Aeterna Zentaris Inc.
Form 424B5
June 16, 2010

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**Filed pursuant to Rule 424(b)(5)**
**Registration No. 333-165037**

*This prospectus supplement, together with the accompanying short form base shelf prospectus dated March 12, 2010 to which it relates, as amended or supplemented and each document incorporated or deemed to be incorporated by reference in this prospectus supplement and the accompanying prospectus, constitutes a public offering of these securities only in those jurisdictions where such securities may be lawfully offered for sale and therein only by persons permitted to sell such securities. No securities regulatory authority has expressed an opinion about these securities and it is an offense to claim otherwise.*

*New Issue* June 15, 2010

**PROSPECTUS SUPPLEMENT NO. 2**
**(TO SHORT FORM BASE SHELF PROSPECTUS DATED MARCH 12, 2010)**

**8,805,964 Units**
**Units Consisting of**
**One Common Share and**
**a Warrant to Purchase 0.50 of a Common Share**
**US$1.3725 per Unit**

Æterna Zentaris Inc. ( we, Æterna or the Company ) is offering 8,805,964 units (the units ), with each unit being comprised of one common share of our capital and a warrant to purchase 0.50 of a common share (each, a purchaser warrant ), pursuant to this prospectus supplement and to the accompanying short form base shelf prospectus dated March 12, 2010. The purchase price for each unit is US$1.3725. Each purchaser warrant has an exercise price of US$1.3725 per common share. It is immediately exercisable and expires five years from its date of issuance. The common shares and the purchaser warrants will be issued separately but will be purchased together in this offering. All of the units are being offered for sale solely in the United States of America. In addition to the placement agent s fee described below, we have also agreed to issue to the placement agent compensation warrants (the compensation warrants and, together with the purchaser warrants, the warrants ) to purchase up to an aggregate of 264,178 common shares under this prospectus supplement at an exercise price of US$1.7156 per share. The distribution of the warrants and the common shares issuable upon the exercise of the warrants is qualified and registered by this prospectus supplement. See Plan of Distribution beginning on page S-16 of this prospectus supplement for more information regarding these arrangements.

**Unless otherwise hereinafter stated, currency amounts in this prospectus supplement are presented in United States dollars, or $ or US$.**

Our common shares are listed on the NASDAQ Global Market ( NASDAQ ) under the symbol AEZS and on the Toronto Stock Exchange ( TSX ) under the symbol AEZ. On June 15, 2010, the last reported sale price of our common shares on the NASDAQ was $1.31 per share, and the last reported sale price of our common shares on the TSX was C$1.36 per share.

We have filed an application with the TSX to have the common shares being offered for sale pursuant to this prospectus supplement (and the common shares of our capital issuable from time to time upon exercise of the offered warrants) listed (or reserved for listing) on the TSX. Listing will be subject to our fulfilling all of the listing requirements of the TSX. The common shares, including common shares issuable upon exercise of the warrants, will be listed on the NASDAQ. **The warrants will not be listed on any national or foreign trading market.**

**Investing in our common shares and warrants involves risks. There is no market through which the warrants may be sold and purchasers may not be able to resell warrants purchased under this prospectus supplement. This may affect the pricing of the warrants in the secondary market, the transparency and availability of trading prices, the liquidity of the warrants, and the extent of issuer regulation. For a discussion of risk factors that you should consider in investing in our common shares and warrants, see the sections entitled Risk Factors beginning on page S-9 of this prospectus supplement and page 8 of the accompanying prospectus, as well as in the documents incorporated by reference herein and therein.**

**No underwriter, as defined under applicable securities legislation, has been involved in the preparation of, or has performed any review of, the contents of this prospectus supplement or the accompanying prospectus.** Rodman & Renshaw, LLC acted as the placement agent for this offering. The placement agent is not purchasing or selling any of these securities nor is it required to place any specific number or dollar amount of securities, but it has agreed to use its reasonable best efforts to place the securities offered by this prospectus supplement. There is no requirement that any minimum number of units or dollar amount of units be sold in this offering and there can be no assurance that we will sell all of the units being offered. We have agreed to pay

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the placement agent, in addition to compensation warrants described above and under Plan of Distribution beginning on page S-16, the placement agent s fees set forth in the table below:

| | Per Unit | Aggregate Amount |
|---|---|---|
| Public Offering Price[1] | $ 1.3725 | $ 12,086,185 |
| Placement Agent s Fees | $ 0.0686 | $ 604,309 |
| Proceeds, Before Expenses, to us[2] | $ 1.3039 | $ 11,481,876 |

(1) The proceeds shown exclude proceeds that we may receive upon exercise of the warrants.

(2) We estimate the total expenses of this offering, excluding the placement agent s fees and expenses, will be approximately $160,000.

This document is in two parts. The first part is this prospectus supplement, which describes the terms of the offering and adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference. The second part is the accompanying base shelf prospectus, which gives more general information, some of which may not apply to this offering. This prospectus supplement is deemed to be incorporated by reference into the accompanying prospectus solely for the purpose of this offering.

This prospectus supplement and the accompanying prospectus contain forward-looking statements , within the meaning of the United States ( U.S. ) Private Securities Litigation Reform Act of 1995 and of applicable Canadian securities laws, that involve risks and uncertainties. Cautionary details concerning forward-looking statements are set out under the captions Cautionary Statement Regarding Forward-Looking Statements beginning on page S-3 of this prospectus supplement and Forward-Looking Statements beginning on page 3 of the accompanying prospectus.

**We are a foreign private issuer under U.S. securities laws. We have prepared our financial statements in accordance with Canadian generally accepted accounting principles ( GAAP ), and they are subject to Canadian auditing and auditor independence standards. Thus, they may not be comparable to the financial statements of U.S. companies. Information regarding the impact upon our financial statements of significant differences between Canadian and U.S. GAAP is contained in Note 26 entitled Differences between Canadian and US GAAP to our audited consolidated balance sheets as at December 31, 2009 and 2008 and our audited consolidated statements of operations, comprehensive loss, accumulated other comprehensive income and deficit, changes in shareholders equity and cash flows for each of the years in the three-year period ended December 31, 2009 included in our annual report on Form 20-F (filed in Canada with the Canadian securities regulatory authorities in lieu of an annual information form), which was filed with the United States Securities and Exchange Commission ( SEC ) on March 30, 2010 (available electronically at www.sec.gov), and in Note 11 entitled Differences between Canadian and US GAAP to our unaudited consolidated balance sheets as at March 31, 2010 and our unaudited consolidated statements of operations and comprehensive loss, changes in shareholders equity and cash flows for each of the three-month periods ended March 31, 2010 and 2009, which were furnished to the SEC on May 13, 2010, each of which is incorporated by reference into this prospectus supplement and the accompanying prospectus.**

**Your ability to enforce civil liabilities under U.S. federal securities laws may be affected adversely by the fact that we are incorporated under the laws of Canada, many of our officers and directors and some of the experts named in this prospectus supplement and the accompanying prospectus are residents of Canada or elsewhere outside of the U.S., and a substantial portion of our assets and the assets of such persons are located outside the U.S.**

**NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ACCURACY OF THIS PROSPECTUS SUPPLEMENT. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.**

**If the description of our common shares and the warrants offered under this prospectus supplement varies between this prospectus supplement and the accompanying prospectus, you should rely on the information in this prospectus supplement. You should rely only on the information contained in or incorporated by reference into this prospectus supplement and the accompanying prospectus and on the other information included in the registration statement of which this prospectus supplement and the accompanying prospectus forms a part. We have not authorized anyone to provide you with different or additional information. If anyone provides you with different or additional information, you should not rely on it. Information in this prospectus supplement updates and modifies the information in the accompanying prospectus and information incorporated by reference therein. We are not making an offer to sell or seeking an offer to buy these securities in any jurisdiction where the offer or sale is not permitted. The information contained in this prospectus supplement and in the accompanying prospectus and information contained in any documents incorporated by reference therein, as well as information previously filed by us with, or furnished by us to, the SEC and the securities regulatory authorities in each of the provinces of Canada, is accurate only as of the respective dates of each of those documents, regardless of the time of delivery of this prospectus supplement and of the accompanying prospectus or of any sale of our common shares. Our business, financial condition, results of operations and prospects may have changed since those dates.**

**Placement Agent**
**Rodman & Renshaw, LLC**

The date of this prospectus supplement is June 15, 2010

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**Prospectus Supplement**



## ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement relates to (i) a short form base shelf prospectus dated March 12, 2010 that we filed with the Canadian securities regulatory authorities of each of the provinces of Canada and (ii) a registration statement that we filed with the SEC, utilizing a shelf prospectus and registration process. Under this shelf prospectus and registration process, we may, from time to time, offer, sell and issue any of the securities or any combination of the securities described in the accompanying base shelf prospectus in one or more offerings. The accompanying base shelf prospectus provides you with a general description of the securities we may offer. This prospectus supplement contains specific information about the terms of this offering of units, which are comprised of common shares and purchaser warrants, by the Company. You should read both this prospectus supplement and the accompanying base shelf prospectus together with the information described under the sections entitled Where to Find Additional Information and Incorporation of Certain Information by Reference in this prospectus supplement and the section entitled Documents Incorporated by Reference in the accompanying base shelf prospectus, and any additional information you may need to make your investment decision.

Prospective investors should be aware that the acquisition of the securities described herein may have tax consequences both in the United States and Canada, as applicable. Such consequences for investors who are resident in, or citizens of, Canada or the United States may not be described fully in this prospectus supplement or the accompanying base shelf prospectus.

In this prospectus supplement, unless otherwise specified or the context otherwise dictates, the terms Æterna Zentaris, the Company, we, us or our mean Æterna Zentaris Inc. and its consolidated subsidiaries, unless it is clear that such terms refer only to Æterna Zentaris Inc. excluding its subsidiaries. Unless otherwise stated, currency amounts in this prospectus supplement are stated in United States dollars, or $ or US$.

The registration statement that contains the accompanying base shelf prospectus, as amended (SEC File No. 333-165037) (including the exhibits filed with and the information incorporated by reference into the registration statement) contains additional important business and financial information about us and our securities that is not presented or delivered with this prospectus supplement. That registration statement, including the exhibits filed with the registration statement and the information incorporated by reference into the registration statement, can be read at the SEC website or at the SEC office mentioned under the section of this prospectus supplement entitled Where to Find Additional Information below.

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## WHERE TO FIND ADDITIONAL INFORMATION

We file annual reports with, and we furnish other reports on Form 6-K to, the SEC. You may read and copy materials we have filed with or furnished to the SEC at the SEC s public reference room at 100 F Street, N.E., Washington, DC 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of its public reference room. Our SEC filings are also available to the public on the SEC s Internet site at www.sec.gov. As we are a Canadian issuer, we also file continuous disclosure documents with the Canadian securities regulatory authorities, which documents are available on the System for Electronic Document Analysis and Retrieval ( SEDAR ) website at www.sedar.com. In addition, we maintain a website that contains information about us, including our SEC and Canadian securities filings, at www.aezsinc.com. The information contained on our website does not constitute a part of this prospectus supplement, the accompanying base shelf prospectus or any other report or documents we file with or furnish to the SEC or with the securities regulatory authorities in Canada.

## CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein contain certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. Such statements are based on assumptions and expectations which may not be realized and are inherently subject to risks, uncertainties and other factors, many of which cannot be predicted with accuracy and some of which might not even be anticipated. Future events and actual results, performance, transactions or achievements, financial and otherwise, may differ materially from the results, performance, transactions or achievements expressed or implied by the forward-looking statements.

The risks and uncertainties of our business, including those discussed under the sections entitled Risk Factors beginning on page 8 of the accompanying prospectus and in our annual report on Form 20-F for the financial year ended December 31, 2009 filed in Canada with the Canadian securities regulatory authorities in lieu of an annual information form and incorporated by reference herein, could cause our actual results and experience to differ materially from the anticipated results or other expectations expressed.

Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance or achievements. These forward-looking statements involve risks, uncertainties and other factors that may cause our actual results in future periods to differ materially from forecasted results. We do not undertake to publicly update or revise these forward-looking statements, whether as a result of new information, future events or otherwise, other than to reflect a material change in the information previously disclosed, as required by applicable law. You should review our subsequent reports filed with or furnished to from time to time the SEC and the Canadian securities regulatory authorities and any amendments thereto. We qualify all of our forward-looking statements by these cautionary statements.

## INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC and the Canadian securities regulatory authorities allow us to incorporate by reference into this prospectus supplement and the accompanying prospectus certain information we file with or furnish to the SEC and the Canadian securities regulatory authorities, which means that we may disclose important information in this prospectus supplement and the accompanying prospectus by referring you to the document that contains the information. The information incorporated by reference is considered to be a part of this prospectus supplement and the accompanying prospectus, and the information we file with or furnish to the SEC (and the Canadian securities regulatory authorities)

later will automatically update and supersede the information filed or furnished earlier. We incorporate by reference the documents listed below and any filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the initial filing of the registration statement that contains the accompanying prospectus and until the offering of the securities covered thereby is completed or withdrawn; provided, however, that we are not incorporating by reference any additional documents or information furnished and not filed with the SEC or the Canadian securities regulatory authorities unless specifically otherwise provided:

- our annual report on Form 20-F for the financial year ended December 31, 2009 (filed in Canada with the Canadian securities regulatory authorities in lieu of an annual information form), which was filed with the SEC on March 30, 2010 and which includes our audited consolidated balance sheets as at December 31, 2009 and 2008 and our audited consolidated statements of operations, comprehensive loss, accumulated other comprehensive income and deficit, changes in shareholders equity and cash flows for each of the years in

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the three-year period ended December 31, 2009, the financial statement schedules and management s annual report on internal control over financial reporting set out on page 116 of our 2009 annual report on Form 20-F, together with the auditors report thereon dated March 23, 2010 on our consolidated financial statements and on the effectiveness of internal control over financial reporting and our Management s Discussion and Analysis included as Item 5. Operating and Financial Review and Prospects in our annual report on Form 20-F;

our unaudited interim consolidated financial statements as at March 31, 2010 and for the three-month periods ended March 31, 2010 and 2009 and Management s Discussion and Analysis thereon, included as Exhibit 99.1 to our report on Form 6-K furnished to the SEC on May 13, 2010;

our management information circular dated March 23, 2010 in connection with our annual and special meeting of shareholders held on May 13, 2010, which was included as Exhibit 99.1 to our report on Form 6-K furnished to the SEC on March 31, 2010; and

to the extent permitted by applicable securities law, any other documents which we elect to incorporate by reference into the accompanying base shelf prospectus.

You may obtain copies of any of these filings by contacting us at the address and telephone number indicated below or via the SEDAR website or the SEC s Internet site or by contacting the SEC as described above under Where to Find Additional Information. You may request a copy of these filings, and any exhibits we have specifically incorporated by reference as an exhibit into this prospectus supplement, at no cost, by writing to or telephoning:

Æterna Zentaris Inc.
1405 du Parc-Technologique Boulevard, Quebec City, Canada G1P 4P5
Attn: Investor Relations
Tel. (418) 652-8525

Readers should rely only on the information provided or incorporated by reference into this prospectus supplement and the accompanying prospectus. Readers should not assume that the information in this prospectus supplement, the accompanying prospectus, or any free writing prospectus, is accurate as of any date other than the date of the applicable document.

## ABOUT ÆTERNA ZENTARIS

### Our Business

We are a late-stage drug development company specialized in oncology and endocrine therapy. Our pipeline encompasses compounds at all stages of development, from drug discovery through marketed products. The highest priorities in oncology are our Phase 3 program with perifosine in multiple myeloma and colorectal cancer, combined with our Phase 2 program in multiple cancers, as well as our Phase 2 program with AEZS-108 in advanced endometrial and advanced ovarian cancer combined with potential developments in other cancer indications. In endocrinology, our lead program is our Phase 3 trial with AEZS-130 (Solorel™) as a growth hormone stimulation test for the diagnosis of growth hormone deficiency in adults.

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The following table summarizes the development status of our principal products and product candidates:

**Status of our drug pipeline as at June 15, 2010**

| Discovery | Preclinical | Phase 1 | Phase 2 | Phase 3 | Commercial |
|---|---|---|---|---|---|
| 120,000 compound library | AEZS-120 Prostate cancer vaccine (oncology)<br><br>AEZS-129, 131 and 132 Erk & P13K Inhibitors (oncology)<br><br>AEZS-127 ErPC (oncology)<br><br>AEZS-123 Ghrelin receptor antagonist (endocrinology)<br><br>AEZS-115 Non-peptide LHRH antagonists (endometriosis & urology) | AEZS-112 (oncology)<br>AEZS-130 Therapeutic in tumor induced cachexia and other (endocrinology) | Perifosine<br>Multiple cancers<br><br>AEZS-108<br>Ovarian cancer<br>Endometrial cancer | Perifosine<br>Multiple myeloma<br>Colorectal cancer<br><br>AEZS-130 (Solorel(tm))<br>Diagnostic in adult growth hormone deficiency (endocrinology) | Cetrotide® (*in vitro* fertilization) |
| **Partners** | | | Perifosine:<br>**Keryx** North America<br>**Handok** Korea (oncology) | Perifosine:<br>**Keryx** North America<br>**Handok** Korea (oncology) | Cetrotide(®):<br>**Merck Serono** (World ex-Japan)<br>**Nippon Kayaku/ Shionogi** Japan |

We were incorporated on September 12, 1990 under the laws of Canada. Our registered office is located at 1405 du Parc-Technologique Blvd., Quebec City, Canada G1P 4P5, our telephone number is (418) 652-8525 and our website is www.aezsinc.com. None of the documents or information found on our website shall be deemed to be included in or incorporated into this prospectus supplement or the accompanying base shelf prospectus.

**Recent Developments**

***Perifosine***

On May 17, 2010, we announced the publication of an article in the May 12, 2010 edition of the Journal of the National Cancer Institute entitled *In Vitro and In Vivo Inhibition of Neuroblastoma Tumor Cell Growth by AKT Inhibitor Perifosine,* demonstrating the single agent activity of perifosine in neuroblastoma tumor preclinical models. Neuroblastoma is the most common pediatric solid tumor. Perifosine, our novel, potentially first-in-class, oral anti-cancer agent that inhibits Akt activation in the phosphoinositide 3-kinase (PI3K) pathway, is currently being investigated in a Phase 1 study as a single agent treatment for recurrent solid tumors, including neuroblastoma, in pediatric patients. The article states that activated Akt is a marker of decreased event-free or overall survival in neuroblastoma patients, and that the aim of this study was to investigate the effect of perifosine, an Akt inhibitor, as a single agent on neuroblastoma cell growth *in vitro* and *in vivo*. The preclinical study investigated the activity of perifosine on four human neuroblastoma cell lines, as well as on the survival, tumor growth, and activation status of Akt in mice bearing human neuroblastoma xenograft tumors. Perifosine showed a statistically significant reduction in neuroblastoma cell survival, slowed or regressed tumor growth, and increased survival in mice bearing neuroblastoma tumors. A decreased level of activated Akt was also observed in perifosine-treated neuroblastoma cells and xenograft tumors. The investigators concluded that perifosine inhibited the activation of Akt and was an effective cytotoxic agent in neuroblastoma cells *in vitro* and *in vivo,* and that this data supports the future clinical evaluation of perifosine for the treatment of neuroblastoma tumors.

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On June 7, 2010, we announced that Phase 1 data of perifosine in recurrent pediatric solid tumors was presented in the pediatric solid tumor poster discussion session held at the 46th Annual Meeting of the American Society of Clinical Oncology (ASCO) taking place in Chicago. This study, conducted by the Memorial Sloan-Kettering Cancer Center pediatric group, marks the first time that perifosine has been administered in a pediatric patient setting.

This Phase 1 Study of perifosine for Recurrent Pediatric Solid Tumors is a single center, open-label, dose-escalating study to assess safety, tolerability, pharmacokinetics (PK), and to identify any dose limiting toxicity (DLT) of single agent perifosine in pediatric patients with any solid tumor that has failed standard therapy. Eleven patients (4 males, 7 females), at a median age of 13 years (5-18) were treated in this study to date. The following tumor types were treated thus far: high-grade glioma (5), medulloblastoma (2), neuroblastoma (3), and ependymoma (1). Most patients were heavily pretreated, with a median of three prior lines of therapy. Cohorts of three patients were treated at three dose levels: 25mg/$m^2$/day, 50mg/$m^2$/day and 75mg/$m^2$/day using 50mg tablets of perifosine after a loading dose on day 1, and taking into account the drug s long half-life (>100hrs). No DLTs were observed at any of the three dose levels; dose level 4 is currently open for accrual. PK data thus far suggests similar drug absorption by pediatric patients relative to adult patients treated with single agent perifosine.

Of particular interest are the early signs of clinical activity observed in two of the three patients with Stage 4 refractory neuroblastoma. Both patients were refractory to prior treatments upon entering the study and achieved stable disease for 48 weeks and 55+ weeks (ongoing). The investigators concluded that perifosine is well-tolerated in children with recurrent solid tumors and that these early signals of activity warrant further investigation in patients with advanced neuroblastoma and select brain tumors. Previously, perifosine has been shown to target activation of Akt in neuroblastoma cells and xenografts and to significantly inhibit tumor growth *in vivo* and improve the survival of mice bearing neuroblastoma tumors.

***AEZS-108***

On May 6, 2010, we announced that we had received orphan-drug designation from the U.S. Food and Drug Administration ( FDA ) for AEZS-108, our doxorubicin targeted conjugate compound, for the treatment of ovarian cancer. AEZS-108 is currently in a Phase 2 trial in advanced ovarian and advanced endometrial cancer in Europe. Orphan-drug designation is granted by the FDA Office of Orphan Products Development to novel drugs or biologics that treat a rare disease or condition affecting fewer than 200,000 patients in the U.S. The designation provides a drug developer with a seven-year period of 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 previously granted the designation for the same indication.

On May 12, 2010, we announced that the FDA had approved our Investigational New Drug ( IND ) application for AEZS-108 in luteinizing hormone releasing hormone ( LHRH ) receptor positive urothelial (bladder) cancer. Following this approval from the FDA, we expect to initiate a Phase 2 clinical trial in this indication in the second half of 2010. This trial will be conducted at the Sylvester Comprehensive Cancer Center at the University of Miami Miller School of Medicine, and will include up to 64 patients, male and female, with advanced LHRH-receptor positive urothelial (bladder) cancer. The study will be conducted in two parts: first, a dose-finding part in up to 12 patients; subsequently, a selected dose will be studied for its effect on progression-free survival.

On May 17, 2010, we also announced that we had received a positive opinion for orphan medicinal product designation from the Committee for Orphan Medicinal Products ( COMP ) of the European Medicines Agency for AEZS-108 for the treatment of ovarian cancer. Orphan medicinal product designation is granted by the European Commission, following a positive opinion from the COMP, to a medicinal product that is intended for the diagnosis, prevention or treatment of a life-threatening or a chronically debilitating condition affecting not more than five in

10,000 persons in the European Community when the application for designation is submitted. Orphan medicinal product designation provides the sponsor with access to the Centralized Procedure for the application for marketing authorization, protocol assistance, up to a 100% reduction in fees related to a marketing authorization application, pre-authorization inspection and post-authorization activities, and could provide ten years of market exclusivity in the European Union for AEZ-108 once approved for the treatment of ovarian cancer.

On June 7, 2010, Prof. Günter Emons, Chairman, Department of Obstetrics & Gynaecology Georg-August University Göttingen, Germany, presented positive efficacy and safety data for our doxorubicin targeted conjugate compound, AEZS-108, in ovarian cancer, at the American Society of Clinical Oncology (ASCO) Annual Meeting. AEZS-108 is currently in a Phase 2 trial conducted in Europe by the German AGO Study Group (Study AGO-GYN5), in

advanced ovarian and endometrial cancer, with final results expected by year-end. The poster (abstract #5035) entitled, *Phase 2 study of AEZS-108, a targeted cytotoxic LHRH analog, in patients with LHRH receptor positive platinum resistant ovarian cancer* , G. Emons, S. Tomov, P. Harter, J. Sehouli, P. Wimberger, A. Staehle, L. C. Hanker, F. Hilpert, P. Dall, and C. Gruendker, for the AGO Study Group, details the use of AEZS-108, a targeted cytotoxic drug in which doxorubicin is linked to [D-Lys(6)]-luteinizing hormone-releasing hormone (LHRH), in women with histologically confirmed taxane-pretreated platinum-resistant/refractory LHRH-R positive advanced (FIGO III or IV) or recurrent ovarian cancer. Patients received a recommended dose of 267 mg/m$^2$ by intravenous infusion over 2 hours, with retreatment every 3 weeks, for up to 6 courses. Response rate (RECIST and/or GCIG criteria) was defined as primary endpoint. Secondary endpoints were safety, time-to-progression (TTP) and overall survival (OS).

42 patients with platinum-resistant ovarian cancer entered the study. Efficacy included partial response in 5 patients (11.9%) and stable disease for more than 12 weeks in 11 patients (26.2%). Based on those data, a Clinical Benefit Rate (CBR) of 38% can be estimated. Median time to progression (TTP) and overall survival (OS) were 3.5 months (104 days) and 15.6 months (475 days), respectively.

In all, tolerability of AEZS-108 was good and commonly allowed retreatment as scheduled. Only one patient (2.4%) had a dose reduction, and overall, 25 of 170 (14.7%) courses were given with a delay, including also cases in which delay was not related to toxicity. Severe (Grade 3 or 4) toxicity was mainly restricted to rapidly reversible hematologic toxicity (leukopenia/neutropenia) associated with fever in 3 cases. Good tolerability of AEZS-108 was also reflected with only a few patients with non-hematological toxicities of grade 3 (none with grade 4), including single cases (2.4%) each of nausea, constipation, poor general condition, and an enzyme elevation. No cardiac toxicity was reported.

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## THE OFFERING

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| Issuer | Æterna Zentaris Inc. |
| Securities we are offering | 8,805,964 units. Each unit is comprised of one common share of our capital and a purchaser warrant to purchase 0.50 of a common share of our capital. |
| Price per Unit | $1.3725 |
| Common shares to be outstanding after this offering | 83,138,663 common shares without giving effect to the exercise of warrants, and 87,805,823 common shares assuming and after giving effect to the exercise of all warrants offered under this prospectus supplement (including both the purchaser warrants and the compensation warrants). The number of common shares to be issued and outstanding after this offering is based on 74,332,699 common shares issued and outstanding as at June 15, 2010, and excludes:<br><br>5,914,121 common shares issuable upon the exercise of outstanding stock options at a weighted average exercise price of C$2.73 per common share and 293,334 common shares issuable upon the exercise of outstanding stock options at a weighted average exercise price of $2.83 per common share;<br><br>8,438,380 common shares issuable upon the exercise of outstanding warrants at a weighted average exercise price of $1.60 per common share; and<br><br>an aggregate of 2,266,473 common shares reserved for future issuance under our equity incentive plans. |
| Warrants to be outstanding after this offering | Warrants to acquire an aggregate of 13,105,540 common shares will be outstanding after this offering (including the purchaser warrants and the compensation warrants offered hereby). Purchaser warrants to acquire 4,402,982 common shares at a price of $1.3725 per share, and compensation warrants to acquire 264,178 common shares at a price of $1.7156 per share, will be issued pursuant to this offering. |
| Use of Proceeds | We expect the net proceeds from this offering to be up to approximately $11.3 million after deducting the placement agent s fees and expenses as described in the section of this prospectus supplement entitled Plan of Distribution and other estimated offering expenses payable by us, which include legal and filing fees, printing costs and various other fees associated with registering the securities and listing the common shares, and excluding the proceeds, if any, from the exercise of the warrants issued pursuant to this offering. We intend to use the net proceeds from the sale of the securities under this prospectus supplement to fund our AEZS-108, AEZS-112 and AEZS-130 programs and for other general corporate and |

| | |
|---|---|
| | working capital purposes. |
| NASDAQ Symbol | AEZS |
| TSX Symbol | AEZ |
| Risk Factors | This investment involves a high degree of risk. Please see the sections entitled Risk Factors beginning on page S-9 of this prospectus supplement and page 8 of the accompanying prospectus, as well as in the documents incorporated by reference herein and therein. |

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## RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the risks described below before making an investment decision. You should also refer to the other information in this prospectus supplement, including information incorporated or deemed to be incorporated by reference herein, including our consolidated financial statements and related notes, and in the accompanying prospectus. The risks and uncertainties described in the accompanying prospectus and incorporated by reference herein are those that we currently believe may materially affect us. Additional risks and uncertainties that we are unaware of or that we currently deem immaterial also may become important factors that affect us. If any of the following risks actually occurs, our business, financial condition, and results of operations could be materially adversely affected, the trading price of our common shares could decline and you could lose all or part of your investment.

### Risks relating to this Offering

***Our share price is volatile, which may result from factors outside of our control. If we experience low trading volume or if our common shares are delisted from the TSX or NASDAQ, you may have difficulty selling your common shares.***

Our common shares are currently listed and traded only on the TSX and NASDAQ. Our valuation and share price since the beginning of trading after our initial listings, first in Canada and then in the United States, have had no demonstrable or 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.

During the year ended December 31, 2009, the closing price of our common shares ranged from C$0.46 to C$3.11 per share on the TSX, and from $0.46 to $2.83 on the NASDAQ, and during the five months ended May 31, 2010, the closing price of our common shares ranged from C$0.80 to C$2.14 per share on the TSX and from $0.79 to $2.09 on the NASDAQ. 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:

- clinical and regulatory developments regarding our product candidates;
- delays in our anticipated development or commercialization timelines;
- developments regarding current or future third-party collaborators;
- other announcements by us regarding technological, product development or other matters;
- arrivals or departures of key personnel;
- governmental or regulatory action affecting our product candidates and our competitors products in the United States, 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 United States, Canada or abroad.

Our listing on both the TSX and NASDAQ 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 price of our common shares to fluctuate significantly more than the stock market as a whole.

In the past, following periods of large price declines in the public market price of a company s securities, securities class action litigation has often been initiated against that company. Litigation of this type could result in substantial costs and diversion of management s attention and resources, which would adversely affect our business. Any adverse determination in litigation could also subject us to significant liabilities.

We must meet continuing listing requirements to maintain the listing of our common shares on the TSX and NASDAQ. For continued listing, NASDAQ requires, among other things, that listed securities maintain a minimum closing bid price of not less than $1.00 per share. On January 22, 2010, we announced that we had received a letter from

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the NASDAQ Listing Qualifications Department indicating that the minimum closing bid price of the common shares had fallen below $1.00 for 30 consecutive trading days, and therefore, Æterna Zentaris was not in compliance with NASDAQ Listing Rule 5450(a)(1) (the Rule ). In accordance with NASDAQ Listing Rule 5810(C)(3)(a), we were provided a grace period of 180 calendar days, or until July 20, 2010, to regain compliance with this requirement. On April 27, 2010, we announced that we had received a letter from NASDAQ notifying us that the closing bid price of our common shares was above U.S.$1.00 for ten consecutive trading days and that, as a result, we had regained compliance with the Rule as of April 23, 2010.

If we are unsuccessful in maintaining the minimum bid requirements set forth in the Rule in the future and are unable to subsequently regain compliance within the applicable grace period, our common shares will be subject to delisting from the NASDAQ Global Market. Should we receive a delisting notification, we may appeal to the Listing Qualifications Panel or apply to transfer the listing of our common shares to the NASDAQ Capital Market if we satisfy at such time all of the initial listing standards on the NASDAQ Capital Market, other than compliance with the minimum closing bid price requirement. If the application to the NASDAQ Capital Market is approved, then we will have an additional 180-day grace period in order to regain compliance with the minimum bid price requirement while listed on the NASDAQ Capital Market. There can be no assurance that we will meet the requirements for continued listing on the NASDAQ Global Market or whether our application to the NASDAQ Capital Market would be approved or that any appeal would be granted by the Listing Qualifications Panel.

***An active market may not develop for the warrants, which may hinder your ability to liquidate your investment.***

The issuance of warrants under this prospectus supplement is a new issue of securities with no established trading market, and we do not currently intend to list them on any securities exchange. A dealer may intend to make a market in the warrants after their issuance pursuant to this prospectus supplement; however, a dealer may not be obligated to do so and may discontinue such market-making at any time. As a result, we cannot assure you that an active trading market will develop for any series of the warrants. In addition, subsequent to their initial issuance, the warrants may trade at a discount to their initial offering price, depending upon the value of the underlying common shares and upon our prospects or the prospects for companies in our industry generally and other factors, including those described herein.

***A large number of common shares may be issued and subsequently sold upon the exercise of the warrants. The sale or availability for sale of these warrants may depress the price of our common shares.***

An aggregate of 4,667,160 common shares are issuable upon the exercise of the warrants. To the extent that purchasers of warrants sell common shares issued upon the exercise of the warrants, the market price of our common shares may decrease due to the additional selling pressure in the market. The risk of dilution from issuances of common shares underlying the warrants may cause shareholders to sell their common shares, which could further contribute to any decline in the common share price.

***You will incur immediate and substantial dilution.***

The public offering price is substantially higher than the pro forma and pro forma as adjusted negative net tangible book value per share of our outstanding common shares immediately after the offering. As a result, investors purchasing common shares in the offering will incur immediate and substantial dilution in the amount of $1.62 per common share. See Consolidated Capitalization and Dilution.

***The sale of common shares issued upon exercise of the warrants could encourage short sales by third parties which could further depress the price of the common shares.***

Any downward pressure on the price of common shares caused by the sale of common shares issued upon the exercise of the warrants could encourage short sales by third parties. In a short sale, a prospective seller borrows common shares from a shareholder or broker and sells the borrowed common shares. The prospective seller hopes that the common share price will decline, at which time the seller can purchase common shares at a lower price for delivery back to the lender. The seller profits when the common share price declines because it is purchasing common shares at a price lower than the sale price of the borrowed common shares. Such sales could place downward pressure on the price of our common shares by increasing the number of common shares being sold, which could further contribute to any decline in the market price of our common shares.

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***Future issuances of securities and hedging activities may depress the trading price of our common shares.***

Any issuance of equity securities or securities convertible into or exchangeable for equity securities after the offering of units under this prospectus supplement, including the issuance of common shares upon the exercise of stock options and upon exercise of the warrants, could dilute the interests of our existing equity securityholders, and could substantially decrease the trading 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 for other reasons. Our stock option plan generally permits 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. As at June 15, 2010, there were:

74,332,699 common shares issued and outstanding;

No issued and outstanding Preferred Shares;

8,438,380 common shares issuable upon exercise of outstanding warrants; and

6,207,455 stock options outstanding.

In addition, the price of common shares could also be affected by possible sales of common shares 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 common shares. This hedging or arbitrage could, in turn, affect the trading price of our common shares.

***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 (as defined in Certain Income Tax Considerations United States Federal Income Taxation ) that directly or indirectly hold common shares or warrants of a passive foreign investment company ( PFIC ). We will be classified as a PFIC for U.S. federal income tax purposes for a taxable year if (i) at least 75 percent of our gross income is passive income or (ii) at least 50 percent 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.

We believe that we were not a PFIC for the 2009 taxable year. However, since the fair market value of our assets may be determined in large part by the market price of our common shares, which is likely to fluctuate, and the composition of our income and assets will be affected by how, and how quickly, we spend any cash that is raised in any financing transaction, no assurance can be provided that we will not be classified as a PFIC for the 2010 taxable year and for any future taxable year.

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 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 common shares or warrants, 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. However, a mark-to-market election is not available to be made in respect of warrants.

Under recently enacted U.S. tax legislation and subject to future guidance, if the Company is a PFIC, U.S. Holders will be required to file, for returns due after March 18, 2010, an annual information return with the IRS relating to their ownership of common shares and, potentially, warrants. This new filing requirement is in addition to any pre-existing reporting requirements that applied to a U.S. Holder s interest in a PFIC (which the recently enacted tax legislation does not affect). Pursuant to IRS Notice 2010-34, the new filing requirement will not apply for taxable years beginning before March 18, 2010. No additional guidance has yet been issued about the annual information return required under the recently enacted legislation, including on the information required to be reported on such return, the form of the return, or the due date for the return.

For a more detailed discussion of the potential tax impact of us being a PFIC, see the section entitled Certain Income Tax Considerations United States Federal Income Taxation.

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## USE OF PROCEEDS

We expect the net proceeds from this offering to be up to approximately $11.3 million after deducting the placement agent s fees and expenses as described in the section of this prospectus supplement entitled Plan of Distribution and other estimated offering expenses payable by us, which include legal and filing fees, printing costs and various other fees associated with registering the securities and listing the common shares, and excluding the proceeds, if any, from the exercise of the warrants issued pursuant to this offering. We intend to use the net proceeds from the sale of the securities under this prospectus supplement to fund our AEZS-108, AEZS-112 and AEZS-130 programs and for other general corporate and working capital purposes.

## PRICE RANGE AND TRADING VOLUMES

Our common shares are listed and posted for trading on the NASDAQ under the symbol AEZS and on the TSX under the symbol AEZ. The following table indicates, for the relevant periods, the high and low closing prices and the average daily trading volume of our common shares on NASDAQ and on the TSX:

| | NASDAQ (US$) | | | TSX (C$) | | |
|---|---|---|---|---|---|---|
| | **High** | **Low** | **Volume** | **High** | **Low** | **Volume** |
| June-10[(1)] | 1.78 | 1.24 | 2,754,440 | 1.88 | 1.31 | 277,659 |
| May-10 | 2.09 | 1.21 | 7,920,290 | 2.14 | 1.23 | 884,790 |
| Apr-10 | 1.65 | 0.80 | 4,816,695 | 1.66 | 0.80 | 877,252 |
| Mar-10 | 0.85 | 0.79 | 217,325 | 0.87 | 0.81 | 77,730 |
| Feb-10 | 0.87 | 0.81 | 102,265 | 0.91 | 0.86 | 38,021 |
| Jan-10 | 0.93 | 0.80 | 489,389 | 0.99 | 0.83 | 109,245 |
| Dec-09 | 1.12 | 0.80 | 341,716 | 1.17 | 0.83 | 140,062 |
| Nov-09 | 1.10 | 0.98 | 191,089 | 1.17 | 1.05 | 97,410 |
| Oct-09 | 1.25 | 0.99 | 408,270 | 1.40 | 1.07 | 96,648 |
| Sept-09 | 1.38 | 0.89 | 1,240,716 | 1.46 | 0.98 | 259,348 |
| Aug-09 | 2.83 | 0.89 | 1,567,974 | 3.11 | 0.97 | 704,210 |
| Jul-09 | 2.62 | 1.67 | 391,576 | 2.80 | 1.95 | 188,891 |
| Jun-09 | 2.35 | 1.73 | | | | |