April 2021
Corporate Presentation

Forward-Looking Statements

This document contains forward-looking statements (as defined by applicable securities legislation) made pursuant to the safe-harbor provision of the U.S. Securities Litigation Reform Act of 1995 and forward-looking information (as defined under applicable Canadian securities laws), which reflect the current expectations regarding future events of Aeterna Zentaris Inc. (the “Company”, “we”, “us” or “our”). Forward-looking statements and forward-looking information may include, but are not limited to statements preceded by, followed by, or that include the words "will," "expects," "believes," "intends," "would," "could," "may," "anticipates," and similar terms that relate to future events, performance, or our results. Such statements include, but are not limited to, the potential of Macrilen™ (macimorelin) to treat childhood-onset growth hormone deficiency, the size, timing and scope of our commercial and development pipeline, the potential use of Macrilen™ (macimorelin) as a therapeutic, the potential of any of our the pre-clinical products or technologies to be successfully developed, the characteristics and commercial potential of any of our products or technologies, our cash runway to fund operations and the expected timing of future key milestones, studies, agreements and approvals. Forward-looking statements and forward-looking information contained in this presentation are based on our opinions, estimates and assumptions in light of our experience and perception of historical trends, current conditions and expected future developments, as well as other factors that we currently believe are appropriate and reasonable in the circumstances. There can be no assurance that the underlying opinions, estimates and assumptions will prove to be correct. Forward-looking statements involve known and unknown risks and uncertainties, including those discussed in this presentation and in our 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. Known and unknown risks and uncertainties could cause our actual results to differ materially from those in forward-looking statements and forward-looking information. Such risks and uncertainties include, among others, our ability to continue as a going concern is dependent, in part, on our ability to secure additional financing, our heavy dependence on the success of Macrilen™ (macimorelin) and related out-licensing arrangements and the continued availability of funds and resources to successfully develop and commercialize Macrilen™ and our in-licensed products and technologies, the ability of the Company to enter into licensing, development, manufacturing and marketing and distribution agreements with other pharmaceutical companies, universities or others and keep such agreements in effect (including that the Company the Company may be unable to successfully negotiate a license agreement for any technology or products for which it has an option), the Company’s ability to identify therapeutic uses for Macrilen™ (macimorelin) or to in-license other product candidates, the Company’s reliance on third parties for the manufacturing and commercialization of Macrilen™ (macimorelin), potential delay or termination or lack of success of any of our pre-clinical or clinical programs, potential disputes with third parties leading to delays in or termination of the manufacturing, development, licensing or commercialization of our products or resulting in significant litigation or arbitration, and, more generally, uncertainties related to the regulatory process, the degree of market acceptance of Macrilen™ (macimorelin), the impact of securities class action litigation, shareholder lawsuits or other litigation on our cash flow, results of operations and financial position, our ability to protect our intellectual property, general changes in economic conditions and the impact of the COVID-19 pandemic on our operations, plans and prospects, including to the initiation and completion of clinical trials in a timely manner or at all.

Readers of this presentation should consult our quarterly and annual filings with the Canadian and U.S. securities commissions for additional information on risks and uncertainties. Given these uncertainties and risk factors, readers are cautioned not to place undue reliance on these forward-looking statements and forward-looking information. The forward-looking statements and information in this presentation are made as of the date hereof and we disclaim any obligation to update any such factors or to publicly announce any revisions to any of the forward-looking statements or forward-looking information contained herein to reflect future results, events or developments, unless required to do so by a governmental authority or applicable law.

Certain Other Matters

Any graphs, tables or other information demonstrating our historical performance or that of any other entity contained in this presentation are intended only to illustrate past performance of such entities and are not necessarily indicative of future performance. This presentation does not purport to contain all of the material information with respect to the Company and is not a recommendation that any person should make an investment in the Company. Moreover, this presentation does not constitute an offer to sell or a solicitation of an offer to buy or acquire securities of the Company in any jurisdiction or an inducement to enter into investment activity, nor may it or any part of it form the basis of or be relied on in connection with any contract or commitment whatsoever. Any reference to “$” or “dollars” means United States dollars.

Where We Are Today

Investment Highlights

Macrilen™ 60 mg (macimorelin) for oral solution

Macimorelin

First and only approved oral drug indicated for diagnosis of adult growth hormone deficiency (AGHD)

FDA

EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

novo nordisk®

United States and Canada Commercial and Development Partner

Novo Nordisk is the global leader in growth hormone deficiency therapeutic market

- *Receiving royalties on sales and milestone payments*
- *Collaborating on development of macimorelin for childhood-onset growth hormone deficiency testing*

Consilient Health

European Commercial Partner

Consilient Health is a privately owned pharma company focused on commercializing medicines in Europe and the Middle East

- *Expected to receive royalties on sales and milestone payments*

Growth Opportunities

Childhood-Onset Growth Hormone Deficiency (CGHD) Testing

Leveraging AGHD approval and compelling safety profile[1]

Macimorelin as a Therapeutic

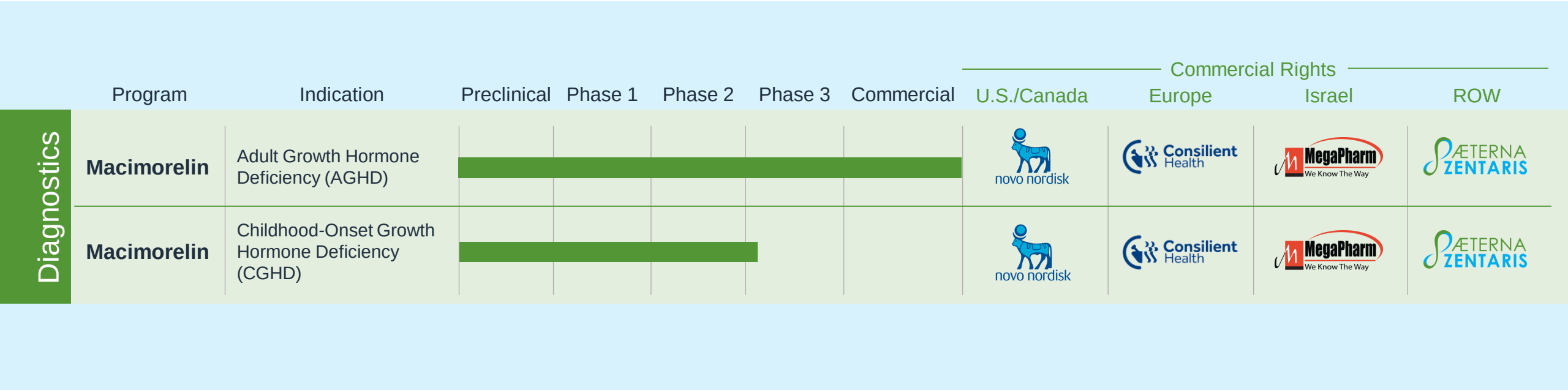
Working with The University of Queensland

Pipeline Expansion

Advancing Therapeutic and Vaccine Programs

1: Macrilen [prescribing information]. Plainsboro, NJ: Novo Nordisk Inc; 2018; Macimorelin summary of product characteristics (SmPC) approved by European Commission

Commercial and Development Diagnostic Pipeline



Therapeutic and Vaccine Development Pipeline

	Program	Indication	Preclinical	Phase 1	Phase 2	Phase 3	Program Highlights
Therapeutics	**AIM Biologicals**	Neuromyelitis Optica Spectrum Disorder (NMOSD)					**In-licensed program in January 2021**
	Macimorelin	Undisclosed Neurodegenerative Disease					**Entered material transfer agreement and option to in-license in January 2021**
	Delayed Clearance Parathyroid Hormone (DC-PTH) Fusion Polypeptides	Primary Hypoparathyroidism					**In-licensed program in March 2021**
Vaccine	**Oral Coronavirus Vaccine Platform**	Covid-19 (SARS-CoV-2)					**In-licensed program in March 2021**

Executing on Key 2021 Initiative

Building A Pipeline Beyond Diagnostics

Developing Therapeutics and Vaccines
to Secure Long-Term Growth

AIM Biologicals

Targeted Immunosuppressive Therapeutics

Potential treatment option for neuromyelitis optica spectrum disorder (NMOSD)

NMOSD is an auto-antibody mediated inflammatory CNS orphan disorder with significant unmet need

Entered exclusive license and R&D agreement with Julius-Maximilians-University of Wuerzburg in January 2021

Targeted, highly specific, autoimmunity modifying proteins

Technology derived from the body's natural process that protects a fetus against the mother's immune system

Plans to conduct further preclinical research to identify and characterize lead candidate

The Promise of Targeted, Physiological, Antigen-Specific Immunosuppression

Immunosuppressive Drugs

Reduce disease symptoms

May cause severe side effects

Autoimmune Diseases are

Enhanced by autoreactive effector T cells

Ameliorated by protective effector T cells

Antigen-specific Immunosuppression

Various antigens

may be used for selective de-sensibilization

Relevant side effects may be avoided

Macimorelin as a Potential Therapeutic

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Entered Material Transfer Agreement (MTA) with University of Queensland in January 2021

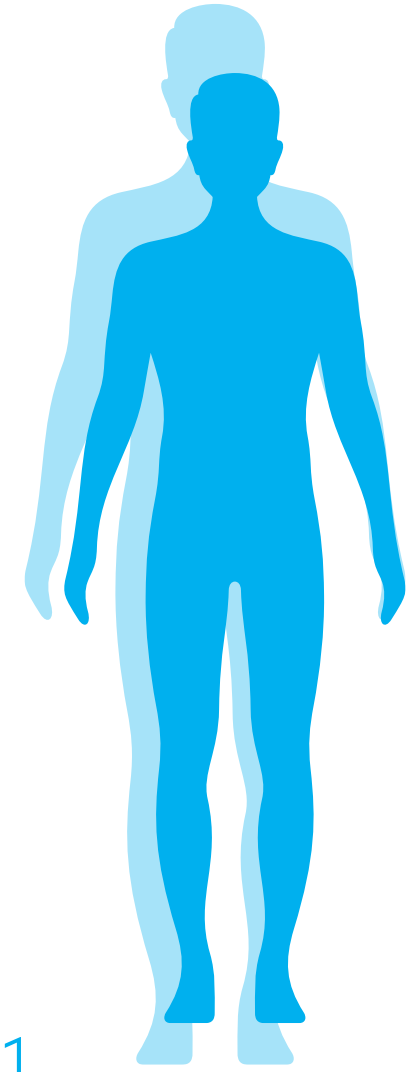
Exclusive rights for AEZS to negotiate a license agreement for the commercial use of the results

Initially targeting as a potential treatment for an undisclosed neurodegenerative disease

University researchers to secure grants and conduct preclinical and clinical studies

AEZS as co-investigator providing medication as well as preclinical and clinical know-how

Rationale



Majority of motor neuron disease (MND) patients have a moderate to marked GH deficiency

Ghrelin mimetics (agonists) like macimorelin have the potential to:

- Reduce neuroinflammation
- Slow metabolism
- Slow weight loss

- Stimulate appetite

Such effects may slow disease progression and may extend survival

Delayed Clearance Parathyroid Hormone (DC-PTH) Fusion Polypeptides

PTH is a key regulating hormone essential for calcium homeostasis and renal phosphate clearance

Potential to be a self-administered pen to help maintain normal serum calcium and phosphate levels

The University Of Sheffield.

Entered exclusive license in March 2021

Hypoparathyroidism

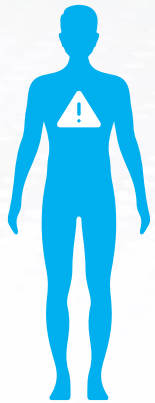
Body produces abnormally low levels of PTH

affects

Orphan indication

~23-37 per 100,000

causes



- Renal dysfunction
- Muscle cramping
- Twitching
- Seizures
- Cardiac arrhythmias

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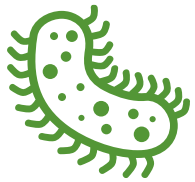
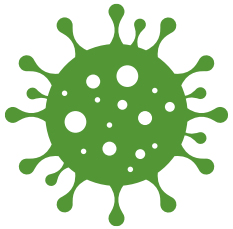
Oral Coronavirus Vaccine Platform



Orally active live-attenuated bacterial vaccine based on the salmonella typhi Ty21a carrier strain



Currently undergoing preclinical studies for the prevention of coronavirus diseases, including COVID-19 (SARS-CoV-2)

Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Entered exclusive license and research agreement with Julius-Maximilians-University of Wuerzburg in March 2021

Paul-Ehrlich-Institut
Bundesinstitut für Impfstoffe
und biomedizinische Arzneimittel

Working closely with regulators on development path forward

~2°C - 8°C

Potential for temperature stable supply chain

Multiple-Antigens

Higher likelihood for improved defense against mutated virus variants

Salmonella Typhi Ty21a carrier strain has been safely used worldwide in more than 150 million administered doses

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Macimorelin

A Disruptive Oral Diagnostic Solution for GHD

Growth Hormone is Critical to Lifelong Health

Produced by the pituitary gland
(located at the base of the brain)

Children

Promotes growth

Reduction in auxological parameters:

- Short stature
- Low growth velocity (speed) for age
- Increased fat around the waist
- Delayed tooth development

Adults

Maintains normal body stature and regulates metabolism

No clear signs or symptoms, but recognized by:

- Metabolic syndrome
- Osteoporosis
- Muscle wasting
- Impaired quality of life

Increased risk of:

- Cardiovascular (CV) issues
- Bone fractures

Macimorelin

Only Approved Oral Diagnostic for GHD

Adult Growth Hormone Deficiency

- U.S. FDA approved
- European Commission approved

Childhood-Onset Growth Hormone Deficiency

- Positive results in dose finding study announced April 2020
- Planned safety and efficacy study to commence early Q2 2021

American Association of Clinical Endocrinologists 2019 Guidelines

"Because the **macimorelin** test is simple, well tolerated with minimal side effects, and of shorter duration with only 3 to 4 blood draws compared to other GH–stimulation tests, it is anticipated that its use will increase over time." [1]

"Very promising test that is easy to conduct with high reproducibility, safety, and diagnostic accuracy comparable to the ITT and GHRH plus ARG test" [1]

1: AACE 2019 Guidelines: American Association Of Clinical Endocrinologists And American College Of Endocrinology Guidelines For Management Of Growth Hormone Deficiency In Adults And Patients Transitioning From Pediatric To Adult Care, 2019

Leveraging Clinical Success and Compelling Safety Profile

Expand Macimorelin Into CGHD Testing Through Use of Pediatric Development Plan

Unified Clinical Protocol Agreed with U.S. FDA and EMA

CGHD Clinical Development Strategy

Dose Finding Study (P01)

Positive results announced April 2020

Provides Framework for Study P02

Pivotal Study (P02): Test Efficacy and Safety

Expected commencement date

Early Q2 2021

- Co-Development with Novo Nordisk (NN)
- Aeterna Zentaris to be the responsible Sponsor overseeing the study
- NN to fund 100% of budgeted Study P02 trial expenses up to €9 million
- Potential additional expenses to be shared

Preparing to Initiate Pivotal Study P02

Open-label, single dose, multicenter, multinational

- Macimorelin GHST will be performed twice (for repeatability data)
- Two standard GHSTs as controls: arginine (i.v.), clonidine (p.o.)
- Design suitable to support claim for potential of macimorelin as stand-alone test

Children and adolescents from 2 to less than 18 years of age with suspected GHD to be enrolled

2 (Years) <18

≥ 100 subjects worldwide

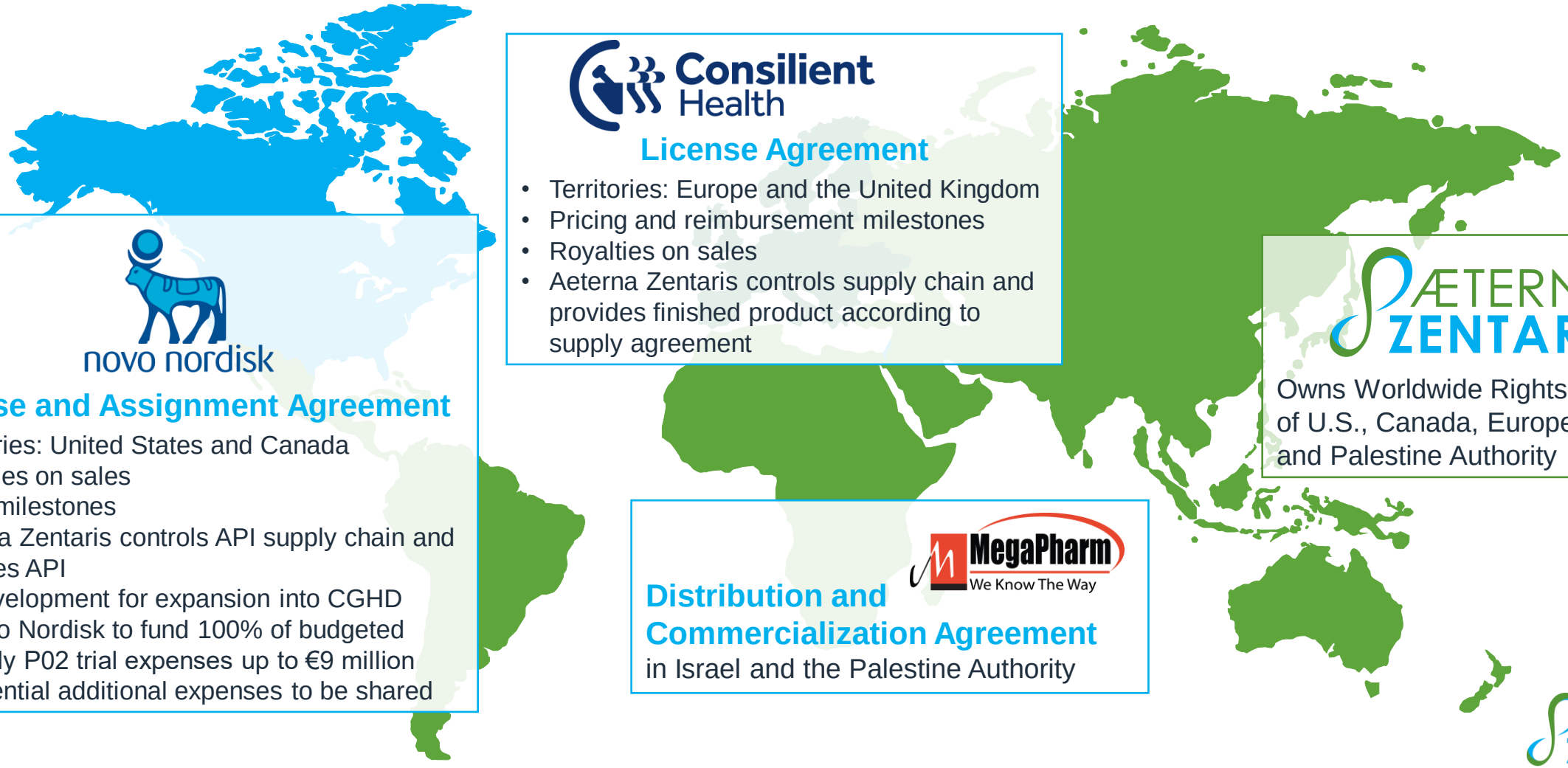
≥ 40 pre-pubertal and 40 pubertal subjects

≥ 25 subjects expected to be enrolled in the U.S.

Corporate Overview

Macimorelin Commercial Rights

Actively seeking commercial partners in ROW



Consilient Health

License Agreement

- Territories: Europe and the United Kingdom
- Pricing and reimbursement milestones
- Royalties on sales
- Aeterna Zentaris controls supply chain and provides finished product according to supply agreement

novo nordisk

License and Assignment Agreement

- Territories: United States and Canada
- Royalties on sales
- Sales milestones
- Aeterna Zentaris controls API supply chain and provides API
- Co-development for expansion into CGHD
  - Novo Nordisk to fund 100% of budgeted Study P02 trial expenses up to €9 million
  - Potential additional expenses to be shared

ÆTERNA ZENTARIS

Owns Worldwide Rights Outside of U.S., Canada, Europe, Israel and Palestine Authority

MegaPharm We Know The Way

Distribution and Commercialization Agreement
in Israel and the Palestine Authority

ÆTERNA ZENTARIS

Financial Snapshot

NASDAQ: AEZS / TSX: AEZS

Cash runway expected to fund operations beyond 2023[1]

~$133M	~120M	~21M
Market Cap[2]	Shares Outstanding[3]	3 month Avg. Volume[4]

1: Based on Management's current expectations and planned development activities
2: Based on April 5, 2021 closing price of $1.11 per share on NASDAQ and the number of issued and outstanding AEZS shares on that date
3: Information as at February 22, 2021
4: Based on information as at April 5, 2021 for the 3 month average daily trading volume on NASDAQ

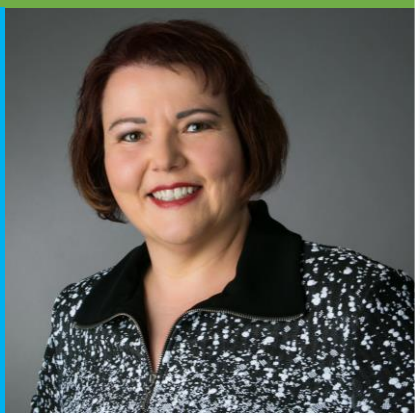
Management

Klaus Paulini, PhD
President and
Chief Executive Officer;
Managing Director,
Aeterna Zentaris GmbH

Eckhard Guenther, PhD
Managing Director /
Senior VP, Business Development
Aeterna Zentaris GmbH

Leslie Auld, CPA, MBA
Senior VP,
Chief Financial Officer

Nicola Ammer, MD
Senior VP, Clinical Development,
Chief Medical Officer



Expected Value Driving Milestones

- ✓ Successful completion of Study P01
- ✓ Amended agreement with Novo Nordisk
- ✓ European Licensing Agreement with Consilient Health Ltd.

Planned start of CGHD clinical safety and efficacy study (AEZS-130-P02 – multi-national, including U.S.)

Planned submission - FDA and EMA CGHD dossiers

- ✓ In-licensed NMOSD program from Julius-Maximilians-University
- ✓ In-licensed oral COVID-19 vaccine from Julius-Maximilians-University
- ✓ In-licensed DC-PTH fusion polypeptides from the University of Sheffield

Planned completion of P02 CGHD study according to EMA

Earliest macimorelin CGHD approvals – FDA and EMA

Potential upside by additional pipeline activities

Investment Summary

Executing on key 2021 initiative to build a pipeline beyond diagnostics

- AIM Biologicals for the treatment of neuromyelitis optica spectrum disorder (NMOSD)
- Exploring macimorelin as a potential therapeutic for an undisclosed neurodegenerative disease
- DC-PTH fusion polypeptides as a potential treatment for primary hypoparathyroidism
- Oral coronavirus (COVID-19) vaccine platform

Macimorelin is the only approved oral product for diagnosis of adult growth hormone deficiency

Partnered with global leader in GHD therapeutics for U.S. and Canada

Funding 100% of budgeted Study P02 trial expenses up to €9 million

Commercial partner seeking pricing and reimbursement approval in Europe and UK

Expanding macimorelin into CGHD, an interesting worldwide market and area of significant unmet need

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