

## Improving Kidney Health Outcomes Lead Program: Varoglutamstat in Diabetic Kidney Disease

December 2024

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## Vivoryon: Poised to improve kidney health with varoglutamstat's novel mechanism of action and breakthrough clinical results



Strong scientific base; novel MoA (QPCT/L inhibition); pE-CCL2 data confirms target engagement



Two independent Phase 2 studies<sup>1</sup>; compelling long-term kidney function improvement



Extensive safety data package for varoglutamstat with convenient dose escalation scheme



Focused development plan for significant commercial opportunity in DKD and beyond



Additional potential orphan indications e.g. Alport Syndrome / Fabry Disease

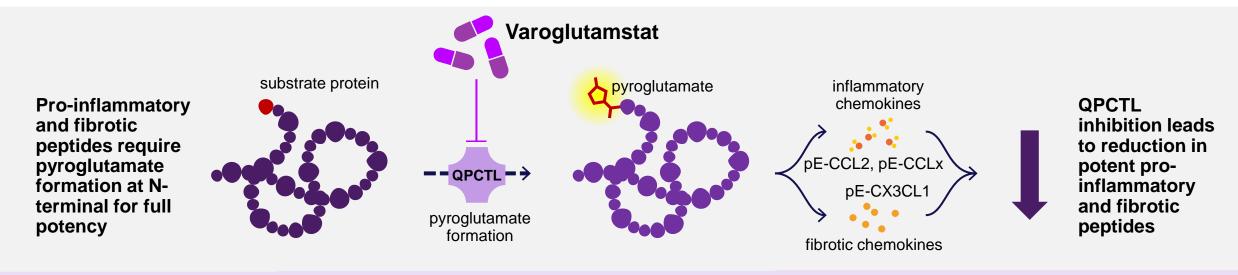


Composition of matter patent protection<sup>2</sup> expected to 2044+



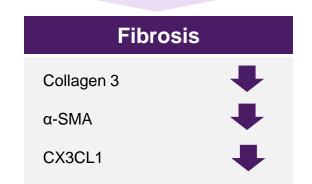
Cash runway into Q3 2025; actively pursuing funding and BD opportunities

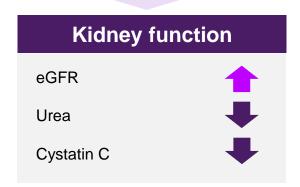
# Groundbreaking discovery: Inhibition of QPCTL reduces kidney inflammation and fibrosis, and improves kidney function



### Pyroglutamate formation (pE-formation) is exclusively catalyzed by QPCTL (iso-glutaminyl cyclase enzyme)

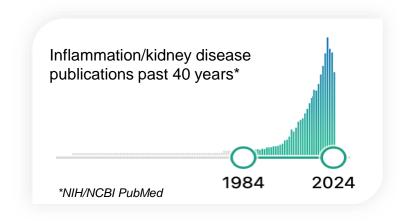
Inflammat	tion
pE-CCL2	•
IFNγ	•
ΤΝΕα	•







## Robust research supports development of QPCTL inhibitors in inflammatory and fibrotic kidney and liver disorders



Pharmacological inhibition of the chemokine CCL2 (MCP-1) diminishes liver macrophage infiltration and steatohepatitis in chronic hepatic injury

Baeck et. al. 2012

N-terminal pyroglutamate formation in CXC3CL1 is essential for its full biologic activity

Kehlen et. al. 2017



Chronic treatment with the (iso-)glutaminyl cyclase inhibitor PQ259 is a novel and effective approach for glomerulonephritis in chronic kidney disease

Kanemitsu et. al. 2021

- Discovered and established pE-CCL2 as direct biomarker for QPCTL engagement
- Dose-dependent decrease of pE-CCL2 levels directly correlates with eGFR improvement

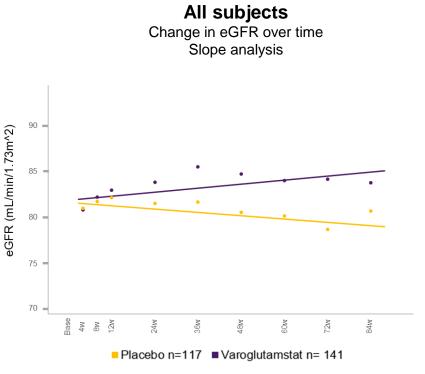
Inhibition of Glutaminyl Cyclases alleviates CCL2-mediated inflammation of non-alcoholic fatty liver disease in mice

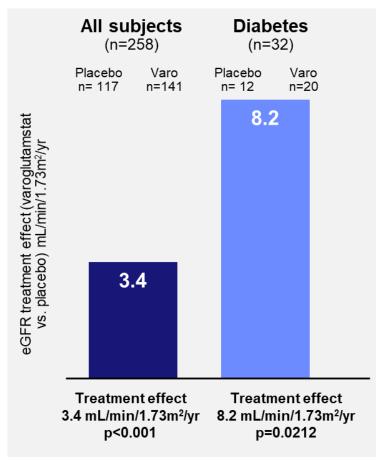
Cynis et al., 2013

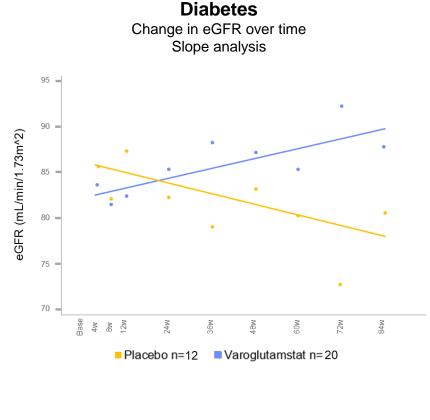


## VIVIAD: Breakthrough clinical results show statistically significant improvement in prospectively defined eGFR over two years

Validated regulatory primary endpoint

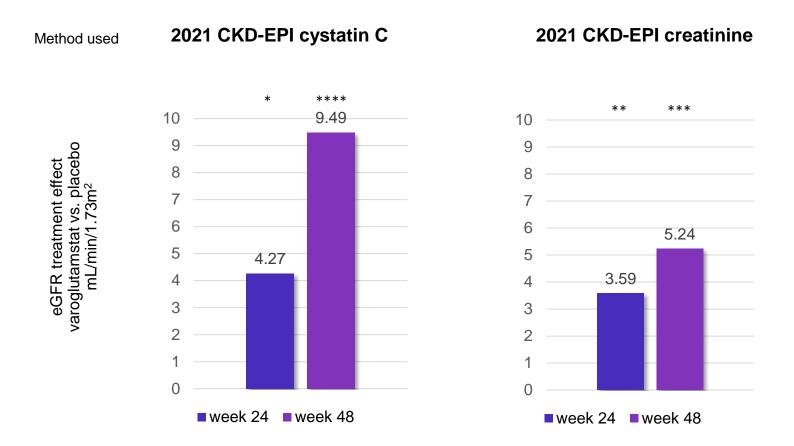






## VIVIAD: Consistency of results using diverse and validated methods for eGFR assessment

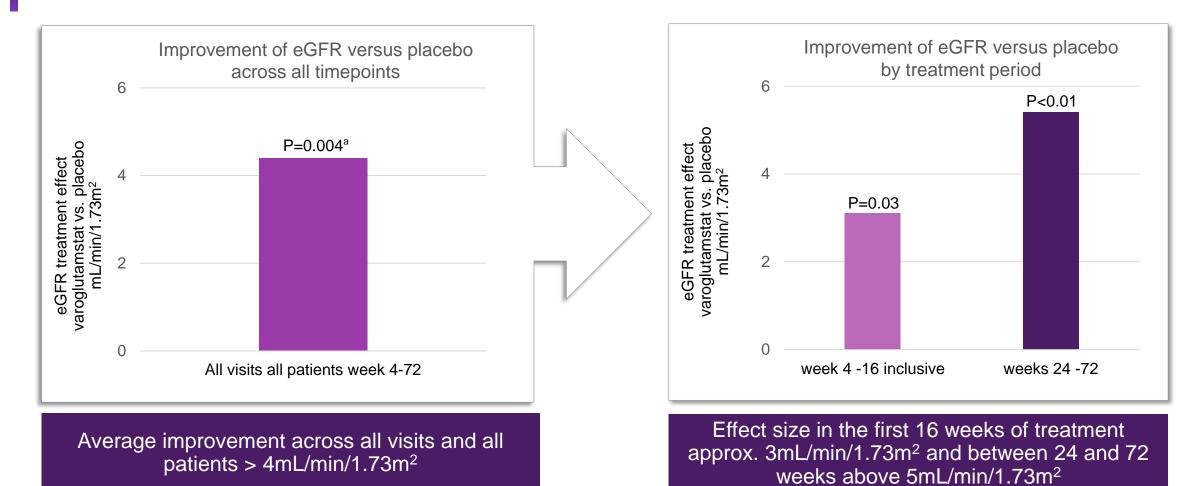
### Sensitivity analysis: baseline adjusted treatment effect of varoglutamstat versus placebo



<sup>\*</sup> significant difference (with p<0.05) \*\* significant difference (with p<0.001) \*\*\* significant difference (with p<0.0001) \*\*\*



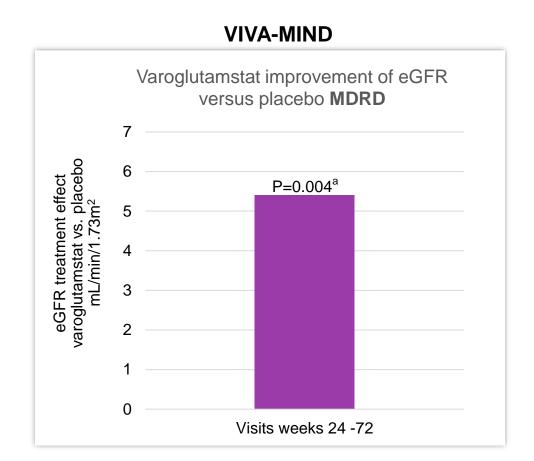
## VIVA-MIND: Statistically significant and clinically meaningful improvement vs. placebo in kidney function measured by eGFR (total population; MDRD)

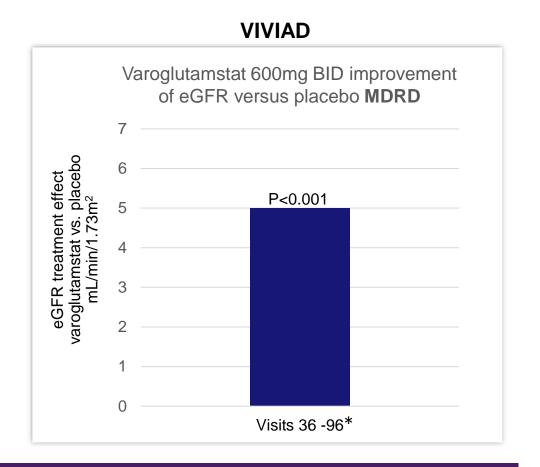


Placebo N=57, Varoglutamstat 600mg BID N=52 Calculations based on weighted average change from baseline



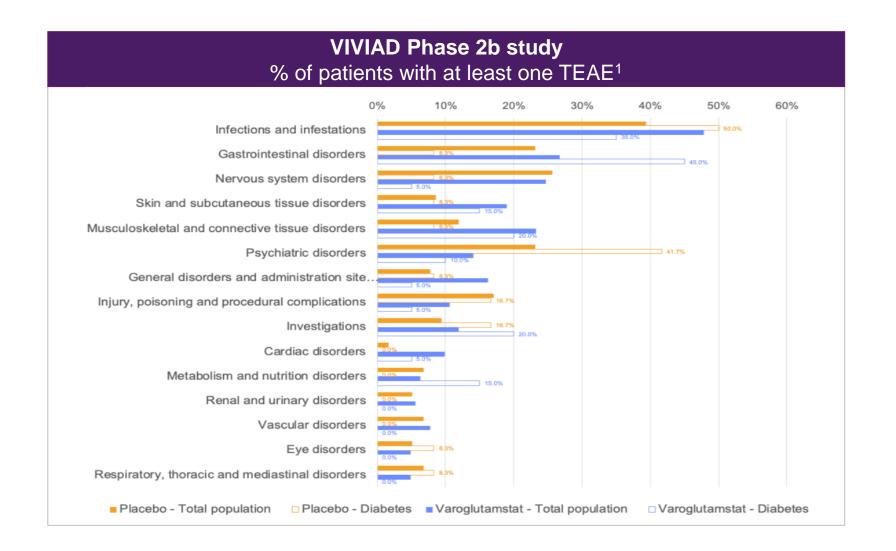
### eGFR Results Comparison VIVA-MIND – VIVIAD





eGFR improvement of varoglutamstat versus placebo was consistent and statistically significant and clinically meaningful in both studies

## VIVIAD: Excellent safety profile consistent across two years of study duration





## VIVA-MIND: No new safety signals identified in second Phase 2 study

### **VIVA-MIND Phase 2 study**

Adverse event category (%)	Varoglutamstat (N=53)*	Placebo (N=56)*	Overall (N=109)
any TEAE	84.9	78.6	81.7
any related TEAE	30.2	32.1	31.2
TEAE by severity			
mild	26.4	41.1	33.9
moderate	47.2	28.6	37.6
severe	11.3	8.9	10.1
serious TEAE	15.1	8.9	11.9
related serious TEAE	0	1.8	0.9
TEAE leading to any study drug dose modification (excluding discontinuation)	5.7	7.1	6.4
TEAE leading to study drug discontinuation	7.5	3.6	5.5
TEAE leading to death <sup>1</sup>	1.9	0	0.9

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## Extensive safety package (# / duration)

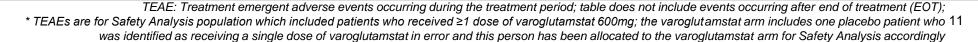
### Pharmacology / Phase 1

- Phase 1 study: large trial with 205 subjects
- Human ADME / mass balance study completed

### Phase 2 double-blind, placebocontrolled

- Phase 2a study: 120 patients, 12 weeks
- VIVIAD Phase 2b study: 259 patients, avg. treatment duration ~80 weeks
- VIVA-MIND Phase 2 study: 109 patients treated, avg. treatment duration ~46 weeks

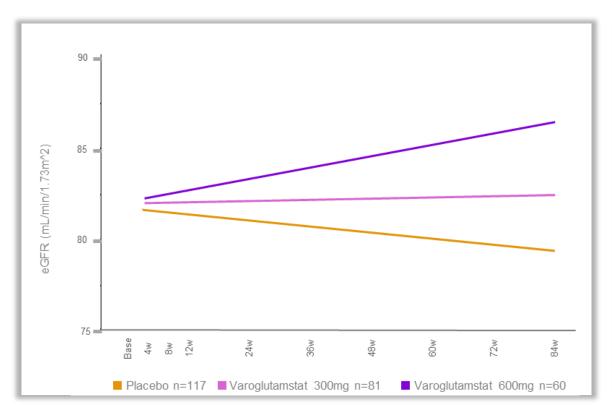
<sup>&</sup>lt;sup>1</sup> One patient died after a head injury from a fall and the patient had a patient's provision to not resuscitate. A second patient had surgery for gastrointestinal bleeding after stopping study medication and died from complications of the surgery several weeks later. The deaths were considered not / unlikely related to varoglutamstat – the DSMB recommended continuation of study without changes after occurrence of these events during the study.



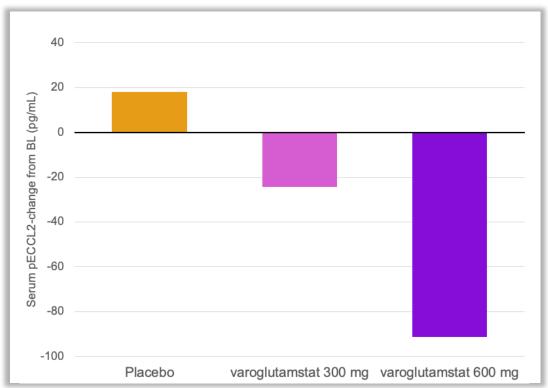
## Clear dose-finding results strongly correlated with MoA and biomarker

Reduction of pE-CCL2 in VIVIAD correlates with improvement of eGFR

Varoglutamstat effect on kidney function outcomes (total population; change in eGFR over time (MDRD)<sup>1</sup>)



### Median reduction in pE-CCL2 levels at week 48 compared to baseline with varoglutamstat (total population)



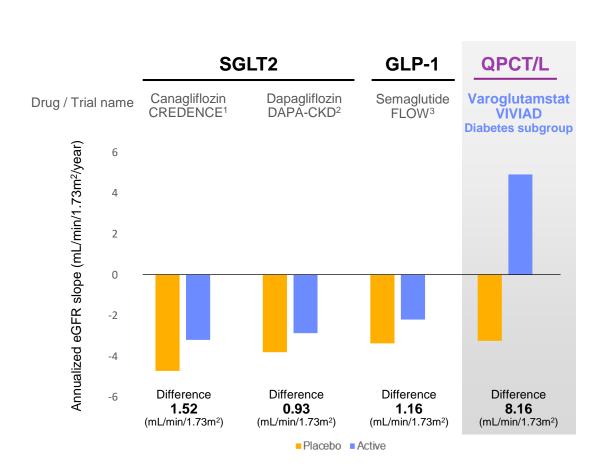


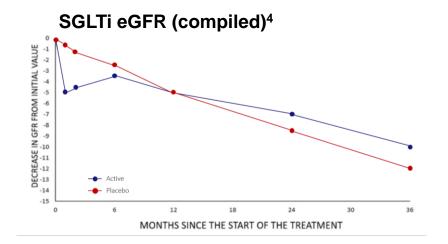
## Summary of kidney function data from varoglutamstat Phase 2 program

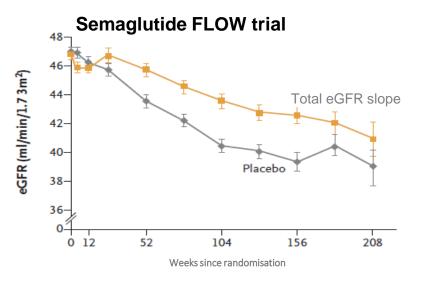
- ✓ Two double blind placebo-controlled studies one conducted in Europe and one in US showed consistent statistically significant and clinically meaningful improvement of eGFR for varoglutamstat versus placebo
- ✓ In both studies eGFR was improved above baseline and stabilized across the whole treatment period of 96 weeks (VIVIAD) and 72 weeks (VIVA-MIND)
- √ The results provide robust evidence of a treatment benefit
- √ Good safety results in VIVA-MIND with the accelerated dose escalation scheme provide pathway for a
  convenient and commercially viable dosing schedule
- ✓ VIVA-MIND results fully support the sample size planning with 120 or fewer patients and previously communicated target effect size of 5mL/min/1.73m² for visits between week 24 and 72 for the planned Phase 2 study in DKD patients
- Analysis of VIVA-MIND data will continue



# Outstanding commercial potential: Currently available, highly successful medicines only slow disease progression in DKD





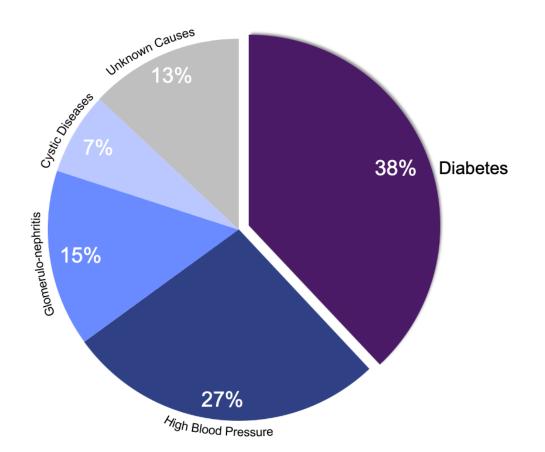




## DKD¹ is the leading cause of end stage kidney disease (ESKD)

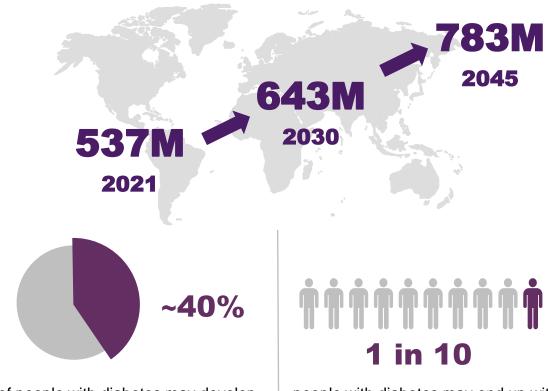
Inflammation and fibrosis are key underlying pathways in DKD

# Diabetes is a leading cause of end-stage kidney disease<sup>2</sup>



# Diabetes is a significant and growing global challenge

(adults aged 20-79 years with diabetes, worldwide)<sup>3</sup>



of people with diabetes may develop diabetic kidney disease (DKD)<sup>4</sup> people with diabetes may end up with end-stage kidney disease<sup>4</sup>



## Planned Phase 2 study in stage 3b/4 DKD on top of standard of care<sup>1</sup>

Draft study design, with anticipated interim analysis at 15 months after study start

#### **Enrollment:**

- Patients: Diabetes patients with CKD 3b/4 eGFR
- Number of patients: up to 120
- Regions: U.S. and Western Europe

### **Draft design:**

- Double-blind placebo-controlled
- Powered to confirm effect size of at least 3.5mL/min eGFR slope;
   80% power to detect a difference of 5mL/min eGFR slope

### **Duration/potential costs:**

- Interim: until confirmation of effect size, ~15 months (~ 60 patients)
- Full: study completion approx. 2.5 yrs; typical trial cost approx. EUR 10 − 12m<sup>2</sup>

				Persistent albuminuria categories Description and range		
				Normal to mildly increased	Moderately increased	Severely increased
				<30mg/g <3mg/mmol	30 - 300mg/g 3-30mg/mmol	>300mg/g >30mg/mmol
				A1	A2	А3
•	>90	Normal and high	Stage 1	No CKD in absence		
GFR categories (mL/min/1.73m2) range and description	60 - 89	Mild decrease related to normal age range	Stage 2	of markers of kidney damage		
	45 - 59	Mild - moderate reduction	Stage 3a			<b>(√)</b>
	30 - 44	Moderate - severe reduction	Stage 3b		<b>√</b>	<b>√</b>
	15 - 29	Severe reduction	Stage 4		<b>✓</b>	<b>√</b>
	< 15	Kidney failure	Stage 5			
					Worsen	ing

## Vivoryon: A history of groundbreaking discoveries and developments

#### Seminal R&D in diabetes **SAPHIR Phase 2a VIVIAD & VIVA-MIND** & development of new class study data with Phase 2 results of oral antidiabetic agents, the varoglutamstat in AD Introduced reveal exciting kidney DPP-4 inhibitors (gliptins) Started development kidney function data, lack of of QPCT/L inhibitors strategy with effect in AD DPP-4 inhibitor for AD/inflammation kidney function platform acquired by **VIVIAD** endpoint in Osi/Astellas Phase 2b **VIVIAD QPCTL** identified (osi) pharmaceuticals, LLC AD study initiated as a driver in EU astellas of inflammation / fibrosis in kidney **VIVA-MIND Phase 2 Discovery of QPCT** CDK9 inhibitor disease AD study initiated in role in AD (2006) program (oncology) the U.S. (supported and **QPCTL** in acquired by by NIH grant) inflammation (2008) AstraZeneca 2 2004 2006 2014 2018 2023 2024 2025 2019 2020 2021 2001 name change IPO Re-branded to

Company founded as ProBioTec

EURONEXT
Amsterdam

Re-branded to Vivoryon

### **Funding:**

private placements of ~EUR 51m; USD 15m NIH grant for U.S. clinical development

#### Funding:

EUR 61m (plus EUR 15m option) raised in private placements



to problodrug

## A trusted company: Senior management team with a strong track record

### **Executive Directors**



Frank Weber, MD
Chief Executive Officer





Anne Doering, CFA
Chief Financial Officer









Michael Schaeffer, PhD
Chief Business Officer





### **Non-executive Directors**

Erich Platzer, MD, PhD
Chairman of the Board

**Charlotte Lohmann** 

Claudia Riedl, PhD
Chair Audit Committee

Samir Shah, MD

## Decades of collective experience in biopharma industry, e.g.:

**First** approved drug in pulmonary fibrosis

**Successful** development of biomarker driven oncology & diabetes programs

M&A and business development **expertise** from transactions with large biopharma

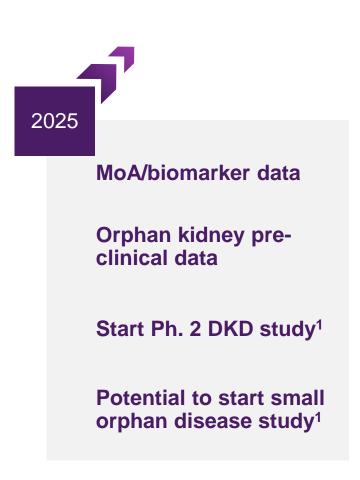
**Know-how** in life science research & development, biophysical and structure-based drug discovery

Strong financial, capital markets and legal **experience** 



## Looking ahead: Upcoming value drivers







Ph. 2 DKD study interim data (~15 months post P2 initiation)

Ph. 2 DKD study full data (~15 months post P2 interim)

# Vivoryon: Phase 2 program confirms varoglutamstat as a leading compound for further development in kidney disorders including DKD

Groundbreaking discovery

Inhibition of QPCTL reduces kidney inflammation and fibrosis

Breakthrough clinical results

Varoglutamstat – first in class QPCT/L inhibitor – shows a large and statistically significant improvement of eGFR versus placebo in two independent Phase 2 studies

Outstanding commercial potential

Substantial market opportunity in DKD with potential to prolong time before kidney replacement therapy – further potential in other kidney and liver indications

Actionable clinical plan

Completion of Phase 2 DKD program requires only one additional study

Trusted organization

Management with track record in fibrosis and business development

