

# Upstream intervention to address multiple hallmarks of AD

Tackling AD at the roots

|Vivoryon Therapeutics N.V. - October 2023

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Vivoryon Uniquely Positioned to Bring Oral, Highly Differentiated, Post PoC Small Molecule to Patients with Alzheimer's Disease



Unique first-in-class approach designed to overcome challenges in AD

- Reduces brain damage: blocks formation of neurotoxic N3pE-amyloid
- Validated MOA: targeting all key hallmarks of AD (amyloid, tau, neuroinflammation)
- Avoids mAb constraints: ARIA, imaging, infusions, costs
- Large addressable market

Phase 2 studies progressing well with no drug-related ARIA, very low AE-related discontinuations

- Delivering on our promise: postpositive PoC, orally available, favorable safety profile to date
- VIVIAD (EU): Fully recruited (259 pts), ~82 weeks of treatment, final data readout: Q1/2024
- VIVA-MIND (US): Cohort A fully recruited (60 pts), DSMB recommended to continue without modification



Senior management changes and funding support future success

- New CEO Frank Weber, new CS&IRO Anne Doering
- New Board Members: Kugan
   Sathiyanandarajah and Morten Asser
   Karsdal
- Healthy runway: recent private placement (€25m) extending cash runway through key milestones into H2/2024



Recent Management and Board Changes Strengthen Development Experience, Enhance Business Acumen and Prepare Company for Next Phase

## MANAGEMENT





## NON-EXECUTIVE DIRECTORS

Erich Platzer, MD, PhD Chairman of the Board

Kugan Sathiyanandarajah Vice-Chairman & Chair Compensation Committee

Prof. Morten Asser Karsdal MSc, PhD, mMBA

Charlotte Lohmann Chair Nomination & Corporate Governance Committee

Claudia Riedl, PhD Chair Audit Committee

Samir Shah, MD Chair IR Committee



Vivoryon Pioneering Small Molecule-Based Therapies Designed to Prevent N3pE-Abeta Formation Rather Than Aiming to Clear Existing Plaques

## ONGOING CHALLENGES IN AD

- ~30 million people worldwide and expected to double by 2050, with ~12.7 million in the US alone
- Recent advances with mAbs (e.g. lecanemab, donanemab) show promise, but come with significant limitations
- Multitude of clinical studies, but statistical significance does not necessarily imply a meaningful drug to individual patients and their caregivers
- Lack of meaningful endpoints to enable reliable evaluation of study data for correlation to real-life benefit
- Meaningful trial design is needed to leverage existing data to select the right patients/appropriate treatment duration
- New modalities are needed to address hallmarks of AD beyond Abeta

## VIVORYON'S APPROACH

 Discovered QPCT-mediated formation of a neurotoxic Abeta variant, N3pE-Abeta (pGlu-Abeta), as driver of AD pathology<sup>1,2</sup>

 Pioneering small molecule-based therapies designed to prevent N3pE-Abeta formation - rather than aiming to clear existing plaques<sup>3</sup>





<sup>1</sup> Schilling et al., Nat. Med. 2008; <sup>2</sup>Grochowska et al., EMBO 2017; <sup>3</sup>Buchholz et al., J. Med. Chem 2006, Nussbaum et al., Nature 2012 5

Our Lead Product Candidate, Varoglutamstat, Targets Multiple Key Hallmarks of Alzheimer's Disease Early in Pathological Process

### ROLE OF QPCT/L IN AD PATHOLOGY

- Increased activity of glutaminyl cyclase (QPCT) is associated with AD pathology in humans<sup>1</sup>
- QPCT catalyzes formation of neurotoxic N3pE-Abetawhich is not found in healthy individuals. <sup>2,3</sup>
- Varoglutamstat efficiently inhibits QPCT, thus targeting N3pE-Abeta monomer formation and all of its aggregation states<sup>4</sup>
- Varoglutamstat also efficiently inhibits QPCTL (isoform of QPCT) leading to decreased neuro-inflammation by attenuating CCL2 activity<sup>5</sup>
- Low MMSE scores correlate with high N3pE-Abeta, high QPCT levels, high pE-CCL2 and high QPCTL levels in AD patients<sup>3,5</sup>
- QPCT/L activity is the key driver of a pathologic cycle involving neuroinflammation, pE-CCL2 and N3pE-Abeta<sup>5</sup>

### VAROGLUTAMSTAT TARGETS AD PATHOGENESIS EARLY-ON





<sup>1</sup>Gunn et al., J.Neurochem 2021; <sup>2</sup> Schilling et al., Nat. Med. 2008; <sup>3</sup>Morawski et al., JAD 2014; <sup>4</sup>Upadhaya et al., Brain 2014; <sup>5</sup>Hartlage-Rübsamen et al., Acta Neuropathol, 2015; QPCT/L Inhibition Has Significant Potential in Humans with Alzheimer's Disease: Translating *In Vivo* Evidence into Proof of Concept in AD Patients



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<sup>1</sup>Jawhar et al., 2011; <sup>2</sup>Joly-Amado et al. 2020; Hartlage-Rübsamen et al., 2015; <sup>3</sup>Hoffmann et al., 2017 <sub>7</sub>

## Varoglutamstat Clinical Development Strategy

Clear Path To Potential Regulatory Approval Based on Well-Informed, Extensive Phase 1 and Phase 2 Trials



#### **Preclinical research** In vitro and in vivo studies

#### COMPLETED

- **OPCT** inhibition improves cognitive parameters in AD mouse models
- **OPCT** is essential for N3pE amyloid and pE-CCL2 formation in vivo





Phase 1 Assessment of safety and tolerability in 205 healthy volunteers

#### COMPLETED

 Varoglutamstat is welltolerated - no DLT at 800mg twice daily or up to 3.6g once daily

Phase 1 Assessment of safety and tolerability in 60 healthy Chinese volunteers\*

#### IN PREPARATION

Phase 2a SAPHIR 12-week Proof of Concept study in 120 patients with early AD

#### COMPLETED

- Statistically significant changes from baseline in working memory after 3 months of treatment
- Strong evidence of synaptic recovery
- High target occupancy detected at doses of 150mg BID and above



#### Phase 2b VIVIAD

Assessment of safety, tolerability and efficacy in 250 patients with MCI or mild AD

#### Fully recruited Final readout Q1/2024

- Endpoints: safety, efficacy (NTB, attention/ working memory, biomarkers)
- Fully enrolled (259 pts); planned to allow for mean treatment duration of ~82 weeks

Phase 2a/b VIVA-MIND Assessment of efficacy and safety in 180/414 patients with early AD

Expanded treatment duration in Phase 2a portion (72 weeks) Study status update in Q4/2023

Endpoints: safety, efficacy (attention/working memory, CDR-SB, biomarkers)



#### Pivotal study or accelerated approval

- FDA Fast Track designation granted in 2021
- Two possible scenarios for late-stage development
  - Application for accelerated approval (based on consistent / positive data of Phase 2b studies)
  - Phase 3 clinical development

<sup>D</sup> Vivorvon Therapeutics N.V. October 2023 BID: twice daily; CDR-SB: clinical dementia rating scale-sum of boxes; DLT: dose-limiting toxicity; NTB: neuropsychological 8 test battery. \*Regional license, Simcere Pharmaceuticals responsible for clinical development in Greater China

Phase 2a SAPHIR Study Provides Evidence of Significant Changes in Working Memory and Synaptic Recovery After Only 12 Weeks of Treatment

Significant Changes in Working Memory<sup>1</sup>



 Statistically significant changes from baseline in working memory (One Back Test, p = 0.05, d = 0.23, ITT) in AD patients after 12 weeks of treatment

## Recovery EEG Synaptic Activity<sup>1,2</sup>



- Significant (p=0.002, ITT and PP) decrease in theta power
- Post hoc analysis of alpha wave: significant increase on connectivity amplitude envelope correlation (AEC) p=0.025

## Reduction of Neuronal Injury Biomarker<sup>1</sup>



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<sup>1</sup>Scheltens et al., Alzheimer's Research & Therapy, 2018; <sup>2</sup>Briels et.al., Clinical Neurophysiol. 2020 9



## VIVIAD Assesses Safety, Tolerability and Efficacy of Varoglutamstat in Patients with MCI and Mild $AD^{1,2}$

Site visits w 13-24	4	12	16	24	INTERIM SAFETY Mid-22	36	48	60	72	84-96	FINAL DATA 1Q24	
FIRST 90 PATIENTS 1:1:1 Placebo / 300 mg / 600 mg				ıg	DSMB DECISION Safety / Final dose selection	w 25-48/96 ALL PATIENTS 1:1 Placebo / 600 mg Fully recruited						
(all BID)			ENDPOINTS Primary efficacy: NTB: attention and working memory domains over 48-96w									
	<ul> <li>MCI/mild AD</li> <li>AD Biomarkers/PET</li> <li>50-80 years old</li> <li>Standard of care</li> <li>250 patients</li> </ul>			s/PET d are	<ul> <li>Safety assessment guided by frequency &amp; severity of adverse events of interest</li> <li>Based on 181 patients (with 91 at 24w treatment timepoint)</li> </ul>	<ul> <li>Enrollment completed as planned (259 patients)</li> <li>Anticipated average treatment duration: ~82w (one of the longest treatment durations for a large patient set in AD to date)</li> </ul>				ed as ts) ~82w for a AD to	Secondary efficacy: EEG, complete NTB, A-IADL-Q Exploratory efficacy: CSF biomarkers Correlation of CSF with serum biomarkers	

Winterlight Speech Assessment



A-IADL-Q: Amsterdam IADL Questionnaire; BID: twice daily; DSMD: data safety monitoring board: PET: positron emission tomography; 10 'https://clinicaltrials.gov/ct2/show/NCT04498650, 'Vijverberg et al.; Alzheimer's Research & Therapy 2021, 2Weber et al., AAIC 2022, poster P1-403, abstract 69290

**VIVIAD Inclusion Criteria Enabled Precision Recruitment** 



## Lessons learned: Recruiting the right patients with early AD is a critical success factor for VIVIAD

#### **BASIC REQUIREMENT:**

• Mandatory sampling for inclusion: all patients included had low Abeta and high p-tau CSF values

#### **RETHINKING MCI ASSESSMENT:**

- Precision recruitment of individuals with at least minimal cognitive impairment by using the WAIS IV inclusion criterion (at least half a standard deviation worse than age and education matched healthy population)
- Baseline mean value of MMSE in VIVIAD is 24.5

	Ν	Mean	Median	SD	Value
Age	259	68,44	70	7,40	63 to 74
MMSE total score - V1	259	24,51	25	2,73	22 to 27
WAIS-IV total score - V1	259	27,75	28	12,36	19 to 37

> Study population exactly represents early AD population



## VIVIAD: Low Number of Discontinuations Due to AE



## SAPHIR (active and placebo groups) vs. blinded VIVIAD data



Safety profile of varoglutamstat strongly improved vs. 1<sup>st</sup> in patient study SAPHIR

- Total number of discontinuations remains low in VIVIAD throughout the study, today 10%
- Number of discontinuations due to AE remain low in VIVIAD throughout the study, today < 4%</li>
- Titration phase of VIVIAD is through week 12
- High dose of 600mg twice daily with nearly 90% target occupancy



Informed Design of VIVIAD vs. SAPHIR: Slower Titration and Lower Final Dose While Maintaining Level of Target Inhibition



-	Weeks	1	2	3&4	5 to 8	9 to 12	After 12
Dose and titration varoglutamstat mg	SAPHIR	400 BID	800 BID	800 BID	800 BID	800 BID	STOP
	VIVIAD	50 OD	50 OD	50 BID	150 BID	300 BID	600 BID



## VIVA-MIND Recruiting into Cohort B and Has Option to Transform into Confirmatory Phase 3





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ADAS-Cog: Alzheimer's Disease Assessment Scale-Cognitive Subscale; ADNI ABC: neuropathologic assessment; BID: twice daily; CFC2: 14 cognitive- functional composite; MRI: magnetic resonance imaging; https://clinicaltrials.gov/ct2/show/NCT03919162

activity in CSF

## Vivoryon's Pipeline Focused on Alzheimer's Disease with Potential Follow-on Programs



## Multiple Value-Generating Catalysts and Events Ahead

Upcoming Events	<ul> <li>R&amp;D Day with KOLs<sup>1</sup> in Q4/2023 on varoglutamstat, scientific approach and study design</li> <li>Multiple investor interactions throughout Q4/2023 to update on progress</li> </ul>
Clinical Progress	<ul> <li>VIVA-MIND U.S. Phase 2a/b status update Q4/2023</li> <li>VIVIAD European Phase 2b final readout Q1/2024</li> </ul>
Regulatory Strategy	<ul> <li>End of Phase 2 meeting with FDA</li> </ul>
Future Opportunities	<ul> <li>Potential to develop varoglutamstat in combination with mAbs in AD (own and external assets)</li> <li>Follow-up programs into the clinic beyond AD</li> <li>Development opportunities in Greater China with Simcere</li> </ul>

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## Varoglutamstat Positioned for Continued Value Generation





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