Corporate Presentation
October 2020

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 our current expectations regarding future events. 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. 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. Despite a careful process to prepare and review the forward-looking statements and forward-looking information, 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 dependent, in part, on the ability of Aeterna Zentaris Inc. to secure additional financing, 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 develop and commercialize the product, the ability of the Company to enter into out-licensing, development, manufacturing and marketing and distribution agreements with other pharmaceutical companies and keep such agreements in effect, the Company's ability to identify therapeutic uses for macimorelin or to in-license other product candidates, reliance on third parties for the manufacturing and commercialization of Macrilen™ (macimorelin), potential delay or termination or lack of success of our pediatric clinical trial program, potential disputes with third parties, leading to delays in or termination of the manufacturing, development, out-licensing or commercialization of our product candidates, or resulting in significant litigation or arbitration, and, more generally, uncertainties related to the regulatory process, our ability to efficiently commercialize or out-license Macrilen™ (macimorelin), the degree of market acceptance of Macrilen™ (macimorelin), our ability to obtain necessary approvals from the relevant regulatory authorities to enable us to use the desired brand names for our product, the impact of securities class action litigation or other litigation on our cash flow, results of operations and financial position, our ability to take advantage of business opportunities in the pharmaceutical industry, our ability to protect our intellectual property, the potential of liability arising from shareholder lawsuits and general changes in economic conditions. 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. 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

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Where We Are Today

Investment Highlights

Macrilen™ 60 mg (macimorelin) for oral solution

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

FDA

EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

novo nordisk®

Partnership with global leader in growth hormone deficiency therapeutic market in U.S. and Canada

- *Receiving royalties on sales and milestone payments*

Aeterna Zentaris Owns Worldwide Rights Outside of U.S. and Canada

Growth Opportunities

Market in Europe and Globally

Robust business development effort ongoing to seek additional commercialization partners

Childhood-Onset Growth Hormone Deficiency (CGHD)

Leveraging AGHD approval and compelling safety profile[1]

- *Clinical development strategy with the goal of obtaining approval defined*
- *New patent filed for CGHD diagnosis*

Macimorelin as a Therapeutic

Exploring the potential of macimorelin as a therapeutic agent in various indications

- *New formulations and administration routes under assessment*

Pipeline Expansion

Evaluating opportunities to expand development pipeline

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

Macimorelin Commercial Rights

Ongoing business development activities to secure commercialization partner in Europe and ROW

novo nordisk

Marketed in the United States

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 and shared costs for expansion into CGHD

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Owns Worldwide Rights Outside of U.S. and Canada

MegaPharm We Know The Way

Distribution and Commercialization Agreement in Israel and the Palestine Authority

Growth Hormone Deficiency

Growth Hormone is Critical to Lifelong Health

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

Children

Promotes growth

Adults

Maintains normal body stature and regulates metabolism

Growth Hormone Deficiency

Rare Endocrine System Disorder Characterized by the Inadequate Secretion of Growth Hormone

Children

Reduction in auxological parameters:

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

Adult

No single signs or symptoms, but recognized by:

- Metabolic syndrome
- Osteoporosis
- Muscle wasting
- Low physical/mental energy
- Impaired quality of life

Increased risk of:

- Cardiovascular (CV) issues
- Bone fractures

Market Overview

Growth Hormone Deficiency

Children

Number of potential tests annually

27,000-28,800[1]

~25,000[1]

Adult

Number of potential tests annually

28,000-62,000[1]

14,000-28,000[1]

1: Navigant study 2009, TVG study 2017, Huron Consulting study 2018

Current GHD Diagnostic Tests

Recommended by the Endocrine Society[1]

No Other FDA or EC Approved Oral Test

- **Insulin tolerance test (ITT)**
  - Not FDA or EC approved or regulated
- **Glucagon stimulation test (GST)**
  - Not FDA or EC approved or regulated
- **Growth hormone releasing hormone[2] (GHRH) test with and without arginine**
  - Not FDA or EC approved or regulated
  - Available in certain countries (national approvals), including the EU-5 territories[3]

"[ITT Test] is increasingly used less frequently in the U.S. because of safety concerns."

AACE 2019 Guidelines For Management of Growth Hormone Deficiency In Adults and Patients Transitioning From Pediatric To Adult Care

1: Molitch et al. J Clin Endocrinol Metab. 2011;96(6):1587-1609; 2: No longer commercially available in the U.S.; 3: National database; data provided by pharmaceutical price information service company Gesundheit Österreich GmbH, report of August 2018 on request of Aeterna Zentaris;

Macimorelin

A Disruptive Oral Diagnostic Solution for GHD

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 Q1 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]

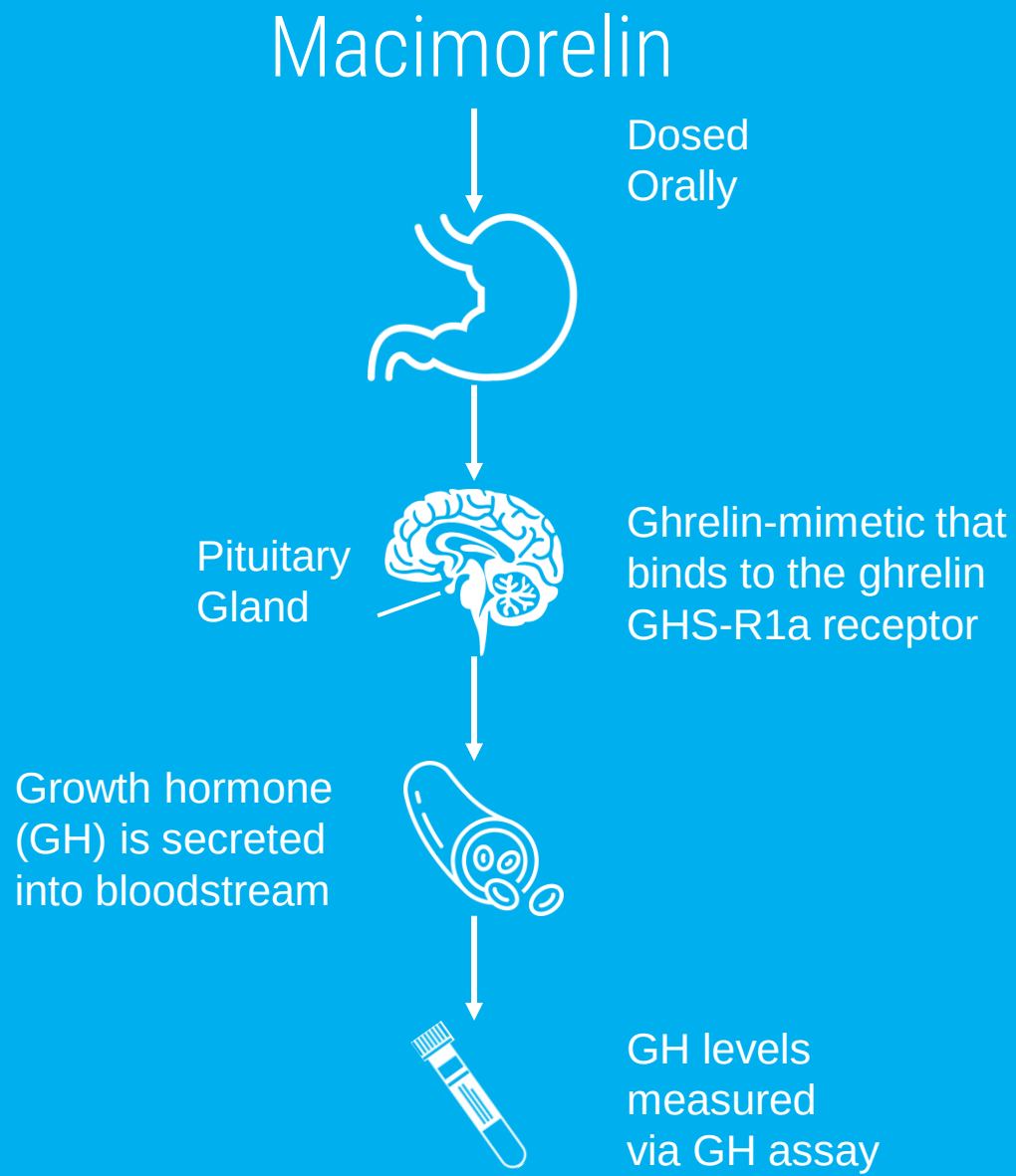
"Very promising test that is easy to conduct with high reproducibility, safety, and diagnostic accuracy comparable to the ITT and GHRH plus ARG test"[1]

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

Test Overview and Mechanism of Action

Macimorelin

- Macimorelin dosing as test for AGHD:
  - 0.5 mg/kg body weight
- 1 sachet = patient up to 120 kg (265 lbs)
- The solution in mL equals the patient's body weight in kg
- 77 kg adult patient would need 77 mL



Adult Test Procedure

Macimorelin

No Physician Supervision Required

Nurse Administered

Fasted Patient
(at least 8 hours)

Patient Drinks Solution
1 ml (0.5 mg/kg)
per kg body weight

FDA	30	45	60	90
EMA	-	45	60	90

Blood Draws
(Minutes)

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Accurately Diagnosed AGHD Compared with ITT[1]

Results from an Open-Label, ITT-Controlled, 2-Way, Randomized Crossover Study

Insulin Tolerance Test (ITT) Outcome

Macimorelin Stimulation Test Outcome	Positive[2]	Negative[3]	Total Subjects
Positive[2]	55	4	59
Negative[3]	19	62	81
Total Subjects	74	66	140
AGREEMENT	**74%**	**94%**	**84%**

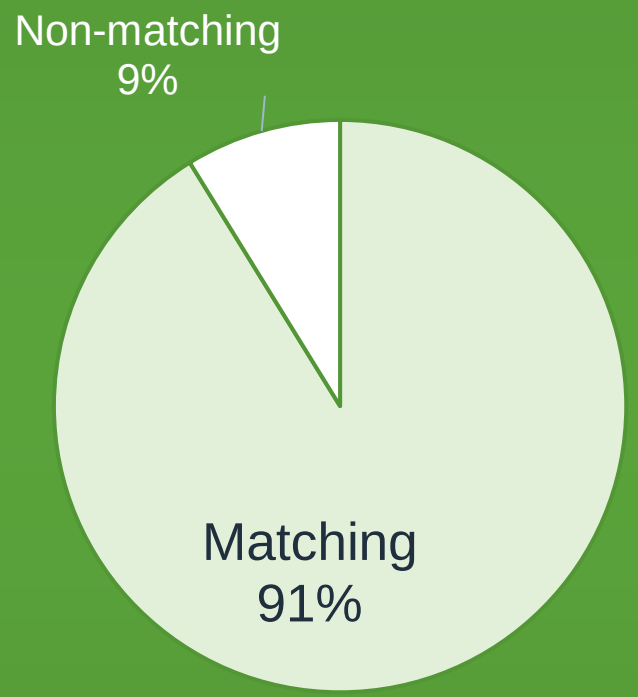
Positive outcome: GH release below pre-defined cut-off point (2.8 ng/mL Mac.; 5.1 ng/mL ITT)
Negative outcome: GH release above pre-defined cut-off point

- Positive agreement higher (89%) for high-risk AGHD category
- Negative agreement 86-94%
- Compelling label with strong overall safety profile
- <1% of macimorelin tests were not evaluable vs. 17% of ITTs
- Macimorelin was highly reproducible (91%) in the same patient

1: Garcia et al., J Clin Endocrinol Metab, 2018, 103(8), 3083-3093; 2: FDA: "…the sensitivity of the new test is estimated as the proportion of subjects with the target condition in whom the test is positive"; 3: FDA: "…the specificity of the test is estimated as the proportion of subjects without the target condition in whom the test is negative"* Source for 1 and 2: "Statistical Guidance on Reporting Results from Studies Evaluating Diagnostic Tests" - Guidance for Industry and FDA Staff as of March 13, 2007, pages 21-23

Repeatable in 91% of Subjects[1]

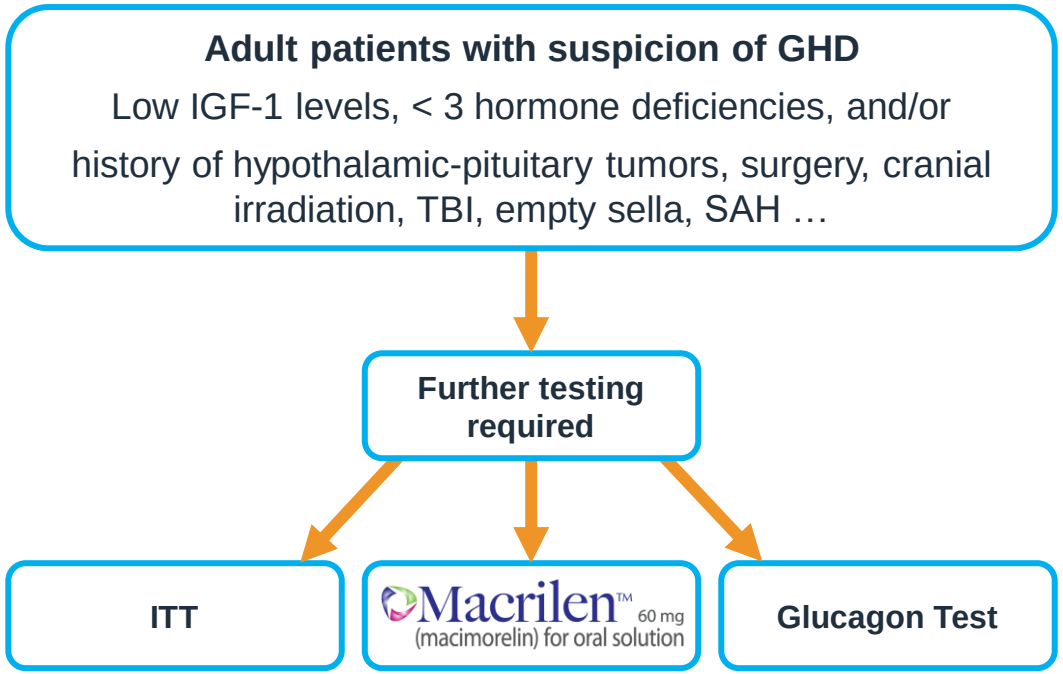
	AGHD Likelihood Group			
	A: High	**B: Intermediate**	**C: Low**	**Total**
Number of subjects	13	12	9	**34**
Subjects with match between 1st and 2nd macimorelin test	13	11	7	**31**



1: US-FDA prescribing information of Novo Nordisk, revised in November, 2019; page 4

Potential to Displace Current Market as Standard Diagnosis

Current AGHD Diagnostic Process[1]



If 1-2 stimulation tests positive → **hGH Treatment**

Physician Sentiment

"I think this could be the new standard of care for adult selective GH testing… too bad it's not approved in kids."
U.S. Pharmacy Director

"This test could be the single exclusive test our clinic would use when GH secretion tests are needed."
U.S. KOL

"I think there is a huge potential; at the moment ITT and glucagon have great drawback. Bitter taste is a small price to pay."
U.S. KOL

1: AACE 2019 Guidelines For Management Of Growth Hormone Deficiency In Adults And Patients Transitioning From Pediatric To Adult Care

Significant Advantages

Over Currently Available Tests

Macimorelin Is the Only Approved Oral Drug Indicated for Diagnosis of AGHD

Test	Accurate?	Safe?	Tolerability?	Simple?	Speedy?	Availability?	Cost?
ITT	Gold standard	No (in some pts)	No (in some pts)	No	No	Yes	$
GST	Yes	Yes	No (in some pts)	Yes	No	Yes	$
Macimorelin	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**$$$**

ITT: insulin tolerance test; GST: glucagon stimulation test

*AACE 2019 Guidelines For Management Of Growth Hormone Deficiency In Adults And Patients Transitioning From Pediatric To Adult Care

Childhood-Onset Growth Hormone Deficiency

Represents Significant Expansion Opportunity

Leveraging Clinical Success and Compelling Safety Profile

Expand Macimorelin Into CGHD 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

Efficacy Study (P02): Test Efficacy and Safety

Expected commencement date

Q1 2021

- Co-Development with Novo Nordisk (NN)
- NN responsible for funding 70% of the CGHD clinical trials

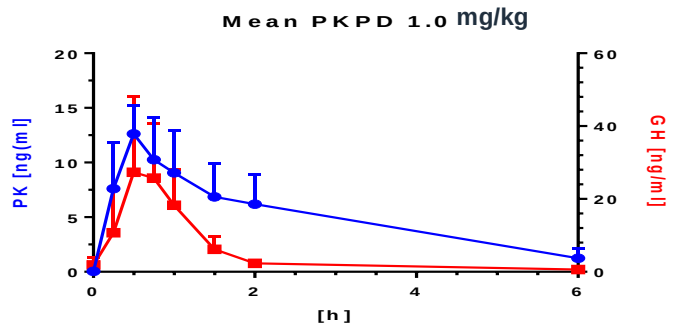
Positive Study P01

Dose Finding Pediatric Study of Macimorelin

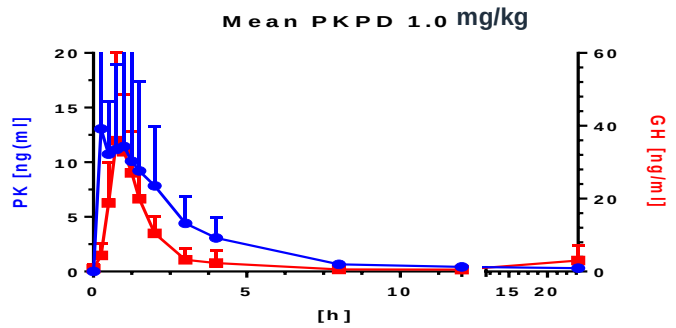
- Study established dose for Study P02
  1mg/kg appears to lead to a strong GH stimulation
- Excellent safety and tolerability profile
  No adverse event related to macimorelin
- ~70% of AEs were related to hypoglycemia induced by the Insulin-Tolerance-Test (ITT)

PK and PD Profile Generally Comparable to Data in Adults

AEZS-130-P01 Cohort 3
Children (age range: 4-14 y)



AEZS-130-054
Adults (age range: 25-52 y)



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.

Building A Pipeline Beyond Diagnostics

Developing Therapeutics to Secure Long-Term Growth

Macimorelin as a Potential Therapeutic

Potential additional uses for Ghrelin Agonists

Semi-rational approach – (Catalent PBPK-analysis - followed for identification of:

- alternative formulations
- alternative routes of administration

Alternative, non-oral formulations preferred for therapeutic use

Experimental work on formulations ongoing

In parallel, evaluation of potential indications together with external experts

PBPK-analysis: Physiologically based pharmacokinetic analysis

Activating Currently Owned Assets

Strategic review of current assets to identify potential program to activate and advance

- Development candidates from our previous programs may offer opportunities for re-purposing
- Various kinase inhibitors (NCEs) were already evaluated clinically or at least pre-clinically
- Ready to consider potential co-development opportunities

Evaluating Licensing Opportunities

Successful, extensive network with universities in Europe and U.S.

Strategic collaborations with universities offer access to innovative development candidates in different indications

Focus on orphan drug indications and potential pediatric use

Assessment of in-licensing of such development projects ongoing

Aim to quickly transition from pre-clinical to clinical development

Corporate Overview

Financial Snapshot

NASDAQ: AEZS / TSX: AEZS

Cash runway to fund operations through 2023[1]

~$23M	~62.6M	~4.65M
Market Cap[2]	Shares Outstanding	Avg. Volume 3M[1]

1: Based on Management's current expectations and planned development activities
2: Based on October 7, 2020 closing price of $0.37 per share

Management

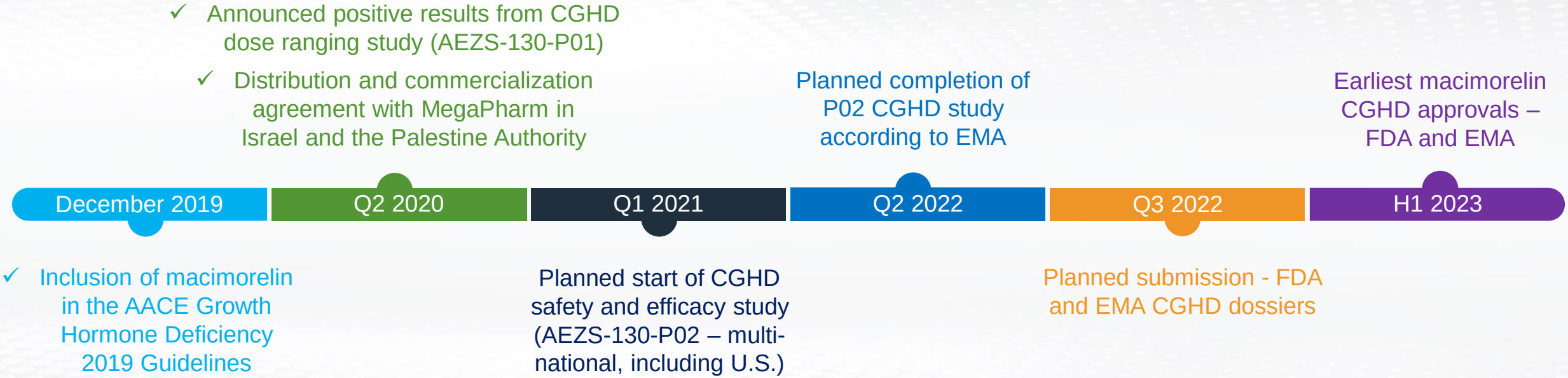
Klaus Paulini, PhD
President and
Chief Executive Officer;
Managing Director,
Aeterna Zentaris GmbH

Eckhard Guenther, PhD
Managing Director,
Aeterna Zentaris GmbH

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

Nicola Ammer, MD
VP Clinical Development,
Chief Medical Officer

Expected Value Driving Milestones



Potential upside by pipeline activities

Investment Summary

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

Partnered with global leader in GHD, Novo Nordisk, for U.S. and Canada

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

Ongoing business development effort to secure marketing partner for macimorelin in Europe and other key markets

Evaluating opportunities to re-establish a development pipeline

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