
# Upstream intervention to address multiple hallmarks of AD

Tackling AD at the roots

# Important Notice and Disclaimer

This document has been prepared by Vivoryon Therapeutics N.V. (the "Company" or "We") strictly only for discussion purposes. This document does not constitute or form part of any offer or invitation to sell or issue, any offer or inducement or invitation or commitment to purchase or subscribe for, or any solicitation of any offer to purchase or subscribe for, any securities in the Company or any other entity. By reviewing this document, you represent that you are able to receive this document without contravention of any legal or regulatory restrictions applicable to you and will not use this information in relation to any investment decision.

This document and its contents may not be reproduced, redistributed, published or passed on, directly or indirectly, to any other person or published, in whole or in part, for any purpose. Failure to comply with these restrictions may constitute a violation of applicable securities laws. By accepting and reading this document, you will be deemed to agree not to disclose, reproduce or otherwise distribute any information contained herein.

Certain information contained in this document has been obtained from published and non-published sources prepared by third parties. While such information is believed to be reliable for the purposes used herein, none of the Company or its affiliates, directors, officers, employees, members, partners, shareholders or agents make any representation or warranty with respect to or assume any responsibility for the accuracy of such information, and such information has not been independently verified by the Company.

Certain statements contained in this document constitute forward-looking statements, estimates, predictions, influences and projections which are subject to risks and uncertainties and may reflect various assumptions, which may or may not prove to be correct. These forward-looking statements include information about possible or assumed future results of the Company's business, financial condition, results of operations, liquidity, plans and objectives. In particular, the words "anticipate," "believe," "could," "expect," "should," "plan," "intend," "estimate" and "potential," or other similar expressions are intended to identify forward-looking statements. Forward-looking statements appear in a number of places in this presentation and include, but are not limited to, statements regarding our intent, belief or current expectations. Forward-looking statements are based on our management's beliefs and assumptions and on information currently available to our management. Such statements are subject to risks and uncertainties, and actual results may differ materially from those expressed or implied in the forward-looking statements due to of various risk factors and uncertainties including without limitation in relation to: the effectiveness of our main product candidate, and our ability to commercialize it if the regulatory approval is obtained; our ability to explore benefits of combination therapies between our product candidates and other products; our ability to compete and conduct our business in the future; our ability to overcome the challenges posed by the COVID-19 pandemic to the conduct of our business; our ability to expend our limited resources and to obtain funding for our operations necessary to complete further development and commercialization of our product candidates; the timing of and our ability to obtain and maintain regulatory approval for our product candidates; the initiation, timing, progress, results, and cost of our research and development programs and our current and future preclinical studies and clinical trials, including statements regarding the timing of initiation and completion of studies or trials and related preparatory work, the period during which the results of the trials will become available and our research and development programs. Moreover, we operate in an evolving environment. Thus, new risk factors and uncertainties emerge from time to time and it is not possible for our management to predict all risk factors and uncertainties, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements. We qualify all of our forward-looking statements by these cautionary statements.

Forward-looking statements speak only as of the date they are made, and we do not undertake any obligation to update them in light of new information or future developments or to release publicly any revisions to these statements in order to reflect later events or circumstances or to reflect the occurrence of unanticipated events or otherwise, except as required by applicable law.

# Vivoryon is Uniquely Positioned to Improve Health Outcome in Patients with Early Alzheimer's Disease

## Unique First-in-Class Approach

**Stops production of neurotoxic N3pE-amyloid**

- **Validated MOA:** small molecule targeting all key hallmarks of AD (amyloid, tau, neuroinflammation)
- **Avoids mAb constraints:** ARIA, imaging, infusions, costs
- **Large addressable market:** worldwide ~55m people living with dementia, of which estimated 60-70% is AD

## Robust Development Program

**Phase 2 studies progressing well**

- **VIVIAD (EU):** Fully recruited (259 pts), ~82 weeks of treatment, final topline data readout: during end of Q1/2024
- **VIVA-MIND (US):** recent DSMB decision for 600 mg BID – same dose as VIVIAD with faster titration

## Proven Team of Innovators

**Strong discovery and development**

- **Management:** track record of bringing multiple innovative drugs to market
- **Healthy runway:** cash through key value generating milestones into H2/2024
- **Leader** in oral QPCT/L inhibitor small molecule development



*AD: Alzheimer's disease*

# Seasoned Executive Team Equipped with Expertise in Drug Development

## EXECUTIVE DIRECTORS

**Frank Weber, MD**
*Chief Executive Officer / Chief Medical Officer*

MERCK · INTERMUNE® · ZBiotech Zambon Biotech

**Michael Schaeffer, PhD**
*Chief Business Officer*

siren · crelux a WuXi AppTec company · crenano®

**Florian Schmid**
*Chief Financial Officer[1]*

inflaRx · T··Systems· · EY · ANDERSEN

**Anne Doering, CFA**
*Chief Strategy & Investor Relations Officer[2]*

BIONTECH · MERCK · FRANKLIN TEMPLETON

## 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*



[1] *until March 1, 2024;* [2] *CFO effective March 1, 2024*

# Multiple Inflection Points for Lead Asset Varoglutamstat, Research Activities Provide Further Opportunities for Future Growth

| Program | | Approach | Discovery / Preclinical / Phase 1 / Phase 2a / Phase 2b / Phase 3 | Status |
|---|---|---|---|---|
| AD | Varoglutamstat (PQ912) | SMI QPCT/L | *VIVIAD: Ph2b in EU*; *VIVA-MIND: Ph2a/b in US* | **VIVIAD**: Fully recruited; **Final readout during end Q1/24**<br>**VIVA-MIND**: Treatment duration of 72 weeks |
| | Varoglutamstat (SIM0408, PQ912) | SMI QPCT/L | *CTA approval in China* | Partnered with Simcere in Greater China; Clinical development in preparation |
| **RESEARCH ACTIVITIES: increased activity with positive VIVIAD results** | | | | |
| AD | NCE | SMI QPCT/L | | Pre-IND; Exploring second generation programs in AD |
| | PBD-C06 | mAb N3pE amyloid | | Pre-IND; Partnered with Simcere in Greater China |
| Multiple disease areas | NCE | SMI QPCTL | | Pre-IND |
| Fibrosis | NCE | SMI Meprin | | Pre-IND |



*mAb: monoclonal antibody; NCE: novel chemical entity; SMI: small molecule inhibitor; CTA: Clinical Trial Application*

# AD Landscape: Growing Incidence Rate and High Disease Burden on Patient Care Ecosystem

### ~55 Million Worldwide Living with Dementia[1]

AD is the most common form of dementia and may contribute to 60–70% of cases[1]

An estimated 6.7 million Americans are living with AD[2]

### ~$1.3 Trillion Economic Burden from Dementia[3]

50% attributable to care by informal carer who provides on average, 5 hours of care per day[4]

More than 11 million Americans provide unpaid care for a family member or friend with dementia, a contribution to the nation valued at nearly $340B[2]

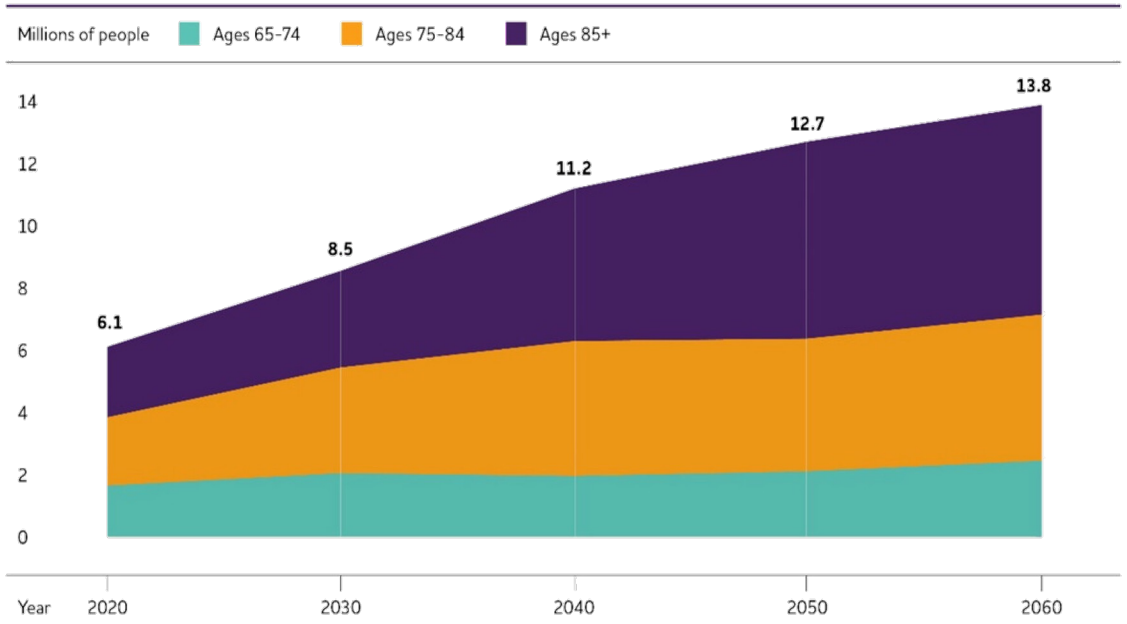
### Early AD Represents Significant Unmet Need

Each year, an estimated 10 in every 100,000 individuals develop early onset dementia[5]

Early-onset affects people under the age of 65

Although there is no known cure, early diagnosis and treatment can lead to better quality of life[6]

Projected number of people age 65 and older (total and by age) in the U.S. population with Alzheimer's dementia, 2020 to 2060[2]




Created from data from Rajan et al.[3]



[1,3,4] WHO, 2023, Mar 15, Dementia, www.who.int/*/fact-sheets/detail/dementia; [2] 2023 Alzheimer's Disease Facts and Figures. Alzheimers Dement 2023;19(4); [5] Alzheimer's Association, 2021, Jul 21, Press Release; [6] Johns Hopkins Medicine, 2023, Nov 08, www.(*)/alzheimers-disease/earlyonset-alzheimer-disease

# Despite Recent AD Treatment Successes Early AD Unmet Need Remains High

## Unmet Need Remains High for Early AD Patients

- Improved safety and higher efficacy in early (MCI) patients
- Robust efficacy in more progressive/advanced mild AD patients with elevated tau levels
- Avoidance of ARIAs (H+E)
- Convenient administration and no infusion-related reactions

## Varoglutamstat Has Potential to Fill the Gaps

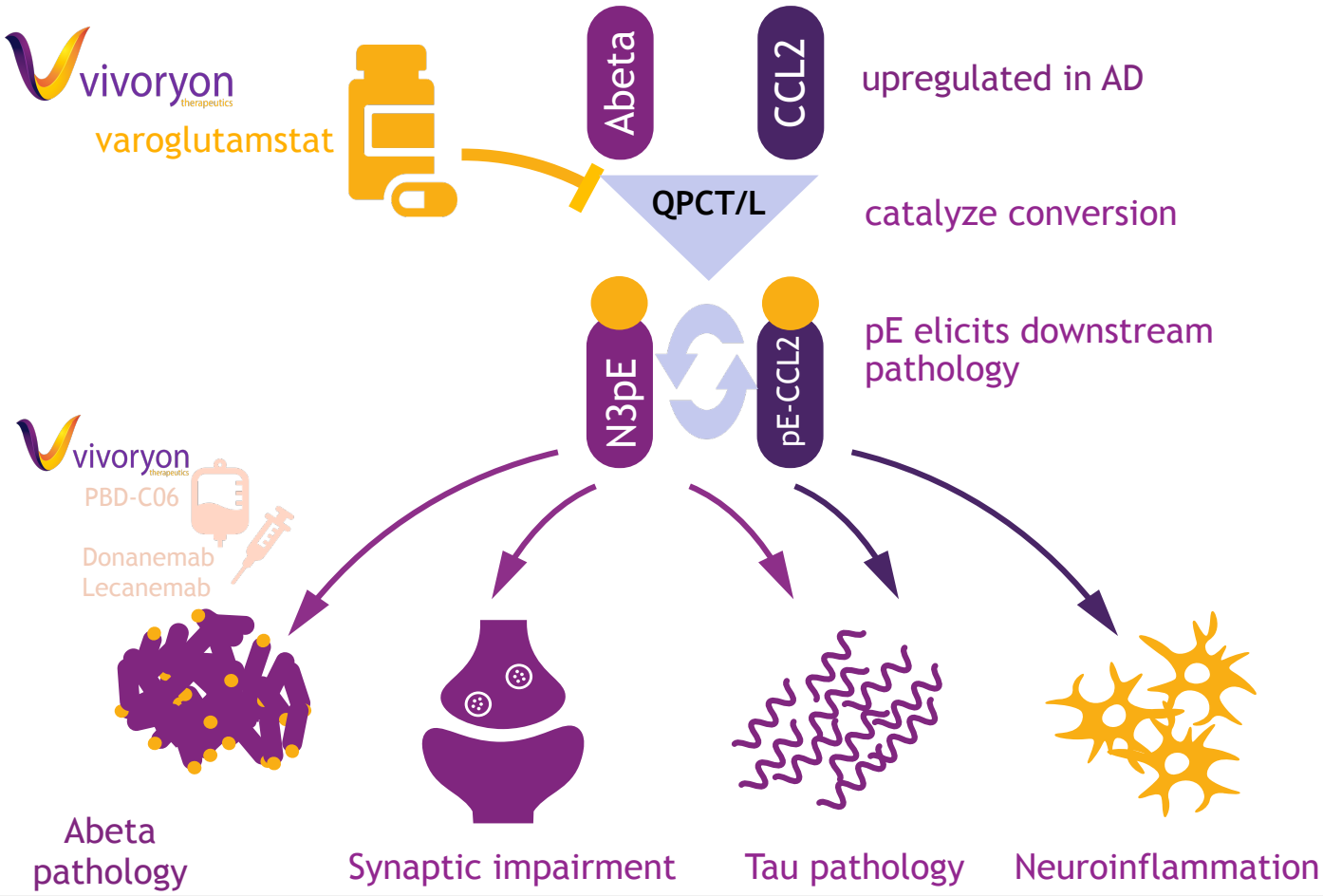
- Potential for higher safety and better efficacy compared to SOC
- Novel MOA to address efficacy gap (tau pathology downstream of pE-Abeta synthesis)
- Favorable safety profile established with no evidence of ARIAs in clinical setting
- Oral small-molecule that can be taken in outpatient setting

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

## VAROGLUTAMSTAT TARGETS AD PATHOGENESIS EARLY-ON






[1] Gunn et al., J.Neurochem 2021; [2] Schilling et al., Nat. Med. 2008; [3] Morawski et al., JAD 2014; [4] Upadhaya et al., Brain 2014; [5] Hartlage-Rübsamen et al., Acta Neuropathol, 2015;

# Translating *In Vivo* Evidence for Relevance of QPCT/L Inhibition into Human AD

| | | | |
|---|---|---|---|
| Abeta Pathology | QPCT is essential for N3pE amyloid formation *in vivo*[1]<br>5XFAD mice, QPCT ko and tg | QPCT/ N3pE | Dose-dependent reduction of QPCT activity in CSF & serum (Ph1 + Ph2a) |
| Neuroinflammation Tau Pathology | CCL2 activity promotes neuroinflammation and accelerates tau pathology[2]<br>rTg45105 mice, CCL2 AAV | CCL2/ Tau | Dose-dependent decrease of pE-CCL2 in serum (Ph1) |
| Cognition | QPCT inhibition improves cognitive parameters in AD mouse models[3]<br>hAPPSLxhQPCT mice, MWM | Cognition/ Memory | Statistically significant changes from baseline in working memory as measured by CogState (Ph2a) |



[1]*Jawhar et al., 2011;* [2]*Joly-Amado et al. 2020; Hartlage-Rübsamen et al., 2015;* [3]*Hoffmann et al., 2017*

# Building Comprehensive Robust Clinical Evidence Including Well-designed and Well-powered Placebo-controlled Phase 2b Program

**Phase 1**
*205 volunteers*

- Dose range: 10-1800 mg single dose; 20-800 mg BID
- CSF based PK/PD model
- Fed / fasted and 3 formulations

**Phase 2a**
*120 patients*

- 12w of treatment
- Evidence of positive effect on synaptic recovery
- MTD reached at 800mg BID
- Discontinuation rates show room for improvement

**Phase 2b: VIVIAD**
*259 patients*

Q1 2024

- Average of >80w of treatment anticipated
- Slower up-titration to 600mg BID improves tolerability while maintaining high target occupancy
- Results during end of Q1/2024

**Phase 2a/b: VIVA-MIND**
*180/414 patients*

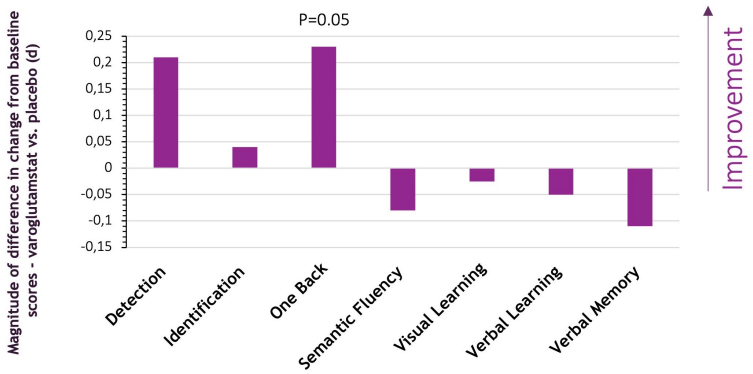
- Treatment duration of 72w in Phase 2a portion
- Complementary to VIVIAD with adaptive design and approvable regulatory endpoints (CDR-SB)
- Potential to expand into Phase 3

**Results-dependent regulatory strategy**

- **Option for accelerated/conditional approval if Phase 2b VIVIAD results are supportive**
- **Option for amendment of VIVA-MIND to full confirmatory Phase 3 study**

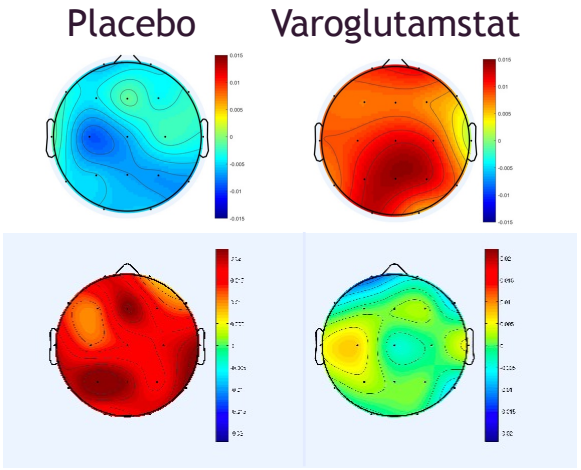
# Completed Phase 2a SAPHIR Study Provides Evidence of Significant Changes in Working Memory and Synaptic Recovery after only 12 Weeks of Treatment

## Significant Changes in Working Memory[1]




- 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[1,2]

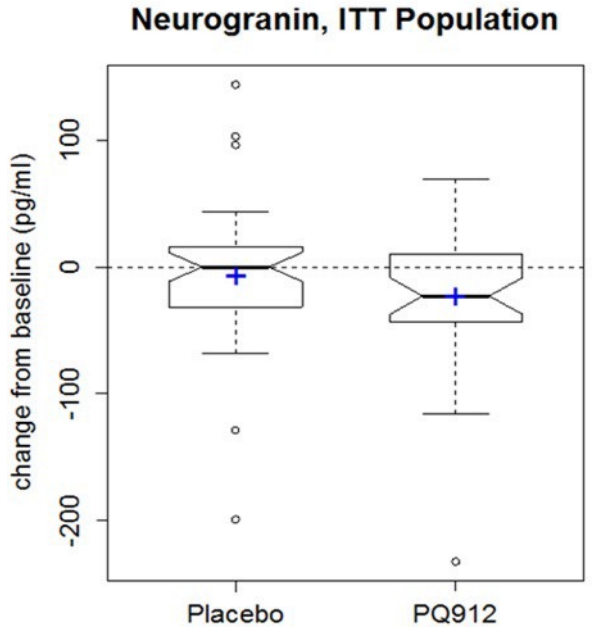



Alpha wave neuronal connectivity

Theta wave synaptic dysfunction

- 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

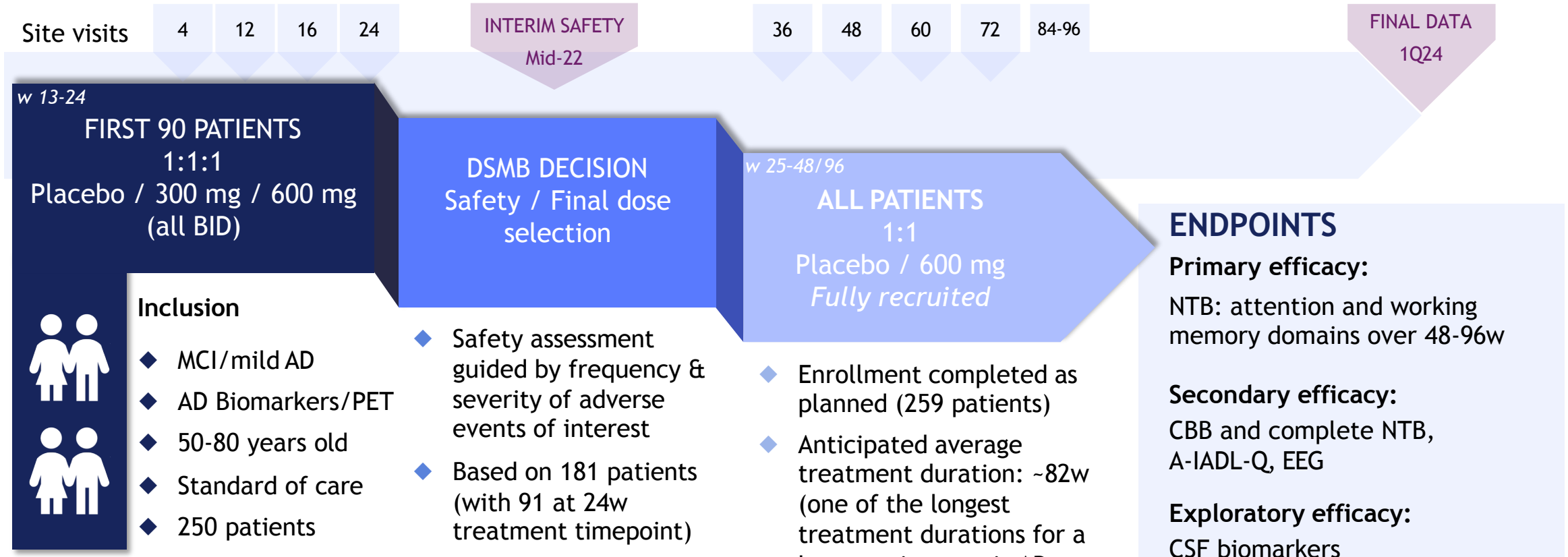
## Reduction of Neuronal Injury Biomarker[1]






[1]Scheltens et al., Alzheimer's Research & Therapy, 2018; [2]Briels et.al., Clinical Neurophysiol. 2020

# VIVIAD Phase 2b European Study Assesses Safety, Tolerability and Efficacy of Varoglutamstat in Patients with MCI and Mild AD[1,2]




## ENDPOINTS

**Primary efficacy:**

NTB: attention and working memory domains over 48-96w

**Secondary efficacy:**

CBB and complete NTB, A-IADL-Q, EEG

**Exploratory efficacy:**

CSF biomarkers

Correlation of CSF with serum biomarkers

Winterlight Speech Assessment



A-IADL-Q: Amsterdam IADL Questionnaire; *BID: twice daily; CBB: Cogstate Brief Battery; DSMB: data safety monitoring board; PET: positron emission tomography;* [1]*https://clinicaltrials.gov/ct2/show/NCT04498650,* [1]*Vijverberg et al.; Alzheimer's Research & Therapy 2021,* [2]*Weber et al., AAIC 2022, poster P1-403, abstract 69290*

# VIVIAD Phase 2b: Inclusion Criteria Enabled Precision Recruitment

**Recruiting the right patients with early AD is a critical success factor for VIVIAD**

**BASIC REQUIREMENT:**

- Mandatory for inclusion: all patients had low Abeta and high p-tau CSF values (Elecsys/Roche)

**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)

➢ **Study population exactly represents early AD population**

| | N | 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 |

# VIVIAD Update: Discontinuation Rates are Favorable and Comparably Low

| Metric | Varoglutamstat<br>VIVIAD<br>(blinded) | Lecanemab<br>CLARITY AD<br>(placebo/active) | Donanemab<br>TRAILBLAZER ALZ 2<br>combined tau<br>(placebo/active) |
|---|---|---|---|
| # of patients | 259 | 1,734 | 1,736 |
| Duration | ~78 weeks* | 72 weeks | 76 weeks |
| Total Discontinuations | 12.7%* | 15.6% / 18.8% | 19.7% / 26.9% |
| Discontinuations due to AE | 3.5%* | 2.9% / 6.9% | 2.4% / 5.8% |

Observations:

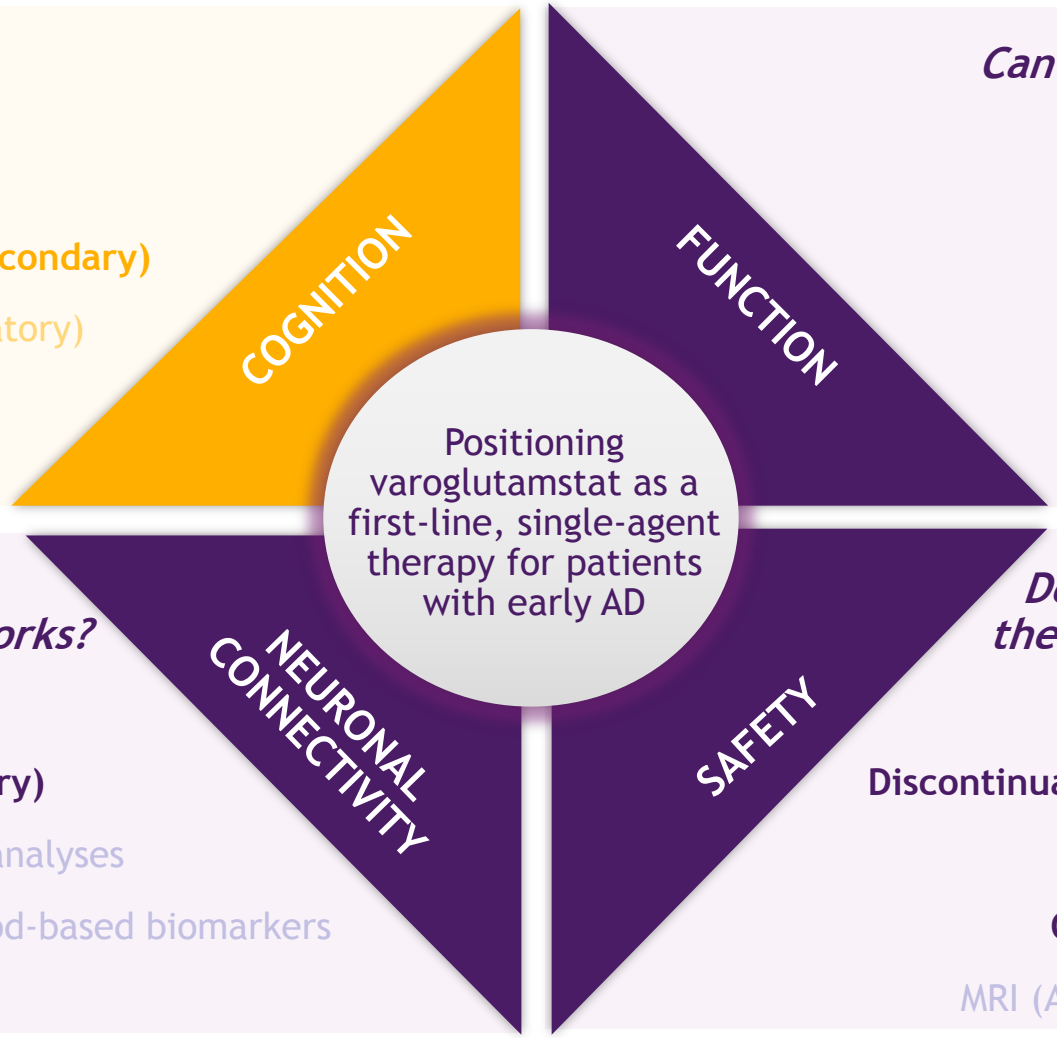
- Total number of discontinuations remains low in VIVIAD throughout the study at <13%* (blinded data)
- Safety update at recent data cut-off confirms low number of discontinuations due to AEs in VIVIAD throughout the study at <4%* (blinded data)
- Studies are of comparable treatment duration



*Cut-off November 20, 2023

# Delivering Key Results Through Well-Designed VIVIAD Study

## Primary and comprehensive secondary endpoints data package in Q1/24




***Can varoglutamstat improve cognition?***

**Endpoints:**

**Cogstate NTB* (primary/secondary)**

Winterlight Speech (exploratory)

WAIS-IV coding test/DSST (exploratory)

***Can varoglutamstat improve activities of daily living?***

**Endpoint:**

**A-IADL-Q (key secondary)**

***Can varoglutamstat restore neuronal networks?***

**Endpoints:**

**EEG theta power (secondary)**

Selected EEG connectivity analyses

Large panel of CSF and blood-based biomarkers (exploratory)

***Does varoglutamstat have the right risk/benefit ratio?***

**Endpoints:**

**Discontinuation due to adverse events**

**TEAE (serious, severe)**

**Clinical evidence of ARIA AE**

MRI (ARIA) blinded central reading



**Cogstate NTB (neuropsychological test battery): Working memory & attention combined score, primary endpoint (3-item scale: Identification, Detection, One Back), Cogstate Brief Battery, secondary endpoint (CBB, 4-item scale: 3-item scale plus One Card Learning), Complete Cogstate NTB, secondary endpoint (8-item scale)*

# VIVA-MIND Update: Recent DSMB Decision Leads to Progress and Enables Further Study Design Flexibility

- Ongoing Phase 2 study running in parallel to VIVIAD to provide clear picture of cognitive changes and support Vivoryon's regulatory strategy
- Adaptive study design involving titration, futility and expanded efficacy evaluation following VIVIAD

**600 mg 2x daily | Treatment duration = 72 weeks | 1:1 Randomization**

**Phase 2a**
- Adaptive dose-finding portion of study: DSMB recommended 600 mg BID
- n=180 patients

→

**Phase 2b**
- Seeks to enroll an additional 234 patients at 600 mg BID

→

**Option to Amend to Phase 3**
- Based on adaptive design of study
- Contingent on VIVIAD study results and regulatory discussions

**Primary Endpoint:**
- Clinical dementia rating scale – sum of boxes (CDR-SB)

**Key Secondary Endpoints:**
- ABC score
- Quantitative EEG-relative theta wave power
- FAQ (Functional Activities Questionnaire)
- Alzheimer's Disease Assessment Scale-Cognitive Subscale (ADAS-Cog-13)
- Neuropsychiatric Inventory



*ADNI ABC: neuropathologic assessment; BID: twice daily; DSMB: data safety monitoring board; https://clinicaltrials.gov/ct2/show/NCT03919162*

# Leveraging Core Expertise in QPCT/L Oral Small Molecule Inhibitors to Generate Multiple Avenues of Addressing Unmet Need

## ALZHEIMER'S DISEASE

- Established program in Early AD with varoglutamstat including product life cycle management
- New small molecule oral second generation QPCT/L inhibitors with improved profile
- Building AD franchise with potential NCE oral QPCT/L
- Discovery efforts underway

## CHRONIC KIDNEY DISEASE

- VIVIAD provides unique opportunity to assess long-term effect of varoglutamstat on kidney function measured by biomarkers in elderly subjects
- QPCT/L inhibitors have shown strong pharmacological evidence to reduce inflammatory and fibrotic processes in kidney

QPCT/L Small Molecule Inhibitor Platform & Related Pathways

## CANCER/NASH/CNS/other

- Researching novel second generation QPCT/L NCE lead molecules with improved profile for disorders not requiring blood brain barrier penetration

## AKI/FIBROSIS

- Novel meprin alpha/beta single and dual selective small molecule inhibitors
- *In vivo* proof of concept in AKI animal model
- Unique recognition pattern allows design of selective and specific meprin protease inhibitors



*AKI: acute kidney injury; NASH: nonalcoholic steatohepatitis; CNS: central nervous system; QPCT: glutaminyl cyclase; QPCTL glutaminyl cyclase-like protein; QPCT/L glutaminyl cyclase and glutaminyl cyclase-like protein*

# Core Asset Varoglutamstat Well-Positioned to be a Leader in QPCT/L for Early AD, Future Opportunities Build on AD and Go Beyond

## Aiming for first line single agent treatment of patients with early AD

- Only product in late-stage development addressing neurotoxic N3pE-Abeta formation[1]
- Not limited to clearing existing plaques
- Well-tolerated
- No signs of product related ARIA in clinical setting
- Convenient oral administration
- Maintaining synaptic and neuronal functionality

## VIVIAD learnings to inform future opportunities in AD and additional indications

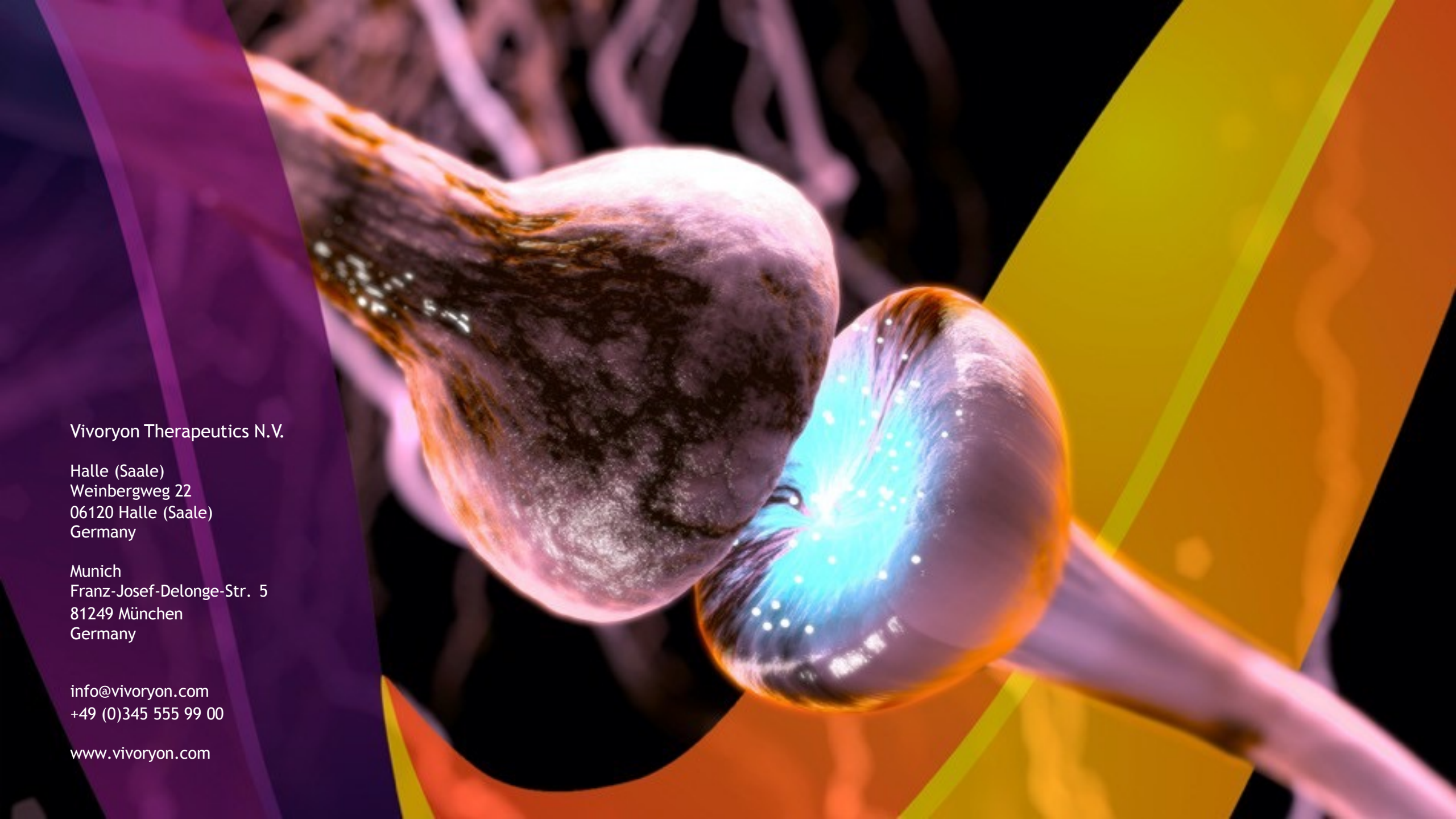
- Varoglutamstat future opportunities:
  - Expand target patient population to capture asymptomatic and moderate AD patients
  - Combination with / follow-on to mAbs in AD
  - Development in Greater China with Simcere
- Unveiled growth strategy with activities to further advance broader pipeline of discovery-stage QPCT/L inhibitors and related pathways

## Multiple value-generating catalysts ahead

- VIVIAD European Phase 2b final topline results during end of Q1/2024
- Continue recruitment of VIVA-MIND at 600 mg twice daily post recent DSMB decision
- End of Phase 2 meeting with FDA planned for H2/2024 leveraging VIVIAD data



[1] *Vijverberg et al., 2021*



Vivoryon Therapeutics N.V.

Halle (Saale)
Weinbergweg 22
06120 Halle (Saale)
Germany

Munich
Franz-Josef-Delonge-Str. 5
81249 München
Germany

info@vivoryon.com
+49 (0)345 555 99 00

www.vivoryon.com