 23, 2018, Strongbridge launched product sales of Macrilen™ (macimorelin) in the U.S. The Company is also entitled to receive a milestone payment of $5,000 upon FDA approval of the Pediatric Indication. Effective December 19, 2018, Strongbridge sold the entity which owned the License Agreement for the U.S. and Canadian rights to Macrilen™ (macimorelin) to Novo. In 2019, the Interim Supply Arrangement was concluded and Novo contracted AEZS Germany to provide supply chain services for the manufacture of Macrilen™ (macimorelin).

On November 16, 2020, the Company, through AEZS Germany, entered into an amendment (the "Novo Amendment") of its existing License Agreement with Novo related to the development and commercialization of macimorelin.

Under the Novo Amendment, Aeterna continues to retain all rights to macimorelin outside of the U.S. and Canada but Novo agreed to make an upfront payment to Aeterna of $6,109 (€5,000), which the Company received in December 2020. Under the Novo Amendment, the royalty payment Aeterna receives on sales in the U.S. and Canada was reduced from 15% to 8.5% for annual net sales up to U.S.$40 million and returns to 15% or more for annual net sales of macimorelin over U.S.$40 million. Additionally, the $5,000 variable payment owing to Aeterna by Novo, upon FDA approval of the pediatric indication, was waived. Under the Novo Amendment, Novo and Aeterna agreed that solely Aeterna will conduct the pivotal Study P02 in partnership with a contract research organization ("CRO"). Given the transfer of development activities to Aeterna, the percentage of Study P02 clinical trial costs that Novo is required to reimburse to Aeterna was adjusted from 70% to 100% of costs up to €9,000 (approximately $10,980). Any additional external jointly approved Study P02 trial costs incurred over €9,000 will be shared equally between Novo and Aeterna. In addition,

certain changes to rights and responsibilities of the joint steering committee were made.

Under the amended terms, Novo was also granted co-ownership of the U.S. and Canadian patents and trademarks owned by Aeterna on macimorelin but will be required to transfer co-ownership in those patents back to Aeterna on the occurrence of certain termination events.

Management has determined that the modification that grants co-ownership of the U.S. and Canadian patents and trademarks that were previously licensed by the Company to Novo is not a distinct performance obligation as the related benefits are highly interdependent and interrelated with the licensed indications granted under the existing license contract prior to the modification.

In addition, upon regulatory approval of macimorelin in the U.S. for the diagnosis of CGHD, if Novo determines not to commercialize macimorelin in Canada, then Aeterna has the option to exclusively license rights to macimorelin in Canada (but not in U.S.) to a third party. The Amendment also confirms that Aeterna has the right to use the results from Study P02, if successful, to support Aeterna seeking regulatory approval and ongoing efforts to seek partnering opportunities for macimorelin in other regions outside of the two countries licensed to Novo, the U.S. and Canada.

Analysis prior to modification

At contract inception, upon analysis of the total discounted cash flows of both the $24,000 payment and the $5,000 payment upon FDA approval of the Pediatric Indication, the Company determined that 84% of the future revenue streams would be derived from the Adult Indication and 16% from the Pediatric Indication. On a relative fair value basis, the Company had allocated the transaction price to the performance obligations resulting in $23,600 being allocated to the Adult Indication and being recognized as license fee revenue in the consolidated statement of comprehensive loss for the year ended, December 31, 2018, and $400 being allocated to the Pediatric Indication, which was recognized as deferred revenue on the consolidated statement of financial position and amortized on a straight-line basis beginning January 2018, over a period of 5.4 years, into the consolidated statements of comprehensive loss.

Under the License Agreement, the Company considered the funding arrangement under the PIP to be a collaboration arrangement under IFRS 11 and has accounted for the invoicing as a reduction of costs incurred. During 2020, the Company invoiced its licensee $1,099 (2019 - $979) as its share of the costs incurred by the Company.

Analysis post modification

On November 16, 2020, the Company announced that it had entered into the Novo Amendment of its existing License Agreement and received an upfront payment of $6,109 (€5,000) in December 2020. Management determined that the remaining performance obligation under the contract which provides the customer with the license of a future FDA approved Pediatric Indication is a distinct performance obligation before and after the modification. Accordingly, the Company accounted for the modification to the License Agreement as an adjustment to the existing License Agreement with Novo, on a prospective basis. The portion of the changes in the transaction price that was attributable to the change in royalty rate was allocated to both the Adult Indication and the Pediatric Indication. Based on the change in future royalty rates, the Company determined that $550 of the additional upfront payment should be allocated to the Adult Indication. Accordingly, the Company allocated $ 550 (€470) to the Adult Indication which was recognized in revenues for the year ended December 31, 2020 and deferred $5,559 (€4,530).

As required per IFRS 11, given changes in facts and circumstances with respect to the development activities associated with the pediatric indication—namely, the substantive changes to rights and responsibilities granted to Novo pursuant to the Novo Amendment—management reassessed whether the classification of those activities should change. Management concluded that the parties to the Novo Amendment no longer share joint control of the related activities. As such, the Pediatric Indication development activities are no longer accounted for under IFRS 11, and the incremental performance obligation associated with the Pediatric Indication development services has been combined with the pediatric license for revenue recognition purposes. No other additional performance obligations were identified in the Novo Amendment.

Based on the preceding analysis, management determined that the total modified transaction price was $5,754 (€4.7 million), which is comprised of $195 (€0.2 million) pre-Novo Amendment unamortized pediatric license fee and $5,559 (€4.5 million) post-Novo Amendment Pediatric Indication and has been allocated to the remaining combined performance obligation. Revenue associated with this performance obligation is being recognized as pediatric development services using a cost-to-cost measure of progress method. The transfer of control to Novo occurs over time, and as such, in management's judgment, this input method is the best measure of progress towards satisfying the performance obligation and reflects a faithful depiction of the transfer of goods and services. As of December 31, 2021, management expects that the remaining performance obligation will be recognized through December 31, 2022. Management reevaluates the transaction price at the end of each reporting period or as changes in circumstances occur and adjusts the transaction price and the timing of recognition thereof as necessary.

Supply Chain Arrangement

The Company agreed, in the Interim Supply Arrangement to the License Agreement, to supply ingredients for the manufacture of Macrilen™ (macimorelin) during an interim period at a price that is set 'at cost' without any profit margin. The Company believes the stand-alone selling price of the manufacturing ingredients to be their cost, as that approximates the amount at which Novo would be able to procure those same goods with other suppliers. In November 2019, Novo contracted with AEZS Germany, to provide supply chain services including provision of supervision of stability studies (support services) as well as API batch production and delivery of certain API and semi-finished goods.

License and supply agreements for macimorelin - European Union and United Kingdom

Background

On December 7, 2020, the Company entered into an exclusive licensing agreement with Consilient Health Limited ("CH") for the commercialization of macimorelin (the

(in thousands of US dollars, except share and per share data and where otherwise noted)

"Licensed Product") in the European Economic Area and the United Kingdom (the "CH License Agreement").

Under the terms of the CH License Agreement, CH agreed to make a non-refundable, non-creditable upfront payment to the Company of $1,209 (€1.0 million), which the Company received in January 2021. The Company also is eligible to receive additional consideration, including regulatory milestones related to agreed-upon pricing and reimbursement parameters; net sales milestones; and royalties, ranging from 10%-20% of net sales of macimorelin, subject to reduction in certain cases, or sublicense income recorded by CH. Also on December 7, 2020, the Company and CH entered into an exclusive supply agreement, pursuant to which the Company agreed to provide the Licensed Product to CH, with such Licensed Product to be manufactured by third-party manufacturers for a period of ten years, subject to renewal (the "CH Supply Agreement").

The total transaction price associated with the CH Agreement is $1,209 (€1.0 million), which consists of the non-refundable, non-creditable upfront payment, discussed above. At the inception of the contract, all other contractual consideration to which the Company may be entitled represents variable consideration, including the regulatory milestones, which were determined to be zero, based on management's estimate of the most likely amount, given that the achievement of the underlying milestones is uncertain and highly susceptible to factors outside of the Company's control.

The Company allocated the transaction price to the two combined performance obligation of the license agreement and the supply agreement for the adult and pediatric indication, using the application of an adjusted market assessment approach. Revenue will be recognized over time using an outputs method based on units of Licensed Product supplied to CH. The total units that the Company expects to supply to CH pursuant to the CH Agreement is an estimate, based on current projections and anticipated market demand, and therefore will be a significant judgment that will be relied upon when using the outputs method to recognize revenue.

In December 2021, the Department of Health and Social Care in the United Kingdom approved a list price which triggered a $226 (€0.2 million) pricing milestone payment, which was allocated to the Adult license performance obligation and deferred to the consolidated statement of financial position.

The aggregate amount of the transaction price allocated to the Company's unsatisfied or partially unsatisfied performance obligations under the CH Agreement was $1,358 (€1.2 million) as of December 31, 2021. The Company expects to recognize the balance of the relevant deferred revenue over the remaining period of ten years, subject to extension based on the outcome of the ongoing clinical development related to the Pediatric Indication and related patent application initiatives.

For the year ended December 31, 2021, the Company recognized $nil as license fee revenue associated with the CH Agreement.

License and supply agreements for macimorelin - Korea

The Company and NK Meditech Limited ("NK") entered into a licensing agreement, effective November 30, 2021 and pursuant to which the Company granted to NK the exclusive right to commercialize (including marketing, selling and offering to sell) macimorelin in the Republic of Korea (the "ROK") and as applicable, in the Democratic People's Republic of Korea ("DPRK") to the extent NK is allowed to use the aforementioned licensed rights in the latter ("NK License Agreement").

Under the terms of the NK License Agreement, NK agreed to make a non-refundable, non-creditable upfront payment to the Company of $136 (€0.1 million), which the Company received in December 2021. The Company also is eligible to receive additional consideration, including a regulatory milestone related to the approval of macimorelin in the Pediatric Indication in the ROK and/or DPRK. Additionally, NK has agreed to pay AEZS royalties of 12% of any sublicense income (i.e., royalties, upfront payments, license or option fees, lump sum payments, equity securities, milestone payments or other non-cash consideration) that may be received by NK from any future sublicensees ("Sublicense Income").

Also, effective November 30, 2021, the Company and NK entered into an exclusive supply agreement, pursuant to which the Company agreed to provide macimorelin to NK for a period of ten years, subject to renewal (the "NK Supply Agreement").

Management determined that the total transaction price associated with the NK License Agreement was $136 (€0.1 million), which consists of the upfront payment, discussed above, that was received by the Company in 2021. The Company allocated the $136 (€0.1 million) transaction price to the single combined performance using an outputs method based on units of macimorelin supplied to NK over a 10-year period.

Distribution agreement for macimorelin - Israel and the Palestinian Authority

In June 2020, the Company entered into an exclusive distribution and quality agreement with MegaPharm Ltd. ("MegaPharm") for the commercialization in Israel and in the Palestinian Authority of Macrilen™, to be used in the diagnosis of patients with adult growth hormone deficiency and in clinical development for the diagnosis of pediatric growth hormone deficiency (the "MegaPharm Agreement"). Under the terms of the MegaPharm Agreement, MegaPharm will be responsible for obtaining registration to market Macrilen™ in Israel and the Palestinian Authority, while the Company will be responsible for manufacturing, product supply, quality assurance and control, regulatory support, and maintenance of the relevant intellectual property. In June 2021 MegaPharm filed an application to the Ministry of Health of Israel for regulatory approval of macimorelin in Israel and, as of December 31, 2021, there have been no products supplied under this agreement.

Summary of revenue recognized, deferred revenue and contract asset balances associated with license, supply and distribution arrangements

The following table provides a summary of deferred revenue balances for the Novo Amendment, CH Agreement and NK License Agreement as of December 31:

	2021		
	Current	**Non-Current**	**Total**
	$	**$**	**$**
Novo Amendment	**4,791**	**23**	**4,814**
CH Agreement	**24**	**1,334**	**1,358**
NK License Agreement	**—**	**136**	**136**
Total	**4,815**	**1,493**	**6,308**

	2020		
	Current	**Non-Current**	**Total**
	$	**$**	**$**
Novo Amendment	2,193	3,289	5,482

(in thousands of US dollars, except share and per share data and where otherwise noted)

Total	2,193	3,289	5,482

The following table provides a summary of revenue recognized for the Strongbridge agreement and Novo Amendment:

	Years ended December 31,		
	2021	2020	2019
	$	$	$
License fee associated with the Strongbridge Agreement	—	68	74
License fee associated with the Novo Amendment (of which $1,670 (2020 - $264 and 2019 - $nil) in deferred revenue was recognized)	**1,670**	843	—
Development services associated with Novo Amendment	**3,337**	—	—
Product sales associated with Novo Supply Agreement (of which $nil (2020 - $852 and 2019 - $nil) in deferred revenue was recognized for prepayments received from Novo)	—	2,370	129
Royalties associated with the Strongbridge Agreement	—	56	45
Royalties associated with the Novo Amendment	**68**	11	—
Supply chain revenue associated with the Novo Supply Agreement (of which $nil (2020 - $67 and 2019 - $nil) in deferred revenue was recognized upon sale of Macrilen™ to Novo)	**185**	304	284
Total	**5,260**	3,652	532

As of December 31, 2021, the Company had $132 in contract assets associated with the Novo Amendment which is presented in other receivables in the Company's consolidated statement of financial position (note 7).

6. Cash and cash equivalents

	December 31,	
	2021	2020
	$	$
Cash on hand and balances with banks	**55,600**	23,920
Interest-bearing deposits with maturities of three months or less	**9,700**	351
	65,300	24,271

7. Trade and other receivables

	December 31,	
	2021	2020
	$	$
Trade accounts receivable (net of expected credit losses of $55 (2020 - $55))	**877**	1,190
Value added tax	**372**	468
Other receivables	**65**	23
	1,314	1,681

See also note 24 - Financial instruments and financial risk management for discussion of credit losses.

8. Inventory

	December 31,	
	2021	2020
	$	$
Work in process	**73**	21
	73	21

The Company recognized $nil of inventory costs and $nil as impairment in inventory in the consolidated statement of comprehensive loss for the year ended December 31, 2021 (2020 - $1,980 and $131, respectively and 2019 - $101 and $106, respectively).

9. Prepaid expenses and other current assets

	December 31,	
	2021	2020
	$	$
Prepaid insurance	**421**	1,021

(in thousands of US dollars, except share and per share data and where otherwise noted)

Prepaid research and development	**1,329**	—
Other	**22**	19
	1,772	1,040

10. Restricted cash equivalents

The Company had restricted cash equivalents amounting to $335 at December 31, 2021 (2020 - $338). These balances consist of certificates of deposit that are used as collateral for corporate credit cards and leases.

11. Property, plant and equipment

Components of the Company's property, plant and equipment are summarized below.

	Cost				
	Equipment	**Furniture and fixtures**	**Computer equipment**	**Leasehold improvements**	**Total**
	$	**$**	**$**	**$**	**$**
At January 1, 2020	422	7	314	34	777
Disposals / Retirements	(245)	(7)	(3)	(38)	(293)
Impact of foreign exchange rate changes	38	—	24	4	66
At December 31, 2020	**215**	**—**	**335**	**—**	**550**
Additions	**6**	**—**	**24**	**—**	**30**
Disposals / Retirements	**(5)**	**—**	**(69)**	**—**	**(74)**
Impact of foreign exchange rate changes	**(17)**	**—**	**(22)**	**—**	**(39)**
At December 31, 2021	**199**	**—**	**268**	**—**	**467**

	Accumulated Depreciation				
	Equipment	**Furniture and fixtures**	**Computer equipment**	**Leasehold improvements**	**Total**
	$	**$**	**$**	**$**	**$**
At January 1, 2020	400	7	307	28	742
Disposals / Retirements	(247)	(7)	(3)	(38)	(295)
Depreciation expense	6	—	3	—	9
Impact of foreign exchange rate changes	40	—	22	10	72
At December 31, 2020	**199**	**—**	**329**	**—**	**528**
Disposals / Retirements	**(5)**	—	**(69)**	—	**(74)**
Depreciation expense	**4**	—	**5**	—	**9**
Impact of foreign exchange rate changes	**(17)**	—	**(21)**	—	**(38)**
At December 31, 2021	**181**	**—**	**244**	**—**	**425**

	Carrying amount				
	Equipment	**Furniture and fixtures**	**Computer equipment**	**Leasehold improvements**	**Total**
	$	**$**	**$**	**$**	**$**
At December 31, 2020	16	—	6	—	22
At December 31, 2021	**18**	—	**24**	—	**42**

12. Right of use assets

	Building	**Vehicles and equipment**	**Total**
	$	**$**	**$**
Cost			
At January 1, 2020	757	106	863
Modification of building lease	(259)	—	(259)
Additions	—	7	7
Disposals	—	(21)	(21)
Impact of foreign exchange rate changes	48	2	50
At December 31, 2020	**546**	**94**	**640**
Additions	**16**	—	**16**
Modification of building lease	**109**	—	**109**
Impact of foreign exchange rate changes	**(48)**	**(7)**	**(55)**
At December 31, 2021	**623**	**87**	**710**

	Building	**Vehicles and equipment**	**Total**
	$	**$**	**$**
Accumulated Depreciation			
At January 1, 2020	242	39	281
Disposals	—	(21)	(21)
Depreciation	180	23	203
Impact of foreign exchange rate changes	15	5	20
At December 31, 2020	**437**	**46**	**483**
Depreciation	**94**	**26**	**120**

(in thousands of US dollars, except share and per share data and where otherwise noted)

Impact of foreign exchange rate changes	(38)	(5)	(43)
At December 31, 2021	493	67	560

	Building $	Vehicles and equipment $	Total $
Carrying amount			
As of December 31, 2020	109	48	157
As of December 31, 2021	130	20	150

Effective August 25, 2021, the Company and its landlord mutually agreed to a one-year extension to its existing building lease agreement for its German subsidiary, continuing such terms until March 31, 2023, resulting in a modification being recorded to the building right of use asset in the amount of $109. Upon the renegotiation of the building lease agreement completed on April 30, 2020, a modification was recorded to the building right of use asset in the amount of $259, representing the reduction in the square footage leased from the landlord. Also see note 17 - Lease liabilities.

13. Identifiable intangible assets

Changes in the carrying value of the Company's identifiable intangible assets are summarized below.

	Year ended December 31, 2021			Year ended December 31, 2020		
	Cost $	Accumulated amortization $	Carrying value $	Cost $	Accumulated amortization $	Carrying value $
Balances – Beginning of the year	35,020	(34,961)	59	31,422	(31,382)	40
Additions	609	—	609	34	—	34
Amortization expense	—	(16)	(16)	—	(20)	(20)
Impact of foreign exchange rate changes	(3,218)	3,191	(27)	3,564	(3,559)	5
Balances – End of the year	32,411	(31,786)	625	35,020	(34,961)	59

During 2021, the Company recorded additions of $609, for separately identified intangibles related to upfront payments under certain license agreements with the University of Wuerzburg €400 ($471) and the University of Sheffield £100 ($138). These intangible assets were not subject to amortization in the year ended December 31, 2021 as they are not ready for their intended use. Amortization of intangible assets with finite lives of $16 (2020 - $20 and 2019 - $20) is presented in research and development expenses.

Cetrotide

On August 10, 2021, the Company entered into a trademark maintenance and assignment option agreement with ARES Trading SA, a subsidiary of Merck KGaA ("Merck"), with respect to the trademarks owned by the Company on Cetrotide® (cetrorelix acetate for injection), a luteinizing hormone-releasing hormone antagonist approved for therapeutic use as part of in vitro fertilization programs in women undergoing infertility treatment (the "Cetrotide Agreement"). The Company had transferred all Cetrotide activities to Merck in 2013 via a license and supply agreement ("LSA").

Pursuant to the Cetrotide Agreement, the Company has granted to Merck the exclusive option to acquire any and all rights in the Cetrotide trademarks at the end of the term of the LSA (the "Option"), which currently is May 2029 (the "Transfer Date"), when, as agreed, the Company will convey and assign to Merck all rights and interest in, as well as title to, the Cetrotide trademarks. The transfer of the trademarks on the Transfer Date shall constitute a sale, after which the Company will no longer have any ownership in or obligations related to the Cetrotide trademarks.

As consideration for having been granted the Option, Merck has agreed to pay the Company a total of $566 (€0.5 million) a portion of which is to be calculated as a reimbursement of all internal and external trademark fees incurred by the Company for all years beginning with 2019 until the Transfer Date. If the Company is not able to transfer the trademarks to Merck on the Transfer Date, all consideration paid by Merck to the Company through the Transfer Date shall be refunded to Merck, and all rights associated with the Trademarks shall revert back to the Company.

The carrying value of the trademarks underlying Cetrotide is $nil and the Company received proceeds of $98 through December 31, 2021. Any proceeds that are received pursuant to the Cetrotide Agreement have been or will be recorded as a deferred gain in the Company's consolidated statement of financial position. The Company will recognize the entirety of the gain on the Transfer Date to the extent that the transfer is successful.

14. Goodwill

	Cost $	Accumulated impairment loss $	Carrying amount $
Balances at January 1, 2020	8,050	—	8,050
Impact of foreign exchange rate changes	765	—	765

(in thousands of US dollars, except share and per share data and where otherwise noted)

Balances at December 31, 2020	**8,815**	**—**	**8,815**
Impact of foreign exchange rate changes	**(685)**	**—**	**(685)**
Balances at December 31, 2021	**8,130**	**—**	**8,130**

Management's evaluation of impairment in goodwill is based on fair value less costs of disposal based on the Company's market capitalization at December 31, 2021, including a control premium, less estimated cost of disposal of approximately $1,774. There was no impairment assessed at December 31, 2021.

15. Payables and accrued liabilities

	December 31,	
	2021	**2020**
	$	**$**
Trade accounts payable	**934**	1,187
Accrued research and development costs	**531**	23
Salaries, employment taxes and benefits	**596**	474
Other accrued liabilities	**611**	515
	2,672	2,199

16. Provisions

	Cetrotide onerous contracts	**German restructuring: severance**	**Total**
	$	**$**	**$**
Balance at January 1, 2020	396	330	726
Utilization of provision	(93)	(323)	(416)
Change in the provision	33	—	33
Unwinding of discount and impact of foreign exchange rate changes	35	(7)	28
Balance at December 31, 2020	**371**	**—**	**371**
Utilization of provision	**(90)**	**—**	**(90)**
Change in the provision	**23**	**—**	**23**
Unwinding of discount and impact of foreign exchange rate changes	**(27)**	**—**	**(27)**
Balance at December 31, 2021	**277**	**—**	**277**
Less: current portion	**34**	**—**	**34**
Non-current portion	**243**	**—**	**243**

In 2013, the Company recognized a provision for certain non-cancellable contracts related to the Cetrotide activities, discussed in note 13 – Identifiable intangible assets, that were deemed onerous. The provisions for onerous contracts represent the present value of estimated unavoidable future royalty and patent costs associated with the intellectual property underlying Cetrotide.

On June 6, 2019, the Company announced that it was reducing the size of its German workforce to more closely reflect the Company's ongoing commercial activities. This restructuring was completed on January 31, 2020.

17. Lease liabilities

	Years Ended December 31,	
	2021	**2020**
	$	**$**
Balance – Beginning of period	**184**	903
Additions	**15**	7
Interest paid as charged to comprehensive loss as other finance costs	**(7)**	(19)
Payment against lease liabilities	**(127)**	(265)
Modification of lease liability	**103**	(463)
Impact of foreign exchange rate changes	**(7)**	21
Balance – End of period	**161**	184
Current lease liabilities	**130**	135
Non-current lease liabilities	**31**	49

Effective March 31, 2020, the Company and its landlord mutually agreed to modify its existing building lease agreement for its German subsidiary, extended the lease term for its portion of the reduced space from April 30, 2021 to March 31, 2022 and retained one sub-lessee until April 30, 2021. On May 5, 2020, the sub-lessee terminated its lease with the Company effective April 30, 2020. Concurrent with this termination, the Company was able to renegotiate a further reduction in leased square footage with

(in thousands of US dollars, except share and per share data and where otherwise noted)

the landlord, which resulted in a lease modification and a resulting gain of $34 which was recorded in the consolidated statement of comprehensive loss. Effective August 25, 2021, the Company and its landlord mutually agreed to a one-year extension to its existing building lease agreement for its German subsidiary, continuing such terms until March 31, 2023, resulting in a lease modification and a resulting gain of $nil (2020 - $34) which was recorded in the consolidated statement of comprehensive loss.

Future lease payments as of December 31, 2021 are as follows:

	$
Less than 1 year	**130**
1 – 3 years	**31**
Total	**161**

18. Employee future benefits

AEZS Germany provides unfunded and partially funded defined benefit multi-employer pension plans, namely the DUPK pension plan and the RUK 1990 and 2006 pension plans, (the "Pension Benefit Plans") and unfunded post-employment benefit plans for certain groups of employees. Provisions for pension obligations are established for benefits payable in the form of retirement, disability and surviving dependent pensions. The Company also provides a defined contribution plans to some of its employees.

The Pension Benefit Plans are final salary pension plans, which provide benefits to members (or to their surviving dependents) in the form of a guaranteed level of pension payable for life. The level of benefits provided depends on the member's length of service and on the member's base salary in the final years leading up to retirement. Current pensions vary in accordance with applicable statutory requirements, which foresee an adjustment every three years on an individual basis that is based on inflationary increases or in relation to salaries of comparable groups of active employees in the Company. Generally, the Company has not authorized actual pension increases, given the economic situation of the Company, and any legally required increases have been funded from the related pension surpluses. In 2020, the Company became responsible for pension increases for one of its Pension Benefit Plans and, in 2021, the Company became additionally responsible for pension increases for two of its Pension Benefit Plans.

An increase may be denied by the Company if the Company's financial situation does not allow for an increase in pensions. As most German pension plans grant lifelong pension benefits, rising life expectancy could increase the Company's benefit obligation. These plans are fully or partially unfunded and the Company meets benefit payment obligations as they fall due.

In the past, certain Pension Benefit Plans were accounted for as defined contribution plans as sufficient information was not available for the Company to account for its proportionate share of the defined benefit obligation, plan assets and cost associated with such Pension Benefit Plans. During 2021, additional information became available to the Company, which began to account for its proportionate share of the defined benefit obligation and plan assets amounting to $16,137 and $11,963, respectively, which amounts were recorded through other comprehensive income.

The change in the Company's accrued benefit obligations associated with the Employee future obligation is summarized for the year ended December 31, 2021:

	Pension Benefit Plans	Other benefit plan	Total
	$	$	$
Change in benefit obligation:			
Balances – Beginning of the year	**15,341**	**94**	**15,435**
Current service cost	**60**	**5**	**65**
Interest cost	**87**	**1**	**88**
Actuarial loss (gain) arising from changes in financial assumptions	**(1,138)**	**8**	**(1,130)**
Past service cost associated with multi-employer plan	**16,137**	**—**	**16,137**
Actuarial loss arising from change in current assumptions on funding of future pension increases	**556**	**—**	**556**
Benefits paid	**(509)**	**(2)**	**(511)**
Impact of foreign exchange rate changes	**(1,221)**	**(7)**	**(1,228)**
Balances – End of the year	**29,313**	**99**	**29,412**
Obligation is attributable to:			
Active members	**4,242**	**99**	**4,341**
Vested terminees	**13,799**	**—**	**13,799**
Retirees	**11,272**	**—**	**11,272**
	29,313	**99**	**29,412**
Change in plan assets			
Balances – Beginning of the year	**—**	**—**	**—**
Presentation of plan assets as of December 31, 2021	**11,963**	**—**	**11,963**
Impact of foreign exchange rate changes	**(36)**	**—**	**(36)**
Balances – End of the year	**11,927**	**—**	**11,927**
Net liability of the unfunded plans	12,650	99	12,749
Net liability of the funded plans	4,736	—	4,736
Net amount recognized as Employee future benefits	**17,386**	**99**	**17,485**
Amounts recognized:			
In net loss	**(147)**	**(6)**	**(153)**
In other comprehensive (loss)	**2,407**	**1**	**2,408**

The cumulative amount of actuarial net losses recognized in other comprehensive loss as of December 31, 2021 is $9,385 ($5,793 as of December 31, 2020 and $5,143 as of December 31, 2019).

The change in the Company's accrued benefit obligations associated with the Employee future benefits is summarized for the years ended December 31, 2020 and 2019:

	Pension Benefit Plans Years ended December 31,		Other benefit plans Years ended December 31,	
	2020	**2019**	**2020**	**2019**
	$	**$**	**$**	**$**
Balances – Beginning of the year	**13,704**	13,100	**84**	105
Current service cost	**50**	41	**4**	8
Interest cost	**162**	239	**1**	2
Actuarial loss (gain) arising from changes in financial assumptions	**650**	1,068	**1**	(28)
Benefits paid	**(529)**	(483)	**(3)**	—
Impact of foreign exchange rate changes	**1,304**	(261)	**7**	(3)
Balances – End of the year	**15,341**	13,704	**94**	84
Amounts recognized:				
In net loss	**(212)**	(280)	**(6)**	18
In other comprehensive loss	**(1,954)**	(807)	**(7)**	3

The Company's proportionate share of the multi-employer pension plan assets as of December 31, 2021 is as follows:

	$
Quoted equities (Level 1)	**826**
Quoted bonds (Level 1)	**7,445**
Cash (Level 1)	**67**
Real estate (Level 3)	**2,207**
Other (Level 3)	**1,382**
Total	**11,927**

The significant actuarial assumptions applied to determine the Company's accrued benefit obligations are as follows:

	Pension Benefit Plans Years ended December 31,			Other benefit plans Years ended December 31,		
Actuarial assumptions	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**
	%	**%**	**%**	**%**	**%**	**%**
Discount rate	**1.10**	0.60	1.10	**1.10**	0.60	1.90
Pension benefits increase	**0.50**	0.50	1.50	**0.50**	0.50	1.50
Rate of compensation increase	**2.50**	2.00	2.00	**2.50**	2.00	2.00

During 2020, management expanded its assumptions of possible future compensation scenarios from its current three-year forecast to a thirty-year forecast and from using an expected average inflation rate to an expected inflation rate. Additionally, the Company included the potential claims of retirees within the thirty-year time horizon. The Company expects to invest in its R&D opportunities, which would not change its economic situation in the short term but, if successful, does allow for scenarios that such pension increases would be owing. Such potential future pension compensation obligations have been included in the revised forecast assumptions, at a rate of 0.50%, in addition to an expected inflation rate of 1.75%. These assumptions remain unchanged in 2021.

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As of December 31, 2021 and December 31, 2020 and for the years ended
December 31, 2021, 2020 and 2019
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Assumptions regarding future mortality are set based on actuarial advice in accordance with published statistics and experience in Germany. These assumptions translate into an average remaining life expectancy in years for a pensioner retiring at age 65:

	2021	**2020**	**2019**
Retiring at the end of the reporting period:			
Male	**21**	20	20
Female	**24**	24	24
Retiring 20 years after the end of the reporting period:			
Male	**28**	28	28
Female	**31**	31	31

The most recent actuarial reports give effect to the pension and post-employment benefit obligations as of December 31, 2021. The next actuarial reports are planned for December 31, 2022.

In accordance with the assumptions used as of December 31, 2021, undiscounted defined pension benefits expected to be paid are as follows:

	Total
	$

(in thousands of US dollars, except share and per share data and where otherwise noted)

2022	801
2023	823
2024	853
2025	868
2026	894
Thereafter	32,685
	36,924

The weighted average duration of the defined benefit obligation is 16.0 years.

If variations in the following assumptions had occurred during 2021, the impact on the Company's pension benefit obligation of $29,313 as of December 31, 2021 would have been as follows:

Assumption	Increase	Decrease
Change in discount rate of 0.25%	(1,252)	1,338
Change in salary rate of 0.25%	18	(18)
Change in pension rate assumption by 0.25%	905	(867)
Change mortality by one year	968	(974)

Total expenses for the defined benefit plan that the Company accounts for as a defined contribution plan amounted to approximately $45 for the year ended December 31, 2021 (2020 - $38 and 2019 - $54).

19. Share capital, warrants and other capital

(a) Share capital

The Company has an unlimited number of authorized common shares (being voting and participating shares) with no par value, as well as an unlimited number of preferred, first and second ranking shares, issuable in series, with rights and privileges specific to each class, with no par value.

2021

During the year ended December 31, 2021, certain warrant holders exercised outstanding warrants to purchase 35,111,187 of our common shares for gross proceeds of approximately $20.1 million (such exercises, the "2021 Warrant Exercises").

On February 19, 2021, the Company completed an underwritten public offering of 20,509,746 common shares at $1.45 per common share, resulting in aggregate gross proceeds of $29,739, less underwriting discounts, commissions and offering expenses of $2,837 (the "February 2021 Financing"). The Company also granted to the underwriter and placement agent (the "Underwriter"), a 30-day over-allotment option to purchase up to 3,076,461 additional common shares at a price of $1.45 per common share (the "Underwriter Option"). Additionally, the Company issued warrants underlying 1,435,682 common shares to the Underwriter, with each warrant bearing an exercise price of $1.8125 (the "February 2021 Placement Agent Warrants"). The February 2021 Placement Agent Warrants expire on February 17, 2026.

On February 22, 2021, the Underwriter exercised the Underwriter Option and received 3,076,461 common shares in exchange for gross proceeds to the Company of $4,461. Upon exercise of the Underwriter Option, the Underwriter also received an additional 215,352 February 2021 Placement Agent Warrants.

Aggregate gross proceeds received in connection with the February 2021 Financing totaled $34,200, less cash transaction costs of $3,221 and non-cash transaction costs, which represent the issue-date fair value of the February 2021 Placement Agent Warrants, of $1,897.

2020

On February 21, 2020, the Company closed a registered direct offering for 3,478,261 common shares, at a purchase price of $1.29 per share, priced at-the-market. Additionally, 2,608,696 investor warrants were issued at an exercise price of $1.20 per common share and 243,478 broker warrants were issued at an exercise price of $1.62 per common share. The net cash proceeds to the Company from the offering totaled $3,900. The gross proceeds of $4,500 was allocated as $2,325 to warrant liability based on the ascribed fair value and the remaining gross proceeds of $2,174 were allocated to share capital. The transaction costs of $600 were allocated between share capital and warrants based on their relative fair values. The fair value of the share capital was recorded within equity net of the allocated transaction costs. The transaction costs of $311 allocated to the warrant liability were recorded as expense in the consolidated statement of comprehensive loss.

On July 7, 2020, the Company closed a public offering of 26,666,666 units at a price of $0.45 per unit, for net cash proceeds to the Company of $10,596. Each unit contained one common share (or common share equivalent in lieu thereof) and one investor warrant to purchase one common share. In total, 26,666,666 common shares, 26,666,666 investor warrants at an exercise price of $0.45 per share expiring July 7, 2025 (the "July 2020 Investor Warrants") and 1,866,667 placement agent warrants with an exercise price of $0.5625 per share, expiring July 1, 2025 (the "July 2020 Placement Agent Warrants") were issued. As these warrants were registered and can be settled for a fixed number of the Company's underlying common shares, the warrants meet the requirements of the fixed-for-fixed rule and have been classified as equity.

Because the warrants were classified as equity, the gross proceeds of $12,000 were allocated as $6,308 to share capital and $5,691 to warrants based on their relative fair values. The transaction costs of $1,420 were reduced from share capital and warrants in the amounts of $754 and $666, respectively, and charged to share issuance costs

(in thousands of US dollars, except share and per share data and where otherwise noted)

and classified as equity. The values ascribed to the share capital and warrants were recorded within equity, net of the allocated transaction costs.

On August 5, 2020, the Company closed a securities purchase agreement of 12,427,876 common shares at a purchase price of $0.56325 per common share. The offering resulted in gross proceeds of $7,000. Concurrently, the Company issued to the purchasers unregistered warrants to purchase up to an aggregate of 9,320,907 common shares. The warrants are exercisable for a period of five and one-half years, exercisable immediately following the issuance date and have an exercise price of $0.47 per common share. In addition, the Company issued unregistered warrants to the placement agent to purchase up to an aggregate of 869,952 common shares, with an exercise price of $0.7040625 per share and an expiration date of August 3, 2025. The gross proceeds of $7,000 was allocated as $3,944 to warrant liability based on the ascribed fair value and the remaining gross proceeds of $3,056 were allocated to share capital. The transaction costs of $748 were allocated between share capital and warrants based on their relative fair values. The fair value of the share capital was recorded within equity net of the allocated transaction costs of $327. The transaction costs of $421 allocated to the warrant liability were recorded as expense in the consolidated statement of comprehensive loss.

2019

On September 20, 2019, the Company entered into a securities purchase agreement with US institutional investors to purchase $4,988 (before total transaction costs of $795) of its common shares in a registered direct offering and warrants with a cashless exercise feature to purchase common shares in a concurrent private placement (together, the "Offering"). The combined purchase price for one common share and one warrant was $1.50. Under the terms of the securities purchase agreement, the Company sold 3,325,000 common shares. The gross proceeds of $4,988 was allocated as $3,457 to warrants based on the ascribed fair value and the remaining gross proceeds of $1,531 were allocated to share capital. The transaction costs of $795 were allocated between share capital and warrants based on their relative fair values. The fair value of the share capital was recorded within equity net of the allocated transaction costs. The transaction costs of $550 allocated to the warrant liability were recorded as expense in the consolidated statements of comprehensive loss.

Shareholder rights plan

Effective May 8, 2019, the shareholders re-approved the Company's shareholder rights plan (the "Rights Plan") that provides the board of directors and the Company's shareholders with additional time to assess any unsolicited take-over bid for the Company and, where appropriate, to pursue other alternatives for maximizing shareholder value. Under the Rights Plan, one right has been issued for each currently issued common share, and one right will be issued with each additional common share that may be issued from time to time.

(b) Warrants

	Number	Weighted average exercise price ($)	$
Balance – January 1, 2020	—	—	—
Warrant liability reclassified to equity	16,368,033	0.8556	7,377
Warrants issued as equity	28,533,333	0.4574	5,025
Balance – December 31, 2020	44,901,366	0.6025	12,402
February 2021 Placement Agent Warrants	**1,651,034**	**1.8125**	**1,897**
Warrants exercised	**(35,111,187)**	**0.5725**	**(9,746)**
Allocation of transaction costs to share capital	—	—	**532**
Balance – December 31, 2021	**11,441,213**	**0.8668**	**5,085**

i) Warrants granted in 2021

The table presented below shows the inputs and assumptions applied to the Black-Scholes option pricing model in order to determine the fair value of the February 2021 Placement Agent Warrants:

	Number of equivalent shares #	Market value per share price $	Weighted average exercise price $	Risk-free annual interest rate (i)	Expected volatility (ii)	Expected life (years) (iii)	Expected dividend yield (iv)
February 2021 Placement Agent Warrants issued on February 19, 2021	1,435,682	1.48	1.8125	0.58734%	119.18%	4.99	0.00%
February 2021 Placement Agent Warrants issued on February 22, 2021	215,352	1.48	1.8125	0.58544%	119.57%	4.98	0.00%

(i) Based on United States Treasury Government Bond interest rates with a term that is consistent with the expected life of the warrants.
(ii) Based on the historical volatility of the Company's stock price over the most recent period consistent with the expected life of the warrants.
(iii) Based upon time to expiry from the issuance date.
(iv) The Company has not paid dividends and it does not intend to pay dividends in the foreseeable future.

ii) Warrants exercised in 2021

(in thousands of US dollars, except share and per share data and where otherwise noted)

During 2021, certain warrant holders exercised their warrants as follows:

	Warrants exercised (number of underlying common shares)	Exercise Price	Aggregate proceeds to the Company
September 2019 Investor warrants	2,000,000	$ 1.65	$ 3,300
February 2020 Investor warrants	1,739,130	1.20	2,087
July 2020 Investor warrants	21,045,555	0.45	9,471
July 2020 Placement Agent warrants	1,866,667	0.5625	1,050
August 2020 Investor warrants	7,589,883	0.47	3,567
August 2020 Placement Agent warrants	869,952	0.7040625	612
	35,111,187		$ 20,087

iii) Warrant liability reclassified to equity in 2020

The Company had issued 3,325,000 unregistered investor warrants in the September 2019 closed direct offering (the "September 2019 Warrants") as well as 2,608,696 unregistered investor warrants (the "February 2020 Investor Warrants") and 243,478 unregistered placement agent warrants (the "February 2020 Placement Agent Warrants") in the February 2020 closed direct offering transaction. The terms of the warrant agreement stated that if the warrants remained unregistered, the warrant holder could elect to exercise the warrants by way of a cashless exercise. This violated the fixed-for-fixed criterion due to the cashless exercise option, and accordingly these warrants had been accounted for as a liability.

Effective June 16, 2020, the Company registered the common shares underlying these warrants by way of a registration statement which eliminated the cashless exercise option on the warrants, on a one-for-one basis. Accordingly, as of June 16, 2020, the warrant liability was remeasured at fair value using the Black-Scholes option pricing model, with the amount of the remeasurement loss recognized in the consolidated statement of comprehensive loss. The carrying value of the warrants was then reclassified from warrant liability to other capital within equity.

The Company also issued 9,320,907 unregistered investor warrants (the "August 2020 Investor Warrants") and 869,952 unregistered placement agent warrants (the "August 2020 Placement Agent Warrants") in the August 2020 registered direct offering transaction. The terms of the warrant agreement stated that if the warrants remained unregistered, the warrant holder could elect to exercise the warrants by way of a cashless exercise. This violated the fixed-for-fixed criterion due to the cashless exercise option, and accordingly these warrants were accounted for as a liability on issuance and measured at fair value using the Black-Scholes option pricing model. Effective September 14, 2020, the Company registered the common shares underlying these warrants by way of a registration statement which eliminated the cashless exercise option on the warrants, on a one-for-one basis. Accordingly, as of September 14, 2020, the warrant liability was remeasured at fair value using the Black-Scholes option pricing model, with the amount of the remeasurement loss recognized in the consolidated statement of comprehensive loss. The carrying value of the warrants was then reclassified from warrant liability to other capital within equity.

The table presented below shows the inputs and assumptions applied to the Black-Scholes option pricing model in order to determine the fair value of such warrants as of the noted dates of reclassification:

	Number of equivalent shares	Market value per share price ($)	Weighted average exercise price ($)	Risk-free annual interest rate (i)	Expected volatility (ii)	Expected life (years) (iii)	Expected dividend yield (iv)
As of June 16, 2020:							
September 2019 Warrants	3,325,000	0.96	1.65	0.30%	104.5%	4.3	0.00%
February 2020 Investor Warrants	2,608,696	0.96	1.20	0.36%	119.3%	5.2	0.00%
February 2020 Placement Agent Warrants	243,478	0.96	1.62	0.32%	113.3%	4.7	0.00%
As of September 14, 2020:							
August 2020 Investor Warrants	9,320,907	0.38	0.47	0.31%	120.5%	5.4	0.00%
August 2020 Placement Agent Warrants	869,952	0.38	0.704063	0.26%	114.6%	4.9	0.00%

(i) Based on United States Treasury Government Bond interest rates with a term that is consistent with the expected life of the warrants.
(ii) Based on the historical volatility of the Company's stock price over the most recent period consistent with the expected life of the warrants, as well as on future expectations.
(iii) Based upon time to expiry from the reporting period date.
(iv) The Company has not paid dividends and it does not intend to pay dividends in the foreseeable future.

iv) Warrants issued as equity in 2020

On July 7, 2020, the Company closed a public offering of 26,666,666 units at a price of $0.45 per unit, for net cash proceeds to the Company of $10,596. Each unit contained one common share (or common share equivalent in lieu thereof) and one investor warrant to purchase one common share. In total, 26,666,666 common shares, 26,666,666 July 2020 Investor Warrants and 1,866,667 July 2020 Placement Agent Warrants were issued. As these warrants were registered and can be settled for a fixed number of

(in thousands of US dollars, except share and per share data and where otherwise noted)

the Company's underlying common shares, the warrants meet the requirements of the fixed-for-fixed rule were classified as equity.

The table presented below shows the inputs and assumptions applied to the Black-Scholes option pricing model in order to determine the fair value of such warrants:

	Number of equivalent shares	Market value per share price	Weighted average exercise price	Risk-free annual interest rate	Expected volatility	Expected life (years)	Expected dividend yield
		($)	($)	(i)	(ii)	(iii)	(iv)
July 2020 Investor Warrants	26,666,666	0.52	0.457	0.2879%	123.1048%	5	0.00%
July 2020 Placement Agent Warrants	1,866,667	0.52	0.5625	0.2879%	123.1048%	5	0.00%

(i) Based on United States Treasury Government Bond interest rates with a term that is consistent with the expected life of the warrants.
(ii) Based on the historical volatility of the Company's stock price over the most recent period consistent with the expected life of the warrants, as well as on future expectations.
(iii) Based upon time to expiry from the reporting period date.
(iv) The Company has not paid dividends and it does not intend to pay dividends in the foreseeable future.

(c) Other capital

Long-term incentive plan

At the 2018 annual and special meeting of shareholders, the Company's shareholders approved the adoption of the 2018 long-term incentive plan (the "LTIP"), which allows the Board of Directors to issue up to 11.4% of the total issued and outstanding common shares at any given time to eligible individuals at an exercise price to be determined by the Board of Directors at the time of the grant, subject to a ceiling, as stock options, stock appreciation rights, stock awards, deferred stock units ("DSUs"), performance shares, performance units, and other stock-based awards. This LTIP replaces the stock option plan (the "Stock Option Plan") for its directors, senior executives, employees and other collaborators who provide services to the Company. Options granted under the LTIP expire after seven years following the date of grant, vest over three years, beginning one year after date of grant. The Company's Board of Directors amended the Stock Option Plan on March 20, 2014 and the Company's Shareholders approved, ratified and confirmed the Stock Option Plan on May 10, 2016. Options granted under the Stock Option Plan prior to the 2014 amendment expire after a maximum period of 10 years following the date of grant. Options granted after the 2014 amendment expire after a maximum period of seven years following the date of grant.

The Company settles stock options exercised through the issuance of new common shares as opposed to purchasing common shares on the market to settle stock option exercises.

As of December 31, 2021, the total compensation cost related to unvested US dollar stock options not yet recognized amounted to $96 (2020 - $43 and 2019 - $101). This amount is expected to be recognized over a weighted average period of 1.54 years (2020 - 1.43 years and 2019 1.21 years).

	Year ended December 31, 2021		
	Stock options (Number)	Weighted average exercise price ($)	DSUs (Number)
Balance – January 1, 2021	506,400	1.44	173,000
Granted	580,000	0.42	280,000
Expired	(32)	590.25	—
Exercised	—	—	(30,000)
Balance – December 31, 2021	**1,086,368**	**0.88**	**423,000**

	Year ended December 31, 2019				
	US$ Stock options (Number)	Weighted average exercise price (US$)	DSUs (Number)	CAN$ Stock options (Number)	Weighted average exercise price (CAN$)
Balance – Beginning of year	727,816	4.07	161,000	869	743.56
Granted	185,000	1.07	150,000	—	—
Exercised	(64,850)	2.75	(99,000)	—	—
Canceled/Forfeited	(6,000)	13.39	—	—	—
Expired	(100,850)	2.24	—	(428)	570.00
Balance – End of year	741,116	3.61	212,000	441	912.00

	Year ended December 31, 2020				
	US$ Stock options (Number)	Weighted average exercise price (US$)	DSUs (Number)	CAN$ Stock options (Number)	Weighted average exercise price (CAN$)
Balance – Beginning of year	741,116	3.61	212,000	441	912.00
Granted	180,000	0.37	120,000	—	—
Exercised	—	—	(159,000)	—	—
Canceled/Forfeited	(330,350)	2.56	—	—	—

(in thousands of US dollars, except share and per share data and where otherwise noted)

Expired	(84,366)	2.14	—	(441)	912.00
Balance – End of year	506,400	1.44	173,000	—	—

Fair value input assumptions for US dollar stock option grants

The table below shows the assumptions, or weighted average parameters, applied to the Black-Scholes option pricing model in order to determine share-based compensation costs over the life of the awards.

		Years ended December 31,		
		2021	**2020**	**2019**
Expected dividend yield	(a)	**0.00%**	0.00%	0.00%
Expected volatility	(b)	**115.80%**	112.50%	110.02%
Risk-free annual interest rate	(c)	**1.23%**	0.27%	1.86%
Expected life (years)	(d)	**5.71**	4.02	5.94
Weighted average share price		**$ 0.42**	$ 0.37	$ 2.00
Weighted average exercise price		**$ 0.42**	$ 0.37	$ 2.00
Weighted average grant date fair value		**$ 0.35**	$ 0.27	$ 2.00

(a) The Company has not paid dividends and it does not intend to pay dividends in the foreseeable future.

(b) Based on the historical volatility of the Company's stock price over the most recent period consistent with the expected life of the stock options, as well as on future expectations.

(c) Based on United States Treasury Government Bond interest rates with a term that is consistent with the expected life of the stock options.

(d) Based upon historical data related to the exercise of stock options, on post-vesting employment terminations and on future expectations related to exercise behavior.

	Options outstanding			Options exercisable		
Range of US dollar stock option exercise prices	**Number (#)**	**Weighted average remaining contractual life (years)**	**Weighted average exercise price ($)**	**Number (#)**	**Weighted average remaining contractual life (years)**	**Weighted average exercise price ($)**
0.37 to 0.50	760,000	6.72	0.41	60,006	5.95	0.37
0.51 to 1.78	160,000	4.91	0.91	106,672	4.91	0.90
1.79 to 3.14	85,000	3.21	2.08	76,667	3.06	2.07
3.15 to 217.00	81,368	1.70	3.95	81,368	1.70	3.95
	1,086,368	**5.81**	**0.88**	**324,713**	**3.86**	**1.84**

20. Operating expenses

The nature of the Company's operating expenses includes the following:

	Years ended December 31,		
	2021	**2020**	**2019**
	$	**$**	**$**
Key management personnel compensation[(1)]			
Salaries and short-term employee benefits	**1,646**	1,540	1,705
Consultant's fees	**163**	167	194
Termination benefits	**—**	—	503
Post-employment benefits, including defined contribution plan benefits of $33 in 2021, $33 in 2020 and $195 in 2019	**70**	86	257
Share-based compensation costs	**295**	160	784
	2,174	1,953	3,443
Other employees compensation:			
Salaries and short-term employee benefits	**1,160**	1,004	1,257
Post-employment benefits, including defined contribution plan benefits of $15 in 2021, $9 in 2020 and $25 in 2019	**139**	159	78
Share-based compensation costs	**16**	(99)	9

(in thousands of US dollars, except share and per share data and where otherwise noted)

	1,315	1,064	1,344
Cost of inventory used and services provided	**90**	2,186	309
Professional fees	**2,749**	1,969	2,599
Insurance	**1,077**	861	890
Third-party research and development	**5,047**	414	322
Consulting fees	**553**	587	144
Restructuring costs	**—**	—	507
Travel	**130**	66	154
Marketing services	**222**	39	18
Laboratory supplies	**114**	36	23
Other goods and services	**162**	72	137
Leasing costs, net of sublease receipts of $nil in 2021, $nil in 2020 and $214 in 2019	**112**	218	247
Modification of building lease	**—**	(219)	—
(Reversal) impairment of other asset and inventory	**—**	(8)	270
Depreciation and amortization of property, equipment and intangibles	**25**	29	37
Depreciation - right to use assets	**120**	203	278
Impairment of right of use asset	**—**	—	22
Operating foreign exchange losses (gains)	**41**	(112)	30
	10,442	6,341	5,987
	13,931	9,358	10,774

(1) Key management includes the Company's executive management team and directors.

Most of the employment agreements entered into between the Company and its executive officers include termination provisions, whereby the executive officers would be entitled to receive benefits that would be payable if the Company were to terminate the executive officers' employment without cause or if their employment is terminated following a change of control. Separation benefits generally are calculated based on an agreed-upon multiple of applicable base salary and incentive compensation and, in certain cases, other benefit amounts.

21. Supplemental disclosure of cash flow information

	Years ended December 31,		
	2021	**2020**	**2019**
	$	**$**	**$**
Changes in operating assets and liabilities:			
Trade and other receivables	**120**	(1,023)	(371)
Inventory	**(56)**	1,182	(971)
Prepaid expenses and other current assets	**(750)**	(702)	(170)
Payables and accrued liabilities	**634**	51	(615)
Income taxes payable	**(109)**	395	(188)
Deferred revenues	**3,010**	3,031	743
Provision for restructuring and other costs	**—**	—	(389)
Employee future benefits (note 18)	**(349)**	(532)	(483)
	2,500	2,402	(2,444)

22. Income taxes

Significant components of the current and deferred income tax recovery (expense) for the years ended December 31, 2021, 2020 and 2019 are as follows:

	Years ended December 31,		
	2021	**2020**	**2019**
	$	**$**	**$**
Current income tax recovery (expense)	**109**	(395)	188
Deferred tax:			
Origination and reversal of temporary differences	**1,291**	1,509	2,755
Change in unrecognized tax assets	**(1,291)**	(1,509)	(2,755)
Total income tax recovery (expense)	**109**	(395)	188

From time to time, the Company is subject to tax audits. While the Company believes that its filing positions are appropriate and supportable, periodically, certain matters are challenged by tax authorities. Although the Company believes its tax provisions are adequate, the final determination of tax audits and any related disputes could be materially different from historical income tax provisions and accruals. In 2020, AEZS Germany underwent a tax audit regarding the taxation years 2013 to 2016. As of December 31, 2021, the tax authorities concluded the audit for those years. The subsequent years remain unaudited, and the Company has accrued $115 as an uncertain tax provision for those years. In addition, as of December 31, 2021, AEZS Germany paid instalments in the amount of $1,605 for the 2021 tax year and $1,448 in estimated taxes payable for the 2020 tax year.

(in thousands of US dollars, except share and per share data and where otherwise noted)

The reconciliation of the combined Canadian federal and provincial corporate income tax rate to the income tax expense is provided below:

	Years ended December 31,		
	2021	**2020**	**2019**
Combined Canadian federal and provincial statutory income tax rate	**26.5%**	26.5%	26.5%

	Years ended December 31,		
	2021	**2020**	**2019**
	$	**$**	**$**
Income tax (expense) recovery based on combined statutory income tax rate	**2,246**	1,252	1,615
Change in unrecognized tax assets	**(1,291)**	(1,872)	(2,820)
Share issuance costs	**367**	363	65
Permanent difference attributable to the use of local currency for tax reporting	**—**	—	35
Change in enacted rates used	**—**	—	(27)
Impact of expiring tax credits	**(1,724)**	(481)	—
Provision to filed return adjustments	**151**	—	—
Permanent difference attributable to net change in fair value of warrant liability	**—**	304	1,197
Share-based compensation costs	**(82)**	(16)	(210)
Difference in statutory income tax rate of foreign subsidiaries	**226**	99	321
Uncertain tax position	**—**	(123)	—
Other	**216**	79	12
	109	(395)	188

(Loss) income before income taxes

(Loss) income before income taxes is attributable to the Company's tax jurisdictions as follows:

	Years ended December 31,		
	2021	**2020**	**2019**
	$	**$**	**$**
Germany	**(4,383)**	(2,042)	(6,010)
Canada	**(3,860)**	(2,463)	812
United States	**(234)**	(218)	(1,032)
	(8,477)	(4,723)	(6,230)

Significant components of deferred tax assets and liabilities are as follows:

	December 31,	
	2021	**2020**
	$	**$**
Deferred tax assets		
Operating losses carried forward	**205**	46
Intangible assets	**776**	1,318
	981	1,364
Deferred tax liabilities		
Accounts receivable	**375**	
Payables and accrued liabilities	**7**	126
Property, plant and equipment	**47**	49
Deferred revenues	**492**	1,073
Other	**60**	116
	981	1,364
	981	1,364
Deferred tax assets (liabilities), net	**—**	—

Significant components of deferred tax assets and losses are as follows:

(in thousands of US dollars, except share and per share data and where otherwise noted)

	December 31,	
	2021	2020
	$	$
Unrecognized deferred tax assets		
Deferred revenues and other provisions	**1,680**	1,494
Operating losses carried forward	**87,734**	89,144
Capital losses carried forward	**105**	—
SR&ED Pool	**9,138**	9,138
Unused tax credits	**2,945**	4,668
Employee future benefits	**3,396**	2,570
Property, plant and equipment	**523**	495
Intangible assets	—	541
Share issuance expenses	**1,110**	623
Other	**84**	—
	106,715	108,673
Unrecognized deferred tax assets	**106,715**	108,673

Deferred income tax assets are recognized to the extent that the realization of the related tax benefit through reversal of temporary differences and future taxable profits is probable. Based on the current forecasted future taxable profits and reversal of temporary differences, the company does not believe it will have sufficient future earnings to offset the deferred tax assets and has an unrecognized deferred tax asset balance of $106,715.

As at December 31, 2021, the Corporation has total accumulated non-capital losses of $77,867 federally and $76,545 provincially, which may be carried forward for twenty years and used to reduce taxable income in future years. The Corporation has not recognized deferred tax assets on any of the non-capital losses, due to the uncertainty that there will be sufficient taxable income or that the taxable temporary differences will be reversing in the same reporting period and jurisdiction. The losses will be expiring as follows:

	Canada	
	Federal	Provincial
	$	$
2028	8,054	6,668
2029	4,791	4,773
2030	4,104	4,089
2031	1,753	1,737
2032	4,250	4,250
2033	3,721	3,721
2034	4,153	4,153
2035	10,418	10,452
2036	10,592	10,592
2037	7,343	7,343
2038	6,557	6,557
2039	3,501	3,580
2040	3,808	3,808
2041	4,822	4,822
	77,867	76,545

The Company has non-refundable R&D investment tax credits of approximately $4,006 which can be carried forward to reduce Canadian federal income taxes payable and which expire at dates ranging from 2022 to 2035. Furthermore, the Company has unrecognized tax assets in respect of operating losses to be carried forward in Germany and in the US The federal tax losses amount to approximately $210,709 in Germany (€ 185,271) for which there is no expiry date, and to $4,793 in the US. The losses in the US will be expiring as follows:

	United States
	$
2028	369
2029	178
2034	151
2035	447
2036	195
2037	709
2038	1,224
2039	771
2040	515
2041	234
	4,793

The operating loss carryforwards and the tax credits claimed are subject to review, and potential adjustment, by tax authorities. Other deductible temporary differences for which tax assets have not been booked are not subject to a time limit, except for share issuance expenses which are amortizable over five years.

23. Capital disclosures

The Company's objective in managing capital, consisting of shareholders' equity, with cash and cash equivalents and restricted cash equivalents being its primary components, is to ensure sufficient liquidity to fund R&D costs, selling expenses, general and administrative expenses and working capital requirements. Over the past

(in thousands of US dollars, except share and per share data and where otherwise noted)

several years, the Company has raised capital via public and private equity offerings and issuances as its primary source of liquidity, as discussed in note 19 - share capital, warrants and other capital. The capital management objective of the Company remains the same as that in previous periods. The policy on dividends is to retain cash to keep funds available to finance the activities required to advance the Company's product development portfolio and to pursue appropriate commercial opportunities as they may arise.

The Company is not subject to any capital requirements imposed by any regulators or by any other external source.

24. Financial instruments and financial risk management

Financial assets and liabilities as of December 31, 2021 and December 31, 2020 are presented below.

December 31, 2021	Financial assets at amortized cost	Financial liabilities at amortized cost
	$	$
Cash and cash equivalents (note 6)	**65,300**	**—**
Trade and other receivables (note 7)	**1,314**	**—**
Restricted cash equivalents (note 10)	**335**	**—**
Payables and accrued liabilities (note 15)	**—**	**1,530**
Lease liability (note 17)	**—**	**161**
	66,949	**1,691**

December 31, 2020	Financial assets at amortized cost	Financial liabilities at amortized cost
	$	$
Cash and cash equivalents (note 6)	24,271	—
Trade and other receivables (note 7)	1,681	—
Restricted cash equivalents (note 10)	338	—
Payables and accrued liabilities (note 15)	—	2,176
Lease liability (note 17)	—	184
	26,290	2,360

Fair value

IFRS 13, *Fair Value Measurement* ("IFRS 13") establishes a hierarchy that prioritizes the inputs used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurement) and the lowest priority to unobservable inputs (Level 3 measurement).

The input levels discussed in IFRS 13 are:

Level 1 – Unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2 – Inputs other than quoted prices included within Level 1 that are observable for an asset or liability, either directly (i.e. prices) or indirectly (i.e. derived from prices).

Level 3 – Inputs for an asset or liability that are not based on observable market data (unobservable inputs).

The carrying values of the Company's cash and cash equivalents, trade and other receivables, restricted cash equivalents, payables and accrued liabilities and provision for restructuring and other costs approximate their fair values due to their short-term maturities or to the prevailing interest rates of the related instruments, which are comparable to those of the market.

Financial risk factors

The following provides disclosures relating to the nature and extent of the Company's exposure to risks arising from financial instruments, including credit risk, liquidity risk and foreign exchange risk and how the Company manages those risks.

(a) Credit risk

Credit risk is the risk of an unexpected loss if a customer or counterparty to a financial instrument fails to meet its contractual obligations. The Company regularly monitors credit risk exposure and takes steps to mitigate the likelihood of this exposure resulting in losses. The Company's exposure to credit risk currently relates to the financial assets at amortized cost in the table above. The Company holds its available cash in amounts that are readily convertible to known amounts of cash and deposits its cash balances with financial institutions that have an investment grade rating of at least "P-2" or the equivalent. This information is supplied by independent rating agencies where available and, if not available, the Company uses publicly available financial information to ensure that it invests its cash in creditworthy and reputable financial institutions. Once there are indicators that there is no reasonable expectation of recovery, such financial assets are written off but are still subject to enforcement activity.

(in thousands of US dollars, except share and per share data and where otherwise noted)

As of December 31, 2021, trade accounts receivable for an amount of approximately $932 were with three counterparties of which $55 was past due and impaired and fully provided for (2020 - $1,245 with three counterparties and $55 past due and impaired and fully provided for).

Generally, the Company does not require collateral or other security from customers for trade accounts receivable; however, credit is extended following an evaluation of creditworthiness. In addition, the Company performs ongoing credit reviews of all of its customers and determines expected credit losses. On this basis, as of December 31, 2021, the Company has provided for all outstanding and unpaid amounts relating to its operations before its licensing of Macrilen™.

The maximum exposure to credit risk approximates the amount recognized in the Company's consolidated statement of financial position.

(b) Liquidity risk

Liquidity risk is the risk that the Company will not be able to meet its financial obligations as they become due. As indicated in note 24, the Company manages this risk through the management of its capital structure. It also manages liquidity risk by continuously monitoring actual and projected cash flows.

A portion of the Company's cash is held in AEZS Germany, which is the counter-party to various license and distribution agreements for the Company's only approved product. In September 2019 and February, July and August of 2020 and February of 2021 the Company completed financings resulting in total funding (net of transaction costs) of $55,905 (note 19). Net cash proceeds were deposited in AEZS Canada accounts and such funds can be provided to its German subsidiary, if and when needed. During 2020, AEZS Germany signed agreements with NOVO and CH whereby AEZS Germany received cash payments of € 5,000 ($6,109) in fiscal 2020 and €1,000 ($1,209) in January 2021, respectively (note 5), and expects to use this cash to fund its operations directly.

The Board of Directors reviews and approves the Company's operating and capital budgets, as well as any material transactions occurring outside of the ordinary course of business. The Company has adopted an investment policy in respect of the safety and preservation of its capital to ensure the Company's liquidity needs are met. The instruments are selected with regard to the expected timing of expenditures and prevailing interest rates.

All of the Company's financial liabilities except lease liabilities are current liabilities with expected settlement dates within one year. The maturity analysis for lease liabilities is disclosed in note 17.

(c) Foreign exchange risk

Entities using the Euro as their functional currency

The Company is exposed to foreign exchange risk due to its investments in foreign operations whose functional currency is the Euro. As of December 31, 2021, if the US dollar had increased or decreased by 10% against the Euro, with all other variables held constant, net loss for the year ended December 31, 2021 would have been lower or higher by approximately $300 (2020 - $110 and 2019 - $841).

25. Segment information

The Company operates in a single operating segment, being the biopharmaceutical segment.

Geographical information

Revenues by geographical area have been allocated to geographic regions based on the country of residence of the Company's external customers or licensees and are detailed as follows:

	Years ended December 31,		
	2021	**2020**	**2019**
	$	**$**	**$**
Switzerland	**5,075**	905	—
Ireland	—	73	74
Denmark	**185**	2,655	413
Other	—	19	45
	5,260	3,652	532

Non-current assets include restricted cash equivalents, right of use assets, property, plant and equipment, identifiable intangible assets, other asset and goodwill and are detailed by geographical area as follows:

	December 31,	
	2021	**2020**
	$	**$**
Germany	**9,212**	9,341
United States	**70**	50
	9,282	9,391

(in thousands of US dollars, except share and per share data and where otherwise noted)

Major customers representing 10% or more of the Company's revenues in each of the last three years are as follows:

	Years ended December 31,		
	2021	2020	2019
	$	$	$
Company 1	**5,260**	3,634	532

26. Net loss per share

The following table sets forth pertinent data relating to the computation of basic and diluted net loss per share attributable to common shareholders.

	Years ended December 31,		
	2021	2020	2019
	$	$	$
Net loss	**(8,368)**	(5,118)	(6,042)
Basic weighted average number of shares outstanding	**114,924,497**	41,083,163	17,494,472
Diluted weighted average number of shares outstanding	**114,924,497**	41,083,163	17,494,472
Items excluded from the calculation of diluted net loss per share because the exercise price was greater than the average market price of the common shares or due to their anti-dilutive effect			
Stock options and DSUs	**1,509,368**	679,400	953,557
Share purchase warrants	**11,441,213**	44,901,366	6,629,144

Net loss per share is calculated by dividing net loss by the weighted average number of shares outstanding during the relevant period. Diluted weighted average number of shares reflects the dilutive effect of equity instruments, such as any "in the money" stock options, DSUs and warrants. In periods with reported net losses, all stock options and warrants are deemed anti-dilutive such that basic net loss per share and diluted net loss per share are equal, and thus "in the money" stock options and warrants have not been included in the computation of net loss per share because to do so would be anti-dilutive.

27. Commitments and contingencies

Contractual obligations and commitments as of December 31, 2021

	Service and manufacturing	R&D contracts	TOTAL
	$	$	$
Less than 1 year	1,085	2,252	**3,337**
1 – 3 years	6	1,049	**1,055**
4 – 5 years	—	—	—
More than 5 years	—	—	—
Total	**1,091**	**3,301**	**4,392**

During 2021, the Company executed various agreements including in-licensing and similar arrangements with development partners (note 13). Such agreements may require the Company to make payments on achievement of stages of development, launch or revenue milestones, although the Company generally has the right to terminate these agreements at no penalty. The Company recognizes research and development milestones as an intangible asset once it is committed to the payment, which is generally when the Company reaches a set point in the development cycle.

Based on the closing exchange rates at December 31, 2021, the Company expects to pay $3,301, including $3,124 (€2.8 million), and $177 (£0.1 million), in R&D contracts and up to $8,937, including $7,386 (€6.5 million) and $1,551 (£1.2 million), in R&D milestone payments and up to $32,942, including $31,255 (€27.6 million) and $1,687 (£1.3 million), in revenue related milestone payments. The table below contains all potential R&D and revenue-related milestone payments that the Company may be required to make under such agreements:

	Future potential R&D milestone payments	Future potential revenue milestone payments	Total
	$	$	$
Less than 1 year	28	—	**28**
1 – 3 years	113	—	**113**
4 – 5 years	927	—	**927**
More than 5 years	7,869	32,942	**40,811**
Total	**8,937**	**32,942**	**41,879**

The table excludes any payments already capitalized in the consolidated statement of financial position. The future payments that are disclosed represent contract payments and are not discounted and are not risk-adjusted. The development of any pharmaceutical product candidates is a complex and risky process that may fail at any stage in the development process due to a number of factors. The timing of the payments is based on the Company's current best estimate of achievement of the relevant milestone.

Securities class action lawsuit

On March 9, 2020, the Company settled the previously disclosed class-action lawsuit against it pending in the US District Court for the District of New Jersey. This settlement was approved by the US District Court for the District of New Jersey on June 3, 2021. The settlement payment was funded entirely by the Company's insurers. As no appeals were filed within the 30-day appeal period, this matter is fully and finally settled.

Item 19. Exhibits

Exhibit Index

1.1	Restated Certificate of Incorporation and Restated Articles of Incorporation of the Registrant (incorporated by reference to Exhibit 99.2 to the Registrant's report on Form 6-K furnished to the Commission on May 25, 2011)
1.2	Certificate of Amendment and Articles of Amendment of the Registrant (incorporated by reference to Exhibit 99.2 to the Registrant's report on Form 6-K furnished to the Commission on October 3, 2012)
1.3	Certificate of Amendment and Articles of Amendment of the Registrant (incorporated by reference to Exhibit 99.1 to the Registrant's report on Form 6-K furnished to the Commission on November 17, 2015)
1.4	Amended and Restated By-Law One of the Registrant (incorporated by reference to Exhibit 1.3 of the Registrant's Annual Report on Form 20-F for the financial year ended December 31, 2012 filed with the Commission on March 22, 2013)
2.1	Amended and Restated Shareholder Rights Plan Agreement between the Registrant and Computershare Trust Company of Canada, as Rights Agent, dated as of May 8, 2019 (incorporated by reference to Exhibit 99.2 to the Registrant's report on Form 6-K furnished to the Commission on May 9. 2019)
4.1	Second Amended and Restated Stock Option Plan of the Registrant (incorporated by reference to Exhibit 4.1 of the Registrant's Annual Report on Form 20-F for the financial year ended December 31, 2013 filed with the Commission on March 21, 2014)
4.2	2018 Long-Term Incentive Plan of the Registrant (incorporated by reference to Exhibit 4.7 of the Registrant's Form S-8 filed with the Commission on May 8, 2018)
4.3	License and Assignment Agreement, dated January 16, 2018 by and between Aeterna Zentaris GmbH and Strongbridge Ireland Limited (incorporated by reference to Exhibit 99.2 of the Registrant's report on Form 6-K furnished to the Commission on January 19, 2018)
4.4	Independent Contractor Agreement dated September 18, 2018 between Leslie Auld and the Registrant (incorporated by reference to Exhibit 4.8 of the Registrant's Annual Report on Form 20-F for the financial year ended December 31, 2018 filed with the Commission on April 1, 2019)
4.5	Form of Warrant Agreement (incorporated by reference to Exhibit 99.1 of the Registrant's report on Form 6-K furnished to the Commission on September 20, 2019)
4.6	Placement Agency Agreement between the Registrant and Maxim Group LLC, dated as of September 20, 2019 (incorporated by reference to Exhibit 99.2 of the Registrant's report on Form 6-K furnished to the Commission on September 20, 2019)
4.7	Form of Securities Purchase Agreement by and between the Registrant and certain institutional investors, dated as of September 20, 2019 (incorporated by reference to Exhibit 99.3 of the Registrant's report on Form 6-K furnished to the Commission on September 20, 2019)
4.8	Form of Investor Warrant (incorporated by reference to Exhibit 99.1 of the Registrant's report on Form 6-K furnished to the Commission on February 21, 2020)
4.9	Form of Placement Agent Warrant (incorporated by reference to Exhibit 99.4 of the Registrant's report on Form 6-K furnished to the Commission on February 21, 2020)
4.10	Form of Common Share Purchase Warrant (incorporated by reference to Exhibit 4.5 of the Registrant's Registration Statement on Form F-1 filed with the Commission on June 30, 2020)
4.11	Form of Pre-Funded Warrant (incorporated by reference to Exhibit 4.6 of the Registrant's Registration Statement on Form F-1 filed with the Commission on June 30, 2020)
4.12	Form of Placement Agent Warrant (incorporated by reference to Exhibit 4.7 of the Registrant's Registration Statement Form F-1 filed with the Commission on June 30, 2020)
4.13	Form of Investor Warrant (incorporated by reference to Exhibit 99.1 of the Registrant's report on Form 6-K furnished to the Commission on August 5, 2020)
4.14	Form of Placement Agent Warrant (incorporated by reference to Exhibit 99.5 of the Registrant's report on Form 6-K furnished to the Commission on August 5, 2020)
4.15	Amendment Agreement dated November 16, 2020, by and between Aeterna Zentaris GmbH and Novo Nordisk Biopharm Limited. (incorporated by reference to Exhibit 99.1 of the Registrant's report on Form 6-K furnished to the Commission on November 16, 2020)
4.16	License Agreement effective December 7, 2020, by and between Aeterna Zentaris GmbH and Consilient Health Ltd. (incorporated by reference to Exhibit 99.1 of the Registrant's report on Form 6-K furnished to the Commission on December 7, 2020)
4.17	Engagement Letter dated February 14, 2021 between the Registrant and H.C. Wainwright & Co.
4.18	Form of Underwriter Warrant (incorporated by reference to Exhibit 99.2 of the Registrant's report on Form 6-K furnished to the Commission February 18, 2021)
4.19	Consulting Agreement dated January 4, 2022 between Giuliano La Fratta and the Registrant
4.20	Employment Agreement dated January 15, 2022 between Giuliano La Fratta and the Registrant
8.1	Subsidiaries of the Registrant

11.1	Code of Conduct and Business Ethics of the Registrant (incorporated by reference to Exhibit 11.1 of the Registrant's Annual Report on Form 20-F for the financial year ended December 31, 2017 filed with the Commission on March 28, 2018)
11.2	Code of Business Conduct and Ethics for Members of the Board of Directors (incorporated by reference to Exhibit 11.2 of the Registrant's Annual Report on Form 20-F for the financial year ended December 31, 2014 filed with the Commission on March 17, 2015)
11.3	Audit Committee Charter of the Registrant (incorporated by reference to Exhibit 11.3 of the Registrant's Annual Report on Form 20-F for the financial year ended December 31, 2014 filed with the Commission on March 17, 2015)
12.1	Certification of the Principal Executive Officer pursuant to §302 of the Sarbanes-Oxley Act of 2002
12.2	Certification of the Principal Financial Officer pursuant to §302 of the Sarbanes-Oxley Act of 2002
13.1	Certification of the Principal Executive Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
13.2	Certification of the Principal Financial Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
15.1	Consent of Ernst &Young LLP
15.2	Consent of PricewaterhouseCoopers LLP
15.3	Letter from PricewaterhouseCoopers LLP to the SEC provided pursuant to Item 16F(a)(3) of Form 20-F

Exhibit Index

101. INS XBRL Instance Document

101. SCH XBRL Taxonomy Extension Schema

101. CAL XBRL Taxonomy Extension Schema Calculation Linkbase

101. DEF XBRL Taxonomy Extension Schema Definition Linkbase

101. LAB XBRL Taxonomy Extension Schema Label Linkbase

101. PRE XBRL Taxonomy Extension Schema Presentation Linkbase

SIGNATURES

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

AETERNA ZENTARIS INC.

/s/ Klaus Paulini

Klaus Paulini
President and Chief Executive Officer

Date: March 28, 2022

H.C.WAINWRIGHT&CO.

Execution Version

February 14, 2021

STRICTLY CONFIDENTIAL

Aeterna Zentaris Inc.
315 Sigma Drive, Suite 302D
Summerville, South Carolina
USA 29486

Attn: Klaus Paulini, Chief Executive Officer

Dear Mr. Paulini:

This letter agreement (this "Agreement") constitutes the agreement between Aeterna Zentaris Inc. (the "Company") and H.C. Wainwright & Co., LLC ("Wainwright"), that Wainwright shall serve as the exclusive agent, advisor or underwriter in any offering (each, an "Offering") of common shares and/or warrants to purchase common shares of the Company but for greater certainty excluding convertible debt (the "Securities") during the Term (as hereinafter defined) of this Agreement, and on the terms and conditions set out herein. The terms of each Offering and the Securities issued in connection therewith shall be mutually agreed upon by the Company and Wainwright and nothing herein implies that Wainwright would have the power or authority to bind the Company and nothing herein implies that the Company shall have an obligation to issue any Securities. It is understood that Wainwright's assistance in an Offering will be subject to the satisfactory completion of such investigation and inquiry into the affairs of the Company as Wainwright deems appropriate under the circumstances and to the receipt of all internal approvals of Wainwright in connection with an Offering. The Company expressly acknowledges and agrees that, unless otherwise mutually agreed by Wainwright and the Company, Wainwright's involvement in an Offering is strictly on a reasonable best efforts basis and that the consummation of an Offering will be subject to, among other things, market conditions. The execution of this Agreement does not constitute a commitment by Wainwright to purchase the Securities and does not ensure a successful Offering of the Securities or the success of Wainwright with respect to securing any other financing on behalf of the Company. Wainwright may retain other brokers, dealers, agents or underwriters on its behalf in connection with an Offering. For greater certainty, an "Offering" shall exclude any transaction involving the Company and Novo Nordisk or any of their respective affiliates, and "Securities" shall exclude any securities issued or issuable in connection with such a transaction.

A. Compensation; Reimbursement. At the closing of each Offering (each, a "Closing"), the Company shall compensate Wainwright as follows:

1. *Cash Fee.* The Company shall pay to Wainwright a cash fee, or as to an underwritten Offering an underwriter discount, equal to 7.25% of the aggregate gross proceeds raised in each Offering.

2. *Warrant Coverage*. The Company shall issue to Wainwright or its designees at each Closing, warrants (the "Wainwright Warrants") to purchase that number of common shares of the Company equal to 7.00% of the aggregate number of common shares (or common share equivalent, if applicable) placed in each Offering (and if an Offering includes a "greenshoe" or "additional investment" component, such number of common shares underlying such "greenshoe" or "additional investment" component, with the Wainwright Warrants issuable upon the exercise of such component). The Wainwright Warrants shall be in a customary form reasonably acceptable to Wainwright, have a term of five (5) years and an exercise price equal to 125% of the offering price per share (or unit, if applicable) in the applicable Offering (such price, the "Offering Price"). If warrants are issued to investors in an Offering, the Wainwright Warrants shall have the same terms as the warrants issued to investors in the applicable Offering, except that such Wainwright Warrants shall have an exercise price equal to 125% of the Offering Price.

3. *Expense Allowance*. Out of the proceeds of each Closing, the Company also agrees to pay Wainwright (a) a management fee equal to 1.0% of the gross proceeds raised in each Offering; (b) $25,000 for non-accountable expenses (to be increased to $50,000 in case of a public offering); (c) up to $50,000 for the reasonable and accounted fees and expenses of legal counsel (to be increased to $100,000 in case of a public offering); plus the additional amount payable by the Company pursuant to Paragraph D.3 hereunder and, if applicable, the costs associated with the use of a third-party electronic road show service (such as NetRoadshow); provided, however, that such amount in no way limits or impairs the indemnification and contribution provisions of this Agreement. Except as provided in Paragraph B hereunder, no expenses pursuant to this paragraph will be payable by the Company if there is no Closing.

4. *Tail*. Wainwright shall be entitled to compensation under clauses (1) and (2) hereunder, calculated in the manner set forth therein, with respect to any offering of Securities consummated at any time within the 12-month period following the expiration or termination of this Agreement ("Tail Financing") to the extent that an Offering pursuant to which Wainwright received the compensation described under clauses (1) and (2) hereunder was not previously consummated, and such Tail Financing is provided to the Company by investors whom Wainwright had contacted on behalf of the Company during the Term or introduced to the Company during the Term.

5. *Right of First Refusal*. Subject to consummation of an Offering, if, from the date hereof until the 12-month anniversary following the consummation of such first Offering, the Company or any of its subsidiaries decides to raise funds by means of a public offering (including at-the-market facility) or a private placement or any other capital raising financing of equity or equity-linked securities using an underwriter or placement agent, Wainwright (or any affiliate designated by Wainwright) shall have the right to act as sole book-running manager, sole underwriter or sole placement agent for such financing. If Wainwright or one of its affiliates decides to accept any such engagement, the agreement governing such engagement will contain, among other things, provisions for customary fees for transactions of similar size and nature and the provisions of this Agreement, including indemnification, which are appropriate to such a transaction.

B. Term and Termination of Engagement; Exclusivity. The term of Wainwright's exclusive engagement will begin on the date hereof and end six (6) months thereafter (the "Term"). Notwithstanding anything to the contrary contained herein, the Company agrees that the provisions relating to the payment of fees, reimbursement of expenses, right of first refusal, tail, indemnification and contribution, confidentiality, conflicts, independent contractor and waiver of the right to trial by jury will survive any termination or expiration of this Agreement. Notwithstanding anything to the contrary contained herein, the Company has the right to terminate the Agreement for cause in compliance with FINRA Rule 5110(g)(5)(B)(i). The exercise of such right of termination for cause eliminates the Company's obligations with respect to the provisions relating to the tail fees and right of first refusal. Notwithstanding anything to the contrary contained in this Agreement, in the event that an Offering pursuant to this Agreement shall not be carried out for any reason whatsoever during the Term, the Company shall be obligated to pay to Wainwright its actual and accountable reasonable out-of-pocket expenses related to an Offering (including the reasonable and documented fees and disbursements of Wainwright's legal counsel in an amount not to exceed $25,000 ($35,000 in the case of a public Offering)) and, if applicable, for electronic road show service used in connection with an Offering. During the Term: (i) the Company will not, and will not permit its representatives to, other than in coordination with Wainwright, contact or solicit institutions, corporations or other entities or individuals as potential purchasers of the Securities in connection with an Offering and (ii) the Company will not pursue any offering of Securities which would be in lieu of an Offering. Furthermore, the Company agrees that during Wainwright's engagement hereunder, all inquiries, whether direct or indirect, from prospective investors in Securities will be referred to Wainwright Additionally, except as set forth hereunder, the Company represents, warrants and covenants that no brokerage or finder's fees or commissions are or will be payable by the Company or any subsidiary of the Company to any broker, financial advisor or consultant, finder, placement agent, investment banker, bank or other third-party with respect to any Offering.

C. Information; Reliance. The Company shall furnish, or cause to be furnished, to Wainwright all information reasonably requested by Wainwright for the purpose of rendering services hereunder and conducting due diligence (all such information being the "Information"). In addition, the Company agrees to make available to Wainwright upon reasonable request from time to time the officers, directors, accountants, counsel and other advisors of the Company in connection with an Offering. The Company recognizes and confirms that Wainwright (a) will use and rely on the Information, including any documents provided to investors in each Offering (the "Offering Documents") which shall include any Purchase Agreement (as defined hereunder), and on information available from generally recognized public sources in performing the services contemplated by this Agreement without having independently verified the same; (b) does not assume responsibility for the accuracy or completeness of the Offering Documents or the Information and such other information; and (c) will not make an appraisal of any of the assets or liabilities of the Company. Upon reasonable request, the Company will meet with Wainwright or its representatives to discuss all information relevant for disclosure in the Offering Documents and will cooperate in any investigation undertaken by Wainwright thereof, including any document included or incorporated by reference therein. At each Offering, at the request of Wainwright, the Company shall deliver or cause to be delivered such legal letters (including, without limitation, negative assurance letters), opinions, comfort letters, officers' and secretary

certificates and good standing certificates, all in form and substance reasonably satisfactory to Wainwright and its counsel as is customary for such Offering. Wainwright shall be a third party beneficiary of any representations, warranties, covenants, closing conditions and closing deliverables made by the Company in any Offering Documents, including representations, warranties, covenants, closing conditions and closing deliverables made to any investor in an Offering.

D. Related Agreements. At each Offering, the Company shall enter into the following additional agreements:

1. *Underwritten Offering*. If an Offering is an underwritten Offering, the Company and Wainwright shall enter into a customary underwriting agreement in form and substance satisfactory to Wainwright and its counsel.

2. *Best Efforts Offering*. If an Offering is on a best-efforts basis, the sale of Securities to the investors in the Offering will be evidenced by a purchase agreement ("Purchase Agreement") between the Company and such investors in a form reasonably satisfactory to the Company and Wainwright. Wainwright shall be a third-party beneficiary with respect to the representations, warranties and covenants, closing conditions and closing deliverables included in the Purchase Agreement. Prior to the signing of any Purchase Agreement, officers of the Company with responsibility for financial affairs will be available upon reasonable notice to answer inquiries from prospective investors.

3. *Escrow, Settlement and Closing*. If each Offering is not settled via delivery versus payment ("DVP"), the Company and Wainwright shall enter into an escrow agreement with a third-party escrow agent pursuant to which Wainwright's compensation and expenses shall be paid from the gross proceeds of the Securities sold. If the Offering is settled in whole or in part via DVP, Wainwright shall arrange for its clearing agent to provide the funds to facilitate such settlement; provided, however, if the clearing firm provides the funds in a best efforts offering and subsequent to such delivery an investor fails to provide the necessary funds to the clearing agent for such purchase of Securities, Wainwright shall instruct the clearing agent to promptly return any such Securities to the Company and the Company shall promptly return such investor's purchase price to the clearing agent. The Company shall pay Wainwright closing costs, which shall also include the reimbursement of the out-of-pocket cost of the escrow agent or clearing agent, as applicable, which closing costs shall not exceed $15,950.

4. *FINRA Amendments*. Notwithstanding anything herein to the contrary, in the event that Wainwright determines that any of the terms provided for hereunder shall not comply with a FINRA rule, including but not limited to FINRA Rule 5110, then the Company shall agree to amend this Agreement (or include such revisions in the final underwriting agreement) in writing upon the request of Wainwright to comply with any such rules; provided that any

such amendments shall not provide for terms that are less favorable to the Company than are reflected in this Agreement.

E. Confidentiality. Each of Wainwright and the Company acknowledge that they have entered into a separate mutual confidentiality and disclosure agreement dated June 27, 2019 (the "CDA") that shall continue in full force and effect and shall not be amended by this Agreement; except that Wainwright shall be entitled to disclose information to prospective investors in connection with its engagement hereunder, other than material non-public information that shall be disclosed on a confidential basis. In the event of the consummation or public announcement of any Offering, Wainwright shall have the right to disclose its participation in such Offering, including, without limitation, the Offering at its cost of "tombstone" advertisements in financial and other newspapers and journals.

F. Indemnity.

1. In connection with the Company's engagement of Wainwright hereunder, the Company hereby agrees to indemnify and hold harmless Wainwright and its affiliates, and the respective controlling persons, directors, officers, members, shareholders, agents and employees of any of the foregoing (collectively the "Indemnified Persons"), from and against any and all claims, actions, suits, proceedings (including those of shareholders), damages, liabilities and expenses incurred by any of them (including the reasonable fees and expenses of one counsel in addition to one local counsel per jurisdiction, if applicable), as incurred, whether or not the Company is a party thereto (collectively a "Claim"), that are (A) related to or arise out of (i) any actions taken or omitted to be taken (including any untrue statements made or any statements omitted to be made except in respect of information furnished by Wainwright to the Company specifically for inclusion in the relevant prospectus publicly filed in connection with an Offering ("Wainwright Information")) by the Company, or (ii) any actions taken or omitted to be taken by any Indemnified Person in connection with the Company's engagement of Wainwright, or (B) otherwise relate to or arise out of Wainwright's activities on the Company's behalf under Wainwright's engagement, and the Company shall reimburse any Indemnified Person for all expenses (including the reasonable fees and expenses of one counsel in addition to one local counsel per jurisdiction, if applicable) as incurred by such Indemnified Person in connection with investigating, preparing or defending any such claim, action, suit or proceeding, whether or not in connection with pending or threatened litigation in which any Indemnified Person is a party. The Company will not, however, be responsible for any Claim that is finally judicially determined to have resulted from the fraud, gross negligence or willful misconduct of any such Indemnified Person for such Claim. The Company further agrees that no Indemnified Person shall have any liability to the Company for or in connection with the Company's engagement of Wainwright except for any Claim incurred by the Company as a result of such Indemnified Person's fraud, gross negligence or willful misconduct.

2. The Company further agrees that it will not, without the prior written consent of Wainwright, settle, compromise or consent to the entry of any judgment in any pending or threatened Claim in respect of which indemnification may be sought hereunder (whether or not any Indemnified Person is an actual or potential party to such Claim), unless such settlement, compromise or consent includes an unconditional, irrevocable release of each Indemnified Person from any and all liability arising out of such Claim.

3. Promptly upon receipt by an Indemnified Person of notice of any complaint or the assertion or institution of any Claim with respect to which indemnification is being sought hereunder, such Indemnified Person shall notify the Company in writing of such complaint or of such assertion or institution but failure to so notify the Company shall not relieve the Company from any obligation it may have hereunder, except and only to the extent such failure results in the forfeiture by the Company of substantial rights and defenses. If the Company is requested by such Indemnified Person, the Company will assume the defense of such Claim, including the employment of one counsel for such Indemnified Person and the payment of the fees and expenses of such counsel, provided, however, that such counsel shall be satisfactory to the Indemnified Person and provided further that if the legal counsel to such Indemnified Person reasonably determines that having common counsel would present such counsel with a conflict of interest or if the defendant in, or target of, any such Claim, includes an Indemnified Person and the Company, and legal counsel to such Indemnified Person reasonably concludes that there may be legal defenses available to it or other Indemnified Persons different from or in addition to those available to the Company, such Indemnified Person will employ its own one separate counsel (including one local counsel per jurisdiction, if necessary) to represent or defend him, her or it in any such Claim and the Company shall pay the reasonable fees and expenses of one such separate counsel (including one local counsel per jurisdiction, if necessary). If such Indemnified Person does not request that the Company assume the defense of such Claim, such Indemnified Person will employ its own one separate counsel (including one local counsel per jurisdiction, if necessary) to represent or defend him, her or it in any such Claim and the Company shall pay the reasonable fees and expenses of such counsel. Notwithstanding anything herein to the contrary, if the Company fails timely or diligently to defend, contest, or otherwise protect against any Claim, the relevant Indemnified Person shall have the right, but not the obligation, to defend, contest, compromise, settle, assert crossclaims, or counterclaims or otherwise protect against the same, and shall be fully indemnified by the Company therefor, including without limitation, for the reasonable fees and expenses of its one counsel (including one local counsel per jurisdiction, if necessary) and all amounts paid as a result of such Claim or the compromise or settlement thereof. In addition, with respect to any Claim in which the Company assumes the defense, the Indemnified Person shall have the right to participate in such Claim and to retain his, her or its own counsel therefor at his, her or its own expense.

4. The Company agrees that if any indemnity sought by an Indemnified Person hereunder is held by a court to be unavailable for any reason then (whether or not Wainwright is the Indemnified Person), the Company and Wainwright shall contribute to the Claim for which such indemnity is held unavailable in such proportion as is appropriate to reflect the relative benefits to the Company, on the one hand, and Wainwright on the other, in connection with Wainwright's engagement referred to above, subject to the limitation that in no event shall the amount of Wainwright's contribution to such Claim exceed the amount of fees actually received by Wainwright from the Company pursuant to Wainwright's engagement. The Company hereby agrees that the relative benefits to the Company, on the one hand, and Wainwright on the other, with respect to Wainwright's engagement shall be deemed to be in the same proportion as (a) the total value paid or proposed to be paid or received by the Company pursuant to the applicable Offering (whether or not consummated) for which Wainwright is engaged to render services bears to (b) the fee paid or proposed to be paid to Wainwright in connection with such engagement.

5. The Company's indemnity, reimbursement and contribution obligations under this Agreement (a) shall be in addition to, and shall in no way limit or otherwise adversely affect any rights that any Indemnified Person may have at law or at equity and (b) shall be effective whether or not the Company is at fault in any way.

G. Limitation of Engagement to the Company. The Company acknowledges that Wainwright has been retained only by the Company, that Wainwright is providing services hereunder as an independent contractor (and not in any fiduciary or agency capacity) and that the Company's engagement of Wainwright is not deemed to be on behalf of, and is not intended to confer rights upon, any shareholder, owner or partner of the Company or any other person not a party hereto as against Wainwright or any of its affiliates, or any of its or their respective officers, directors, controlling persons (within the meaning of Section 15 of the Securities Act or Section 20 of the Securities Exchange Act of 1934, as amended (the "Exchange Act")), employees or agents. Unless otherwise expressly agreed in writing by Wainwright, no one other than the Company is authorized to rely upon this Agreement or any other statements or conduct of Wainwright, and no one other than the Company is intended to be a beneficiary of this Agreement. The Company acknowledges that any recommendation or advice, written or oral, given by Wainwright to the Company in connection with Wainwright's engagement is intended solely for the benefit and use of the Company's management and directors in considering a possible Offering, and any such recommendation or advice is not on behalf of, and shall not confer any rights or remedies upon, any other person or be used or relied upon for any other purpose. Wainwright shall not have the authority to make any commitment binding on the Company. The Company, in its sole discretion, shall have the right to reject any investor introduced to it by Wainwright.

H. Limitation of Wainwright's Liability to the Company. Wainwright and the Company further agree that neither Wainwright nor any of its affiliates or any of its or their respective officers, directors, controlling persons (within the meaning of Section 15 of the

Securities Act or Section 20 of the Exchange Act), employees or agents shall have any liability to the Company, its security holders or creditors, or any person asserting claims on behalf of or in the right of the Company (whether direct or indirect, in contract, tort, for an act of negligence or otherwise) for any losses, fees, damages, liabilities, costs, expenses or equitable relief arising out of or relating to this Agreement or the services rendered hereunder, except for losses, fees, damages, liabilities, costs or expenses that arise out of or are based on any action of or failure to act by Wainwright or any Wainwright Information and that are finally judicially determined to have resulted solely from the fraud, gross negligence or willful misconduct of Wainwright.

I. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of New York applicable to agreements made and to be fully performed therein. Any disputes that arise under this Agreement, even after the termination of this Agreement, will be heard only in the state or federal courts located in the City of New York, State of New York. The parties hereto expressly agree to submit themselves to the jurisdiction of the foregoing courts in the City of New York, State of New York. The parties hereto expressly waive any rights they may have to contest the jurisdiction, venue or authority of any court sitting in the City and State of New York. In the event Wainwright or any Indemnified Person is successful in any action, or suit against the Company, arising out of or relating to this Agreement, the final judgment or award entered shall be entitled to have and recover from the Company the costs and expenses incurred in connection therewith, including its reasonable attorneys' fees. Any rights to trial by jury with respect to any such action, proceeding or suit are hereby waived by Wainwright and the Company.

J. Notices. All notices hereunder will be in writing and sent by certified mail, hand delivery, overnight delivery or e-mail, if sent to Wainwright, at the address set forth on the first page hereof, e-mail: notices@hcwco.com, Attention: Head of Investment Banking, and if sent to the Company, to the address set forth on the first page hereof, e-mail: kpaulini@aezsinc.com, Attention: Chief Executive Officer. Notices sent by certified mail shall be deemed received five days thereafter, notices sent by hand delivery or overnight delivery shall be deemed received on the date of the relevant written record of receipt, notices sent by e-mail shall be deemed received as of the date and time they were sent.

K. Conflicts. The Company acknowledges that Wainwright and its affiliates may have and may continue to have investment banking and other relationships with parties other than the Company pursuant to which Wainwright may acquire information of interest to the Company. Wainwright shall have no obligation to disclose such information to the Company or to use such information in connection with any contemplated transaction.

L. Anti-Money Laundering. To help the United States government fight the funding of terrorism and money laundering, the federal laws of the United States require all financial institutions to obtain, verify and record information that identifies each person with whom they do business. This means Wainwright must ask the Company for certain identifying information, including a government-issued identification number (e.g., a U.S. taxpayer identification number) and such other information or documents that Wainwright considers appropriate to verify the Company's identity, such as certified articles of

incorporation, a government-issued business license, a partnership agreement or a trust instrument.

M. Miscellaneous. The Company represents and warrants that it has all requisite power and authority to enter into and carry out the terms and provisions of this Agreement and the execution, delivery and performance of this Agreement does not breach or conflict with any agreement, document or instrument to which it is a party or bound. This Agreement shall not be modified or amended except in writing signed by Wainwright and the Company. This Agreement shall be binding upon and inure to the benefit of both Wainwright and the Company and their respective assigns, successors, and legal representatives. If any provision of this Agreement is determined to be invalid or unenforceable in any respect, such determination will not affect such provision in any other respect, and the remainder of the Agreement shall remain in full force and effect. This Agreement may be executed in counterparts (including electronic counterparts), each of which shall be deemed an original but all of which together shall constitute one and the same instrument.

****

In acknowledgment that the foregoing correctly sets forth the understanding reached by Wainwright and the Company, please sign in the space provided below, whereupon this letter shall constitute a binding Agreement as of the date indicated above.

Very truly yours,

H.C. WAINWRIGHT & CO., LLC

By: _____
Name: Mark W. Viklund
Title: Chief Executive Officer
Date: February 14, 2021

Accepted and Agreed:

AETERNA ZENTARIS INC.

By: _____
Name: Klaus Paulini
Title: Chief Executive Officer

HCW.AEZS Engagement Letter 13FEB2021

Final Audit Report 2021-02-14

Created:	2021-02-14
By:	Patricia Zahn (pzahn@aezsinc.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAcPq5XwS1dJfTROCEmvBn2cVXfouN2FIF

"HCW.AEZS Engagement Letter 13FEB2021" History

Document created by Patricia Zahn (pzahn@aezsinc.com)
2021-02-14 - 4:24:31 PM GMT- IP address: 24.211.97.91

Document emailed to Klaus Paulini (kpaulini@aezsinc.com) for signature
2021-02-14 - 4:25:00 PM GMT

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Document e-signed by Klaus Paulini (kpaulini@aezsinc.com)
Signature Date: 2021-02-14 - 4:28:59 PM GMT - Time Source: server- IP address: 88.217.181.173

Agreement completed.
2021-02-14 - 4:28:59 PM GMT

Aeterna Zentaris Inc.
c/o Norton Rose Fulbright Canada LLP
222 Bay Street, Suite 3000
P.O. Box 53
Toronto ON M5K 1E7 Canada

January 4, 2022

Privileged and Confidential

Sent By E-mail

Giuliano La Fratta
[redacted]

Dear Giuliano:

Re: Consulting Arrangement in Advance of Employment

As discussed, we have agreed that in preparation for your pending employment with the Company, which is anticipated to commence on January 24, 2022, AETERNA ZENTARIS INC. (the "Company") will engage you to provide financial consulting services to the Company on an interim basis in order to facilitate your transition into the Company and the sharing in advance of information as we may determine appropriate. To clarify, you will not be required to, and are not assuming the duties of the Company's chief financial officer until the commencement of your employment.

The term of this consulting arrangement will commence upon the return to us of a copy of this letter executed by you. The financial consulting services are intended to facilitate your transition to employment and will involve services as agreed between you and the Company.

The Company will pay you a lump sum fee of $1000 as full compensation for all services provided under this consulting arrangement. This will be paid to you within 2 weeks of the completion of the services. Since you are starting as a consultant for the Company, the Company may grant to you the award of 50,000 stock options to purchase Common Stock in the capital of the Company referred to in section 4.3 of your employment agreement with the Company (the "Initial Grant") but may now do so in advance of the effective date of your employment, Accordingly, you hereby acknowledge that even though it may be made prior to the start of your employment with the Company, such Initial Grant will satisfy the obligation of the Company in respect of such grant described in section 4.3 of your employment .

You will receive confidential information of the Company in the course of providing the services. All such information is the property of the Company, you will not use or disclose any such information except and only as required to perform the services under this arrangement and that the terms of confidentiality and no-use set out in the employment agreement between you and the Company apply to this information received by you under this Agreement. This obligation will survive the termination of this consulting arrangement.

This consulting arrangement will terminate immediately prior to the commencement of your employment with the Company without further notice or liability on the Company or, if earlier, on written notice by you or the Company to the other.

You acknowledge that this consulting arrangement does not constitute employment and is not intended to create an employment relationship. We expressly agree that this consulting arrangement be drafted, read, and interpreted in the English language.

Les parties ont expressément demande que ce contrat soit rédigé en langue anglaise.

Please let us know if you have any questions.

AETERNA ZENTARIS INC.

Per: _____ Date: January 10, 2022
Dr. Klaus Paulini

I agree to the terms of the consulting arrangement set out in this letter.

Giuliano La Fratta Date: January 10, 2022
Giuliano La Fratta

Exhibit 4.20

EMPLOYMENT AGREEMENT

This Agreement is made by and between AETERNA ZENTARIS INC., a corporation duly incorporated under the laws of Canada, (the " **Corporation**") and **Giuliano La Fratta**, [redacted] (the "**Executive**") and shall be effective as of **January 15, 2022** or such other date as the parties agree (the "**Effective Date**"):

SECTION 1 - PURPOSE:

1.1 The Corporation wishes to employ at the Effective Date the Executive as its Senior Vice President, Finance and Chief Financial Officer ("**CFO**"), performing the associated duties of this position (including executing the Corporation's quarterly financial certifications for filing) and such other duties as may be assigned from time to time by the Corporation, and the Executive agrees to be employed in such manner on the terms and conditions set forth herein.

SECTION 2 - TERM:

2.1 Subject to a background check that is satisfactory to the Corporation, this Agreement will be effective from the Effective Date and will continue in effect until it is terminated in accordance with Section 6 - (the "**Term**"). The Executive recognizes that the employment is conditional upon completion, to the Employer's satisfaction, of background checks including criminal record check. The Executive will sign and return any forms or consents and take any steps necessary for the Corporation to conduct the background checks as required by the Corporation. The Corporation may use the services of a third-party background checking firm to conduct some or all of the background checks, and that the Employer will provide personal information, including any forms and consents, to the background checking firm for this purpose. If the background check is not satisfactory to the Corporation, then this Agreement is null and void.

SECTION 3 - DUTIES:

3.1 The Executive will work on a full-time basis and will devote the Executive's full time, attention, skill and efforts to the faithful performance and discharge of the duties and responsibilities as CFO in conformity with the highest professional standards, in a prudent and workmanlike manner and in a manner consistent with the obligations imposed under applicable law. While working and in his off hours the Executive shall promote the best interests of the Corporation, and shall not take any action, or fail to take any action which failure could, or could reasonably be expected to, have an adverse effect on the business of the Corporation. The Executive shall hold no other paid employment or office during the Term, except as may be permitted by the Corporation in its discretion.

3.2 The Executive shall report to and closely partner with the President and Chief Executive Officer of the Corporation. The Executive shall serve as a member of the executive management team of the Corporation and report to the Corporation's Audit Committee and Board, as required.

3.3 The Executive's principal place of business is at his home office in Montreal and any reassignment of his principal place of business outside Montreal will be to a place mutually agreed upon by the Executive and the Corporation. The Executive will comply with any reasonable directions of the Corporation related to working from his home, including confidentiality, privacy, and occupational health and safety considerations. The Executive understands that the Executive will be required to travel domestically and internationally from time to time to further the business and interests of the Corporation.

3.4 The Executive acknowledges that during the Term the Executive must comply with (i) the lawful policies and procedures established by the Corporation from time to time, including any code of ethics or business conduct adopted by the Corporation (including any future revisions of such policies, procedures or other codes of business conduct) and the Executive acknowledges having been given a copy of the Corporation's Code of Conduct in advance of executing this Agreement; and (ii) all applicable laws, rules and regulations, and all requirements of all applicable regulatory, self-regulatory and administrative bodies.

SECTION 4 - COMPENSATION:

4.1 **Annual Base Salary**. The Corporation shall pay the Executive a base annual salary (the "**Base Salary"**), which initially shall be $275,000(CAD), subject to applicable withholdings and deductions and payable in accordance with the Corporation's standard payroll practices for executive officers. The Base Salary shall be reviewed annually by the Board or a committee of the Board and may be increased in accordance with the Corporation's compensation policy. Finally, all or part of the Executive's Base Salary may be paid through an Affiliate of the Corporation.

4.2 **Annual Cash Bonus**. The Executive shall be eligible to earn an annual cash bonus (the "**Annual Bonus**") of up to 30% of the Base Salary. The granting of an Annual Bonus, if any, shall be based on the mutually agreed objectives for the performance of the business and the Executive and it is subject to the approval by the Board in its sole discretion. The Annual Bonus, if any, payable for any calendar year shall be paid no later than March 15 of the following calendar year. To be eligible to receive any Annual Bonus, the Executive must not have given notice of termination or received notice of termination of employment for Cause (as defined below) under this Agreement at the time that Annual Bonus payments are made.

4.3 **Stock Options**. Subject to any required shareholder and/or regulatory approval, the Executive shall be eligible to receive an annual grant of stock options to purchase shares of the Corporation's publicly-traded common stock (the "**Common Stock**"), subject to vesting, exercise, pricing and all other applicable terms of the Corporation's Stock Option Plan. Granting of such annual stock options shall also be subject to the prior approval and the sole discretion of the Board and the parties agree that any such grant is a prospective benefit intended to compensate the Executive for future performance. If any shareholder or regulatory approval is required, the Corporation shall promptly undertake all reasonable efforts to secure such approval. Within 60 days of the later of Effective Date and the expiry of any blackout period in effect as of the Effective Date, the Corporation will seek Board approval to grant to the Executive 50,000 options to purchase Common Stock with a strike price to be determined on the day of the grant. These options will have a 7 year term and will vest in equal one-third amounts on each of the first three anniversaries of the grant date.

4.4 **Business Expenses**. The Corporation shall reimburse the Executive, upon presentation of valid receipts or vouchers, for reasonable entertainment, travel and other business expenses, incurred on behalf of or at the request of the Corporation, so long as they are in incurred accordance with the Corporation's policies and rules for such reimbursements.

4.5 **RRSP Contribution**. The Corporation will contribute to Executive's RRSP an amount equal to 5% of the Base Salary paid to the Executive or, if less, the maximum annual contribution permitted by law, without regard to any prior year's contribution room or any allowable over contribution. This contribution will be paid directly to the Executive on a bi- weekly basis through the Corporation payroll system. The RRSP contribution is not part of the Base Salary.

4.6 **Benefits.** The Corporation shall reimburse the Executive on a monthly basis for the cost of a health and welfare insurance program purchased by the Executive to a maximum annual amount of 3% of the Base Salary. This reimbursement will be paid to the Executive on a bi- weekly basis through the Corporation payroll system. The

benefits reimbursement is not part of the Base Salary. The Corporation will not be responsible for providing any health and welfare benefits to the Executive provided that if the Corporation becomes obligated to provide any such benefits as a result of a change in the applicable law, the obligation of the Corporation to reimburse the Executive will be adjusted accordingly.

4.7 **No other entitlement**. The Executive is not entitled to any other payment, compensation, benefit, perquisite, allowance or entitlement other than as specifically set out in this Agreement or as otherwise agreed to in writing by the Corporation and the Executive.

SECTION 5 - VACATION:

5.1 The Executive shall be entitled to an annual vacation of four weeks, which will vest on a monthly basis, in accordance with the Corporation's vacation policy for executives, subject to the approval of the Corporation's CEO or the CEO's designee. All of the vacation shall be taken during each calendar year and shall not be carried over in any amount into succeeding years, except as required by applicable employment standards legislation and provided that, at the written request of the CFO in advance, the Corporation may in its discretion allow up to 5 days of annual vacation to be carried over to the next calendar year for use in that next calendar year.

SECTION 6 - TERMINATION:

6.1 **Termination**. Notwithstanding any other term of this Agreement, either the Corporation or the Executive may terminate the Executive's employment at any time for any reason, with or without Cause, as set out below.

6.2 **Termination for Cause**. The Executive's employment may be terminated by the Corporation for Cause upon notice in writing transmitted to the Executive, with the Corporation being bound to pay only earned but unpaid wages, including vested vacation that is owed, to the date of termination and reimbursement for business expenses properly incurred but not reimbursed as of the date of termination. For the purpose of this subsection **Fehler! Verweisquelle konnte nicht gefunden werden.** and this Agreement, "**Cause**" means any of the following reasons:

(a) The Executive is declared bankrupt or insolvent or makes an assignment of substantially all of the Executive's property or is placed under protective supervision.

(b) The Executive materially fails or refuses to adequately perform the duties or responsibilities assigned by the Corporation or its Board.

(c) The Executive engages in fraud, theft, embezzlement or other criminal act of a similar nature, or commits an act of serious misconduct or willful or gross negligence in the performance of the Executive's duties.

(d) Any act or failure to act by the Executive, the result of which is materially detrimental to the business or reputation of the Corporation.

(e) The Executive materially breaches Section 7 -, Section 8 - or Section 9 - of this Agreement.

(f) Any other act or omission or series of acts or omissions by the Executive that would, pursuant to applicable law, permit the Corporation to terminate the Executive's employment for cause.

6.3 **Termination for Disability**. Subject to any legal duty to accommodate the Executive, the Executive's employment may be terminated if the Executive becomes physically or mentally disabled to such an extent as to render the Executive unable to perform the essential functions as CFO for an aggregate of 26 weeks during a period of 12 consecutive months. If there is any disagreement between the Corporation and the Executive as to the Executive's disability or as to the date any such disability began or ended, such disagreement will be determined by a physician mutually acceptable to the Corporation and the Executive whose determination will be conclusive evidence of any such disability and of the date any such disability began or ended. In such a case, the Corporation shall be bound to pay the Executive 1) any earned but unpaid wages, including vested vacation, to the date of termination and reimbursement for business expenses properly incurred but not reimbursed as of the date of termination; and 2) those termination and severance payments required by applicable employment standards legislation. The Executive shall not be entitled to any other notice, or payment in lieu of notice in respect of the termination of the Executive's employment.

6.4 **Termination by Death**. In the event of the Executive's death during the Term, the Corporation's obligation to make payments under this Agreement shall terminate on the date of death, except the Corporation shall pay the Executive's estate or surviving designated beneficiary or beneficiaries, as appropriate, any earned but unpaid wages, including vested vacation, and reimburse business expenses incurred but not reimbursed as of the date of death.

6.5 **Voluntary Termination**. If the event the Executive wishes to resign for any reason, the Executive shall give at least 30 days, and no more than 3 months, prior written notice of such resignation and will assist with transitional duties as required by the Corporation. Any such notice shall not relieve either the Executive or the Corporation of their mutual obligations to perform under this Agreement, provided that the Corporation is under no obligation to utilize the Executive's services during this period, or to relieve the Corporation to compensate the Executive during such notice period for any earned but unpaid wages, vested vacation and reimburse business expenses incurred but not reimbursed as of the date of termination. Upon receipt of such notice, the Corporation may terminate the employment of the Executive at any time by providing the Executive with an amount equal the lesser of 30 days Base Salary and the Base Salary for the balance of the notice period provided by the Executive.

6.6 **Termination Without Cause**. The Corporation may terminate the Executive's employment at any time without Cause by providing written notice to the Executive. The Corporation will pay to the Executive any earned but unpaid wages, including the vested vacation, and reimburse business expenses incurred but not reimbursed to the Executive as of the date of termination. In the event that the Corporation terminates the Executive's employment without Cause, other than as contemplated in subsection **Fehler! Verweisquelle konnte nicht gefunden werden.** the Corporation shall pay to the Executive Base Salary, benefit reimbursement, RRSP and Average Annual Bonus (as defined below) equal to:

(a) 6 months, if the employment is terminated within 12 months of the Effective Date;

(b) 8 months, if the employment is terminated on or after the first anniversary, and before the second anniversary, of the Effective Date;

(c) 10 months, if the employment is terminated on or after the second anniversary, and before the third anniversary, of the Effective Date; or

(d) 12 months, if the employment is terminated on or after the third anniversary of the Effective Date, (the "**Severance Pay**").

The Severance Pay will be made as a lump sum or salary continuance, at the Corporation's discretion. In case of salary continuance, payments will be made to the Executive in accordance with the Corporation's regular payroll schedule and will include an amount for the Average Annual Bonus. The "Average Annual Bonus"

will be the annual average of the Annual Bonus paid to the Executive for the two full bonus years preceding the date of termination provided that if the Executive has been employed for less than one full bonus year, then the Average Annual Bonus will be the target Annual Bonus award and if the Executive has been employed for more than one full bonus year but less than two full bonus years, then the Average Annual Bonus will be the amount of any Annual Bonus paid to the Executive.

6.7 **Release**. The parties agree that the provisions of subsection 6.6 are fair and reasonable and that the payments, benefits and entitlements referred to in subsection 6.6 above are reasonable estimates of the damages which will be suffered by the Executive in the event of the termination of the Executive's employment with the Corporation. Except as otherwise provided in subsection 6.6, the Executive shall not be entitled to any further notice of termination, payment in lieu of notice of termination, severance, damages, or any additional compensation whatsoever including at common law and the amounts payable are inclusive of any statutory payments. As a condition to receiving any payment pursuant to Subsection 6.6 (except for the Corporation's obligations pursuant to employment standards legislation), the Executive must deliver a full and final release from all actions or claims in connection therewith in favour of the Corporation, the Corporation's affiliates, and all of their respective officers, directors, trustees, shareholders, employees, attorneys, insurers and agents, such release to be in a form satisfactory to the Corporation. In the absence of providing such a signed release, the Executive will only be entitled to the minimum notice or pay in lieu of notice, if any, required by the applicable employment standards legislation.

6.8 **Clawback Entitlement**. If the Corporation finds, after full consideration of the facts, that the Executive engaged in fraud, theft, embezzlement or any other criminal act of a similar nature during the Executive's employment with the Corporation, the Corporation is entitled to obtain reimbursement from the Executive, to the full extent permitted by governing law and to the extent it determines (in its sole discretion) that it is in the Corporation's best interest to do so. Such reimbursement shall include 1) any portion of any performance-based compensation paid or awarded to the Executive, whether cash or equity based, that is greater than would have been paid or awarded in the absence of fraud, theft, embezzlement or any other criminal act of a similar nature in the performance of the Executive's duties to the Corporation; and 2) immediately repayment to the Corporation of all amounts that were paid the Executive pursuant to subsection 6.6 of the Agreement (except for the Corporation's obligations pursuant to employment standards legislation). This subsection 6.8 does not limit the Corporation's right to take other appropriate actions with respect to the Executive, including termination of his employment and other remedial and recovery action.

SECTION 7 - NO COMPETITION, NO SOLICITATION AND LOYALTY:

7.1 **Competitive Business**. The Corporation's business includes developing and commercializing endocrinology products for sale in Canada, the United States, and Europe (the "**Business**"). The Executive will hold a senior executive role for the Corporation, will have extensive access to, and will be entrusted with, highly sensitive Confidential Information (as defined below) and will be involved in, and responsible for strategic, supervisory and managerial decisions for the Corporation. The Executive will develop important relationships with key stakeholders of the Business, including customers, partners, suppliers, prospects and employees, such that the goodwill and competitiveness of the Corporation depend in part on the Executive. As a result, the Business would be vulnerable to, and harmed by, the Executive performing duties and work that are competitive with or detrimental to the Business for a reasonable period after the employment of the Executive with the Corporation terminates.

7.2 **No Competition**. During the Term, the Executive will not compete with the Corporation in any manner whatsoever. For a period of 12 months following the date of termination of the Executive's employment (for any reason), the Executive shall not, in any capacity, compete with the Corporation, directly or indirectly, in the development and/or commercialization of the endocrinology products that compete, or could compete, in the territory with endocrinology products that the Corporation is developing or commercializing. For the purpose of this subsection 7.2 and subsections 7.4 and 7.5, "**capacity**" means as an executive, employee, director, officer, employer, principal, agent, partner, contractor, franchisor, franchisee, distributor or consultant, "**territory**" means the United States, the provinces of Quebec, Ontario, Alberta and British Columbia within Canada, , Germany, Italy, France, Spain, and Great Britain, and "**compete**" means to engage in work that:

(a) is the same or similar to any of the duties of the Executive as CFO under this Agreement and relates to products and/or services that are competitive with any of the products and/or services of the Business or involve the management, direction or supervision of any person performing such duties; or

(b) is executive, management, supervisory, consultation or strategic work in circumstances where the Executive has Confidential Information that if used or disclosed in performing such work could be advantageous to a competitor of the Business or detrimental to the Business.

7.3 The non-competition covenant in subsection 7.2 does not prevent the Executive from engaging in purely passive investments in the shares or other securities of a corporation or entity other than the Corporation whose securities are publicly traded on a recognized stock exchange where the securities so held by the Executive do not represent more than five percent (5%) of the voting shares of such other corporation or entity and do not allow for its control.

7.4 **No Solicitation – Customers, Suppliers and Prospects**. For a period of 12 months following the date of termination of the Executive's employment (for any reason) and in respect of the territory, the Executive shall not, without the prior written consent of Corporation, whether directly or indirectly, in any capacity, alone, or with any person, solicit, in a manner that is competitive with or potentially detrimental to the Corporation, customers, suppliers, or prospects of the Corporation or its affiliates with which the Executive either had material contact on behalf of the Corporation during the Term, or in respect of which had Confidential Information. A "**prospect**" is a prospective customer of the Corporation that was solicited by the Corporation in the 12 month period prior to the termination date and with respect to whom the Executive either had a direct and material involvement in the solicitation or had Confidential Information. The term "**suppliers**" includes distributors, representatives, agents and other parties with whom the Corporation or any of its affiliates deals and with whom the Executive either had direct and material contact with during the Term or with respect to whom had Confidential Information.

7.5 **No Solicitation – Employees.** For a period of 12 months following the date of termination of the Executive's employment (for any reason), the Executive shall not, without the prior written consent of Corporation, whether directly or indirectly, in any capacity, alone, or through any person, solicit any of the personnel of the Corporation to leave their employment or terminate their engagement with the Corporation or any of its affiliates nor to hire the personnel of the Corporation or any of its affiliates for any enterprise in which the Executive has an interest (whether or not such individual would commit any breach of their contract or terms of employment or engagement by leaving the employ or the engagement of the Corporation or any of its affiliates). For clarity, the placement by the Executive of advertising in a newspaper or other publication of general circulation, or the engagement of a personnel search agency by the Executive generally (i.e. not specifically in respect of the Corporation or targeting its personnel), that results in an employee or other individual engaged by the Corporation leaving the employment of or engagement with the Corporation shall not be considered a violation of this subsection 7.5.

7.6 **Corporate Opportunities**. The Executive also undertakes, during the Term, to fully disclose and make available to the Corporation and not to appropriate under any circumstance, any business opportunities relating in any way to the business and affairs of the Corporation or any of its affiliates which become known to the Executive.

7.7 **Acknowledgement**. The Executive acknowledges that the provisions of this Section 7 - are reasonably limited as to the time period, the geographic area and the nature of the activities to what the parties deem necessary to protect the legitimate interests of the Corporation and its affiliates, while allowing the Executive to earn a living. The Executive also acknowledge that the Corporation may over time develop and commercialize other products and may make it a condition of any improvement in the compensation of the Executive that the Executive sign a revised restrictive covenant agreement to amend or replace this Section 7 -.

7.8 **Loyalty**. Nothing in this Section 7 - shall operate to reduce or extinguish the obligations of the Executive arising at law or under this contract which survive at the termination of this Agreement, in particular, without limiting the foregoing, the Executive's duty of loyalty, duty of confidentiality, fiduciary obligations and obligation to act faithfully, honestly and ethically.

SECTION 8 - CONFIDENTIALITY:

8.1 The Executive acknowledges that the Executive will receive or conceive, in carrying out the duties of CFO, confidential information pertaining to the activities, the technologies, the operations and the business, past, present and future, of the Corporation, which information is not in the public domain ("**Confidential Information**"). The Executive acknowledges that such Confidential Information belongs to the Corporation and that its disclosure or unauthorized use could be damaging or prejudicial to the Corporation and contrary to the Corporation's best interests.

Accordingly, the Executive will respect and maintain the confidentiality of Confidential Information and not to make use of or disclose it to, or to discuss it with, any person, other than in the ordinary course of his duties with the Corporation, or as required under applicable law, without the explicit prior written authorization of the Corporation.

This undertaking to respect the confidentiality of Confidential Information shall survive and continue to have full effect notwithstanding the termination of the Executive's employment with the Corporation to the greatest extent permitted by applicable law, so long as the Confidential Information does not become public as a result of an act by the Corporation or a third party, which act does not involve the fault of the Executive.

8.2 The term Confidential Information includes, among other things:

(a) work product resulting from or related to work or projects performed or to be performed by the Corporation, including, but not limited to, the interim and final lines of inquiry, hypotheses, research and conclusions related thereto and the methods, processes, procedures, analysis, techniques and audits used in connection therewith;

(b) products, formulae, processes and composition of products, as well as raw materials and ingredients, of whatever kind, that are used in their manufacture;

(c) technical knowledge and methods, quality control processes, inspection methods, laboratory and testing methods, information processing programs and systems, manufacturing processes, plans, drawings, tests, test reports and software;

(d) equipment, machinery, devices, tools, instruments and accessories;

(e) information relating to Developments (as defined below) prior to any public disclosure thereof, including, but not limited to, the nature of the developments, production data, technical and engineering data, test data and test results, the status and details of research and development of products and services, and information regarding acquiring, protecting, enforcing and licensing proprietary rights (including patents, copyrights and trade secrets);

(f) financial information, production cost data, marketing strategies, raw materials supplies, suppliers, staff and customer lists and related information, marketing plans, sales techniques and policies, including pricing policies, sales and distribution data, purchasing and internal cost information, internal services, operational manuals and present and future expansion plans;

(g) contracts and their contents, customer services, data provided by customers and the type, quantity and specifications of products and services purchased, leased, licensed or received by customers of the Corporation;

(h) research, experiments, inventions, discoveries, developments, improvements, ideas, industrial secrets and know-how;

(i) personnel information of employees of the Corporation; and

(j) both the existence and the terms of this Agreement.

8.3 In the event the Executive is required to disclose Confidential Information pursuant to any law, regulation, governmental authority or court, the Executive shall give prompt notice to the Corporation of such requirement (where it is within the Executive's control to provide such notice) so as to allow the Corporation sufficient opportunity to contest such requirement. The Executive will cooperate with the Corporation in any lawful efforts to prevent or limit the disclosure of such information. Any disclosure under this subsection 8.3 must be limited solely to the extent of the legal requirement.

8.4 Nothing in this Section 8 - shall be read to prevent the Executive from discussing or disclosing confidential information in connection with an investigation by the U.S. Securities and Exchange Commission, or another Canadian or U.S state or federal agency, or from filing and/or pursuing a charge or complaint with any such agency.

SECTION 9 - OWNERSHIP OF INTELLECTUAL PROPERTY:

9.1 The Executive acknowledges and agrees that all rights, titles and interests in or to any Developments (meaning any discovery, invention, design, improvement, concept, design, specification, creation, development, treatment, computer program, method, process, apparatus, specimen, formula, formulation, product, hardware or firmware, any drawing, report, memorandum, article, letter, notebook and any other work of authorship and ideas (whether or not patentable or copyrightable) and legally recognized proprietary rights (including, but not limited to, patents, copyrights, trademarks, topographies, know-how and trade secrets), and all records and tangible embodiments relating to the foregoing, that 1) result or derive from the Executive's employment with the Corporation or from the Executive's knowledge or use of Confidential Information; 2) are conceived or made by the Executive (alone or jointly) in the discharge of the Executive's duties as CFO; 3) result from or derive from the use or application of the resources of the Corporation; or 4) relate to the business operations of the Corporation or the actual or demonstrably anticipated research and development by the Corporation) and all Intellectual Property (meaning all common law, statutory and other intellectual and industrial property rights, including, without limiting the generality of the foregoing: 1) rights to any patents, trademarks, service marks, trade names, domain names, copyright, database rights, designs, industrial designs, trade secrets, integrated circuit rights and topography rights; and 2) all domestic and foreign registrations, applications, divisionals, continuations, continuations-in-part, re-examinations and renewals thereof) in and to the Developments shall be owned exclusively by the Corporation.

9.2 Without further compensation, the Executive hereby irrevocably quit-claims, assigns and agrees to assign to the Corporation all of the Executive's Intellectual Property rights, title and interest in and to as of their creation and to make full and prompt disclosure to the Corporation of all information relating to any Developments unless specifically released from such obligation in writing by the Corporation's Board of Directors. The Executive understands that this assignment is intended to, and does, extend to Developments currently in existence, in development, as well as Developments which have yet to be created.

9.3 In addition, without further compensation, the Executive renounces all legal rights in any Developments. The Executive irrevocably waives, in favour of the Corporation, its successors, assigns and nominees, all moral rights arising under the *Copyright Act* (Canada) as amended (or any successor legislation of similar effect) or similar legislation in any applicable jurisdiction, or at common law, to the full extent that such rights may be waived in each respective jurisdiction, that the Executive may have now or in the future with respect to the Developments. The Executive acknowledges that the Corporation has the right to use, modify or reproduce any Developments realized by the Executive, at its entire discretion, without the Executive's authorization and without the Executive's name being mentioned.

9.4 At any time during the Term or after the termination of the employment of the Executive, the Executive shall sign, acknowledge and deliver, at the Corporation's expense, but without compensation other than a reasonable sum for the Executive's time devoted thereto if the employment has then terminated, any document required by the Corporation to give effect to this Section 9 -. The Executive shall also provide such other assistance as the Corporation or one of its affiliates may require, without compensation other than a reasonable sum for the Executive's time devoted thereto if the employment has then terminated, with respect to any proceeding or litigation relating to the protection or defense of intellectual property rights belonging to the Corporation or any of its affiliates. In particular, the Executive agrees to execute on demand, whether during or after the Term, any applications, transfers, assignments or other documents as the Corporation may consider necessary for the purpose of either:

(a) obtaining, maintaining, vesting or assigning absolute title in any Developments and any Intellectual Property related thereto in, to or for the Corporation; or

(b) applying for, prosecuting, obtaining or protecting any patent, copyright, industrial design or trade-mark registration or any other similar right pertaining to any Intellectual Property in Developments in any country. The Executive further agrees to cooperate and assist the Corporation in every way possible in the application for or prosecution of rights pertaining to such Intellectual Property.

9.5 The entirety of this Section 9 - shall be binding on the Executive's heirs, assigns and legal representatives.

SECTION 10 - RECOGNITION AND REMEDIES:

10.1 **Recognition**. The Executive expressly recognizes and expressly acknowledges that:

(a) Section 7 -, Section 8 - and Section 9 - of this Agreement are of the essence of this Agreement, and that the Corporation would not have entered into this Agreement without the inclusion of those provisions and the Executive's commitment to abide by same.

(b) the application of Section 7 -, Section 8 - and Section 9 - of this Agreement will not have the effect of prohibiting the Executive from earning a living in a satisfactory manner in the event of the termination of employment under this Agreement.

(c) Section 7 -, Section 8 - and Section 9 - of this Agreement grant to the Corporation only such reasonable protection as is necessary to preserve the legitimate interests of the Corporation and the Executive equally recognizes, in this respect, that the description of the business and the territory contained in Section 7 - are reasonable.

10.2 **Remedies**. The Executive recognizes and expressly acknowledges that the Corporation would be subject to irreparable harm should any of the provisions of Section 7 -, Section 8 - and Section 9 - be infringed, or should any of the Executive's obligations under this Agreement be breached by the Executive, and that damages alone will be an inadequate remedy for any breach or violation thereof and that the Corporation, in addition to all other remedies, will be entitled as a matter of right to equitable relief, including temporary or permanent injunction to restrain such breach or a threatened breach.

SECTION 11 - OWNERSHIP OF FILES AND OTHER PROPERTY:

11.1 Any property of the Corporation, including any file, sketch, drawing, letter, report, memorandum or other document, any equipment, machinery, tool, instrument or other device, any diskette, recording tape, compact disc, software, electronic communication device or any other property, which comes into the Executive's control or possession during the Term, regardless of whether the Executive participated in its preparation or design, how it may have come under the Executive's control or into the Executive's possession and whether it is an original or a copy, shall at all times remain the property of the Corporation and, forthwith upon any request by the Corporation and upon the termination of the Executive's employment (for any reason), shall promptly be returned to the Corporation or its designated representative by the Executive. The Executive may not keep a copy or give one to a third party without the prior expressly written permission of the Chairman of the Board.

SECTION 12 - NON DISPARAGEMENT:

12.1 Except as may be required by law, during and following the Term neither the Corporation nor the Executive shall make any disparaging statements or remarks (including, without limitation, the repetition or distribution of disparaging rumours, allegations, negative reports or comments), verbally or in writing, in any medium, including social media, about the other to any person or entity outside the Corporation except to the extent required by law.

SECTION 13 - TERMINATION OF PRIOR CONTRACTS:

13.1 As of the effective date hereof, this Agreement supersedes and cancels any prior agreement, including but not limited to any understandings, negotiations and discussions, verbal or written, with respect to the Executive's employment with the Corporation.

SECTION 14 - NO CONFLICTING OBLIGATIONS:

14.1 The Executive represents and warrants to the Corporation that:

(a) there exists no agreement or contract, and the Executive is not subject to any obligation, which restricts the Executive from (i) being employed by the Corporation; (ii) performing the duties of CFO; (iii) soliciting business for the Corporation; or (iv) using information within his knowledge or control which may be useful in the performance of the CFO duties for the Corporation;

(b) in the performance of the duties as CFO for the Corporation, the Executive shall not improperly bring to the Corporation or use any trade secrets, confidential information or other proprietary information of any third party; and

(c) the Executive shall not infringe the intellectual property of any third party.

SECTION 15 - SUSPENSION WITH PAY:

15.1 The Executive acknowledges that, during the course of the Executive's employment, the Board may exercise its discretion to suspend the Executive with pay in furtherance of any internal investigation relating to the Executive's conduct.

SECTION 16 - SURVIVAL:

16.1 Notwithstanding the termination of the employment of the Executive under this Agreement, each party shall remain bound by the provisions of this Agreement which by their terms impose obligations upon that party that extend beyond the termination of the employment of the Executive under this Agreement.

SECTION 17 - FURTHER ASSURANCES:

17.1 The parties shall, with reasonable diligence, do all things and provide all reasonable assurances as may be required to give effect to this Agreement and carry out its provisions, including providing such further documents or instruments reasonably required by any other party.

SECTION 18 - ASSIGNMENT:

18.1 Except as otherwise expressly provided herein, neither this Agreement nor any rights or obligations are assignable by the Executive. The Corporation may assign this Agreement to any of its affiliates or subsidiaries or to any successor (whether direct or indirect, by purchase, amalgamation, arrangement, merger, consolidation or otherwise) to all or substantially all of the business or assets of the Corporation. The Executive, by the Executive's signature hereto, expressly consents to such assignment and, provided that such successor agrees to assume and be bound by the terms and conditions of this Agreement, all references to the "**the Corporation**" herein shall include its successor.

SECTION 19 - AMENDMENT OF THE AGREEMENT:

19.1 To be valid and enforceable, any amendment to this Agreement must be confirmed in writing by each of the Corporation and the Executive.

SECTION 20 - COMPLIANCE WITH EMPLOYMENT STANDARDS LEGISLATION:

20.1 In the event that the minimum standards set out in the applicable employment standards legislation (as may be amended from time to time) are more favorable to the Executive in any respect than a term or provision provided for in this Agreement, the statutory provisions will apply in respect of that term or provision.

SECTION 21 - NOTICES:

21.1 Any notice given hereunder shall be given in writing and sent by registered or certified mail or hand-delivered. If such notice is sent by registered or certified mail, it shall be deemed to have been received five business days following the date of its mailing if the postal services are working normally. If such is not the case, the notice must be hand-delivered. In the case of hand-delivery, the notice shall be deemed to have been received the same day. It is agreed that if the delivery date is a non-business day, the notice shall be deemed to have been received on the following business day.

For purposes of mailed or hand-delivered notices to be effectively delivered under this provision, the notices must be addressed as follows:

For the Corporation, the address is: c/o Norton Rose Fulbright Canada, LLP, 222 Bay Street, Suite 3000, PO Box 53, Toronto Ontario M5K 1E7, Canada.

For the Executive, the address is: [redacted]

SECTION 22 - SUCCESSORS:

22.1 This Agreement shall be binding on the successors, heirs, assignees and legal representatives of all of the parties hereto.

SECTION 23 - CHOICE OF LAW AND JURISDICTION:

23.1 This Agreement shall be governed by and interpreted in accordance with the laws, including conflicts of laws, by the Province of Quebec and the laws of Canada applicable therein. Both during and after the performance of this Agreement, each of the parties will make bona fide efforts to resolve any disputes arising between them by amicable negotiations. All disputes arising out of or in connection with this Agreement, or in respect of any relationship between the parties, will be referred to and finally and confidentially resolved by arbitration under the Quebec Code of Civil Procedure. The place of arbitration will be Montreal, Quebec, Canada. Either party may apply to the arbitrator(s) appointed pursuant to the Code of Civil Procedure seeking injunctive relief until the arbitration award is rendered or the controversy is otherwise resolved. Before an arbitrator makes a final determination on the merits of the controversy, either party also may, without waiving any remedy under this Agreement, seek from any Quebec Court having jurisdiction any interim or provisional relief that is necessary to protect the rights or property of that party.

SECTION 24 - SEVERABILITY:

24.1 If any provision of this Agreement or the application thereof is held invalid, the invalidity shall not affect other provisions or applications of this Agreement, which can be given effect without the invalid provisions or applications and, to this end, the provisions of this Agreement are declared to be severable. Moreover, if any provision of this Agreement is deemed to be overbroad or otherwise unenforceable as written, the parties agree that such provision should be modified and reformed, and then enforced, to the maximum extent permitted by applicable law.

SECTION 25 - LANGUAGE:

25.1 All of the parties hereto expressly agree that this Agreement be drafted, read and interpreted in the English language. Les parties ont expressément demande que ce contrat soit rédigé en langue anglaise.

SECTION 26 - INDEPENDENT LEGAL ADVICE:

26.1 The Executive acknowledges that the Executive has been advised to obtain, and either has obtained or has been afforded the opportunity to obtain, independent legal advice with respect to this Agreement and understands the nature and consequences of this Agreement.

SECTION 27 - PERSONAL INFORMATION

27.1 The Executive acknowledges that the Corporation will collect, use and disclose health and other personal information for employment and business related purposes. The Executive consents to the Corporation collecting, using and disclosing health and other personal information of the Executive for employment and business related purposes in accordance with the privacy policy of the Corporation.

SECTION 28 - COUNTERPARTS:

28.1 This Agreement may be executed in counterparts, each of which when so executed and delivered shall be deemed to be an original and such counterparts will together constitute one and the same Agreement. This Agreement may be executed and transmitted electronically and any version so executed and transmitted will be deemed to be as effective as if originally executed.

NOW, THEREFORE, the Corporation and the Executive have duly signed this Agreement on the dates shown by their names below.

AETERNA ZENTARIS INC.

By: _____

Title: President and Chief Executive Officer (CEO)
Printed Name: Dr. Klaus Paulini

Date: 10. December 2021

GIULIANO LA FRATTA

Giuliano La Fratta

Date: Dec 13, 2021

WITNESS

Printed Name _____

Exhibit 8.1

SUBSIDIARIES OF THE REGISTRANT

AETERNA ZENTARIS INC.

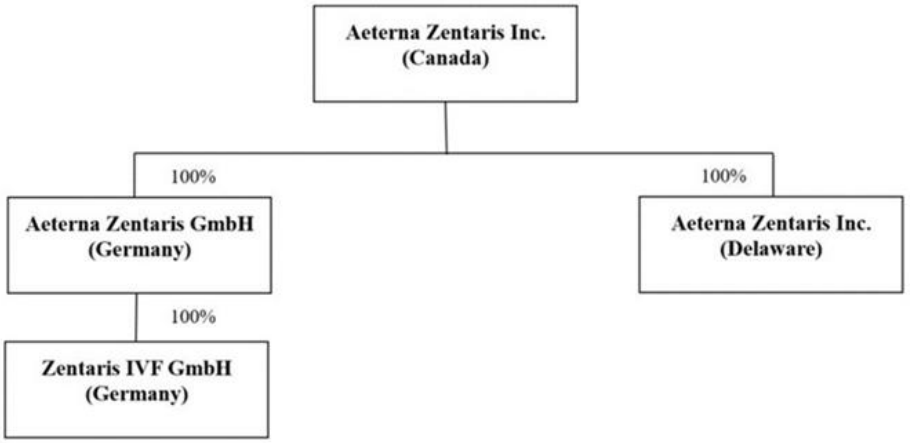

Exhibit 12.1

Certification of the Principal Executive Officer pursuant to §302 of the Sarbanes-Oxley Act of 2002 **Certification**

I, Klaus Paulini, certify that:

1. I have reviewed this annual report on Form 20-F of Aeterna Zentaris Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;

4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and

5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: March 28, 2022

/s/ Klaus Paulini
Klaus Paulini
President and Chief Executive Officer

Exhibit 12.2

Certification of the Principal Financial Officer pursuant to §302 of the Sarbanes-Oxley Act of 2002 **Certification**

I, Giuliano La Fratta, certify that:

1. I have reviewed this annual report on Form 20-F of Aeterna Zentaris Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;

4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as for the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and

5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: March 28, 2022

/s/ Giuliano La Fratta
Giuliano La Fratta
Chief Financial Officer

Exhibit 13.1

Certification of the Principal Executive Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

CERTIFICATION PURSUANT TO

18 U.S.C. SECTION 1350,

AS ADOPTED PURSUANT TO

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the annual report of Aeterna Zentaris Inc. (the "**Company**") on Form 20-F for the year ended December 31, 2021 as filed with the Securities and Exchange Commission on the date hereof (the "**Report**"), I, Klaus Paulini, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 28, 2022

/s/ Klaus Paulini
Klaus Paulini
President and Chief Executive Officer

Exhibit 13.2

Certification of the Principal Executive Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

CERTIFICATION PURSUANT TO

18 U.S.C. SECTION 1350,

AS ADOPTED PURSUANT TO

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the annual report of Aeterna Zentaris Inc. (the "**Company**") on Form 20-F for the year ended December 31, 2021 as filed with the Securities and Exchange Commission on the date hereof (the "**Report**"), I, Giuliano La Fratta, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 28, 2022

/s/ Giuliano La Fratta
Giuliano La Fratta
Chief Financial Officer

Exhibit 15.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statements on Forms S-8 (No. 333-224737, No. 333-210561 and No. 333-200834), Forms F-3 (No.333-232935 and No. 333-254680) and Forms F-1 (No.333-239264, No. 333-248561 and No. 333-239019) of Aeterna Zentaris Inc. of our report dated March 28, 2022 with respect to the consolidated financial statements of Aeterna Zentaris Inc. as of and for the year ended December 31, 2021, included in this Annual Report on Form 20-F.

/s/ Ernst & Young LLP

Montreal, Canada
March 28, 2022

Exhibit 15.2

Consent of Independent Registered Public Accounting Firm

We hereby consent to the incorporation by reference in the Registration Statements on Forms S-8 (No. 333-224737, No. 333-210561 and No. 333-200834), Forms F-3 (No.333-232935 and No. 333-254680) and Forms F-1 (No.333-239264, No. 333-248561 and No. 333-239019) of Aeterna Zentaris Inc. of our report dated March 24, 2021 relating to the consolidated financial statements, which appears in this Form 20-F.

/s/ PricewaterhouseCoopers LLP

Chartered Professional Accountants, Licensed Public Accountants

Toronto, Canada
March 28, 2022

Exhibit 15.3

March 28, 2022

Securities and Exchange Commission
100 F Street, N.E.
Washington DC 20549 Commissioners:

We have read the statements made by Aeterna Zentaris Inc. (copy attached), which we understand will be included under Item 16.F of its Annual Report on Form 20-F which will be filed with the Securities and Exchange Commission on March 28, 2022. We agree with the statements concerning our Firm contained therein.

Very truly yours,

/s/ PricewaterhouseCoopers LLP

Toronto, Canada Attachment

PricewaterhouseCoopers LLP
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