# Redefining Kidney Disease Treatment with A1M Therapies

**Non-confidential summary** 



# PIONEERING TRANSFORMATIVE MEDICINES FOR KIDNEY DISEASE

RMC-035 for **kidney protection** in open-heart surgery

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  - > 59% reduction vs placebo (MAKE, regulatory endpoint)
- > Phase 2b POINTER study ongoing > enrolment completed, results expected in Q4 2025
- > Granted FDA Fast Track Designation; eligible for Breakthrough Therapy Designation
- > First-to-market potential; >USD 1 billion market no approved therapies

Additional **opportunities** with RMC-035 & GTX peptides

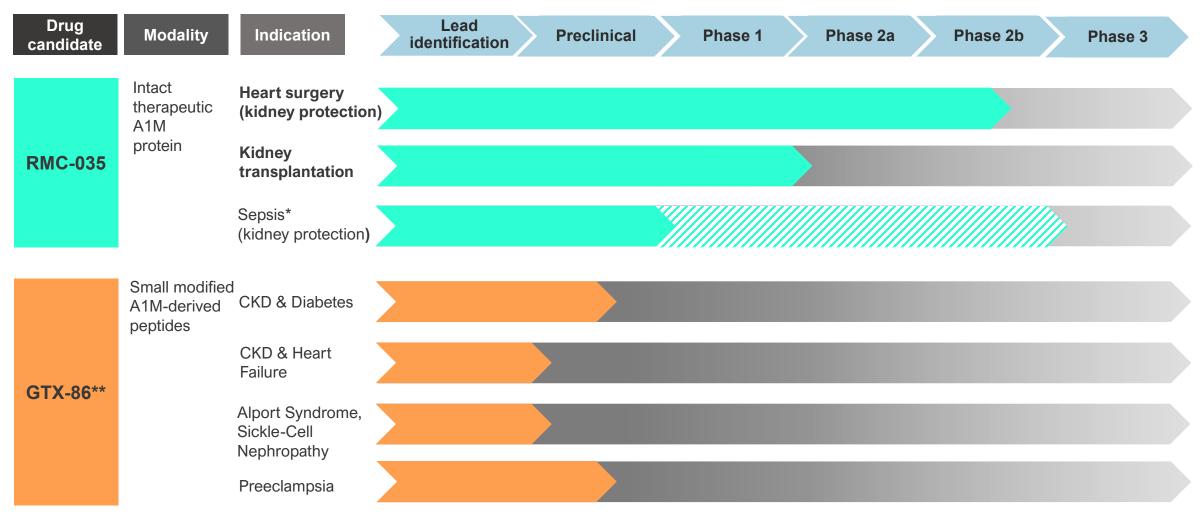
- > Phase 3 ready sepsis program and Phase 2a/b ready kidney transplantation program for >USD 5.6 billion market
- > Unique positioning of preclinical GTX peptides in chronic kidney disease for >USD 8 billion market
- > Listed in Stockholm with top shareholders including Industrifonden and Swedbank Robur [Nasdaq FN Growth Market: GUARD]



## EXPERIENCED MANAGEMENT TEAM WITH STRONG & PROVEN TRACK RECORD IN DRUG DEVELOPMENT

NAME / POSITION **NAME / POSITION EXPERIENCE EXPERIENCE TOBIAS L. AGERVALD** KARIN BOTHA +10 +20 astellas NOVARTIS SmithKline Beecham MD, PhD, CEO MSc, CFO years in industry years in industry GlaxoSmithKline **Fujisawa** AstraZeneca 2 **PETER GILMOUR** +20 **MICHAEL REUSCH** +30 MSc, PhD, CSO/Head MD, CMO of Preclinical years in industry years in industry astellas astellas oncopeptides **Medivir TORBJÖRN LARSSON** SARA THURESSON +15 +30 BSc, Head of CMC MSc, Head of Clinical years in industry years in industry Operations Pharmacia &Upjohn **IQVIA Medivir** 

### DIFFERENTIATED PIPELINE BASED ON A1M MECHANISM



<sup>\*</sup> Opportunity to initiate pivotal Phase 3 study in sepsis following results in ongoing Phase 2b study (POINTER) in open-heart surgery.

<sup>\*\*</sup> Multiple GTX peptides fulfill criteria for candidate drug nomination. GTX-86 at nomination stage. A1M, alpha-1-microglobulin.

# CHRONIC KIDNEY DISEASE & END-STAGE RENAL DISEASE – A GLOBAL HEALTH CONCERN

### Acute Kidney Injury (AKI):

- Multiple causes, often resulting from in-hospital complications like severe infections & sepsis and major surgeries (e.g., open-heart surgery, kidney transplantation)
- 50% or more of high-risk open-heart surgery patients develop AKI; addressable patient population ~100,000-120,000 cases per year in the US alone (~30,000 patients with pre-operative CKD)

### Progression to Chronic Kidney Disease (CKD):

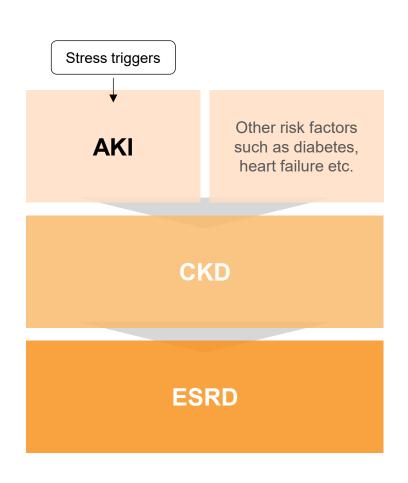
- AKI raises the risk of CKD; 15-20% progress to advanced CKD within 24 months
- CKD leads to severe complications, e.g., cardiovascular disease and kidney failure
- Years of life lost (YLL) from CKD are expected to surpass diabetes by 2040

### AKI in patients with pre-existing CKD:

- CKD is a strong risk factor for AKI
- AKI in CKD accelerates progression to ESRD high unmet need

### CKD to End-Stage Renal Disease (ESRD):

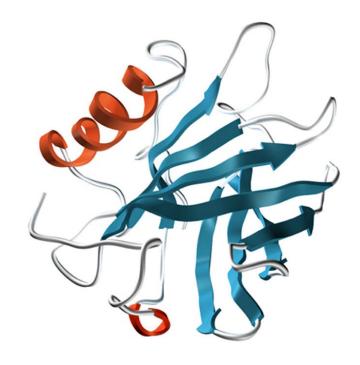
- 10-15% of CKD patients advance to ESRD; requires dialysis or kidney transplant
- High mortality rate (15-20%), worse than many cancers
- Represents 7% of Medicare costs but affects 1% of the population



## THERAPEUTIC A1M DELIVERY – A NOVEL PARADIGM WITH CLINICALLY VALIDATED MECHANISM

### Harnessing the natural properties of A1M

- Endogenous ~22 kDa circulating glycoprotein
  - Liver main source of expression
- Ubiquitous distribution & cellular uptake
- Renal clearance
- Evolutionary conserved house-keeping mechanism:
- Potent dual-action inhibitor of oxidative stress (reductase, radical scavenging)
- Heme binding
- Mitochondrial protection



3-D structure of A1M protein

Bergwik et al., Front Physiol 2021

# A1M PROTECTS KIDNEY FUNCTION BY TARGETING CRITICAL DISEASE PATHWAYS

Challenges	A1M's Key Actions		<b>Protective Effects</b>	
Oxidative stress damages kidney cells	 Neutralizes Oxidative Stress		Reduces cell injury from ROS and hemolysis	
Hemolysis-induced kidney injury	 Binds & Degrades Free Heme		Prevents cell toxicity from free heme / hemoglobin	
Mitochondrial damage and cell death	 Stabilizes Mitochondria	<b>→</b>	Protects mitochondrial integrity	
Inflammatory response after ischemia-reperfusion	Prevents Secondary Inflammation		Reduces inflammatory injury and tissue scarring	

Bergwik et al., Front Physiol 2021

# RMC-035 – recombinant human intact A1M

Kidney protection in open-heart surgery

### **COMPLETED PHASE 2a AKITA STUDY**

### - OUTLINE & OBJECTIVES

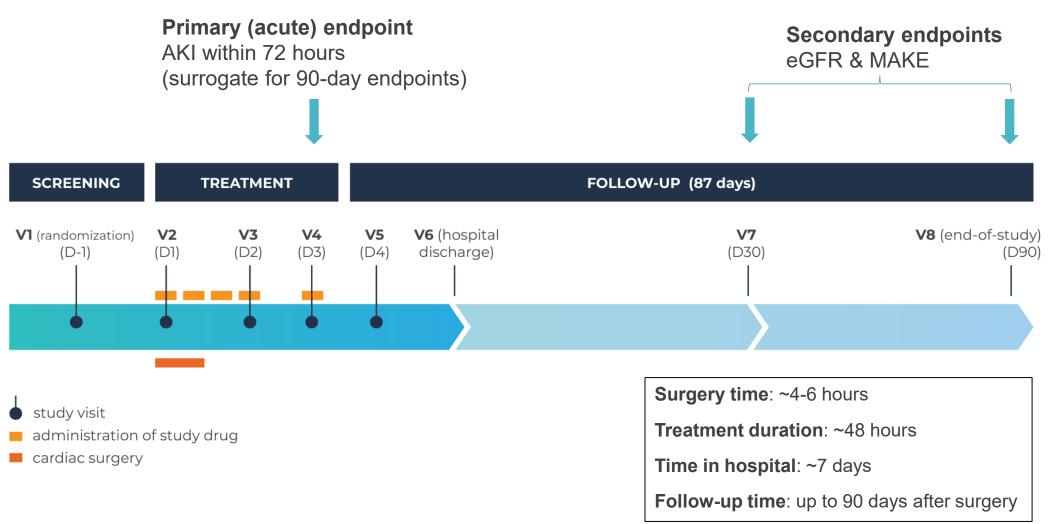


- Recruitment in the U.S., Canada & Europe
- Double-blind, placebo-controlled study in patients undergoing open-heart surgery at increased risk for kidney injury
- 177 patients randomized and dosed
- Main objective: proving efficacy & safety with the maximum possible dose
  - <u>Primary endpoint:</u> acute SCr change meeting AKI criteria
     (surrogate for long-term renal outcomes, allowing for lower sample size. Not accepted regulatory endpoint)
  - <u>Secondary endpoints:</u> eGFR change and Major Adverse Kidney Events (MAKE) at Day 90 (clinically meaningful outcomes, **MAKE** is the accepted regulatory endpoint)
- Start dose 1.3 mg/kg
  - 0.65 mg/kg to subjects with low pre-operative renal function due to risk for overexposure associated with transient SCr increase (tubular overload)

### **COMPLETED PHASE 2a AKITA STUDY**

### - FLOWCHART





## PHASE 2a RESULTS SUPPORT ROBUST EFFICACY ON HARD KIDNEY ENDPOINTS



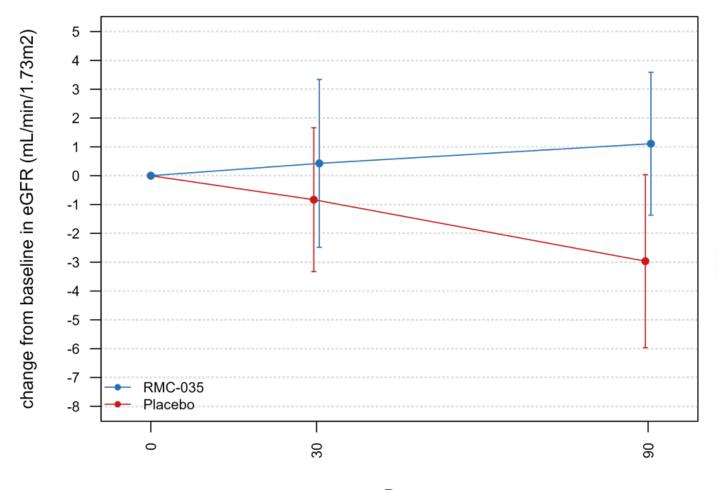
Efficacy stronger than required for regulatory approval based on renal function (eGFR) & Major Adverse Kidney Events (MAKE) on Day 90

- Statistically significant & clinically relevant improvement of eGFR vs placebo
  - 4.3 mL/min (full population)
  - 7.9 mL/min (pre-defined subgroup of patients with chronic kidney disease [CKD])
- Reduced proportion of patients with MAKE90 (i.e., severe loss of kidney function)
  - 59% risk reduction vs placebo for composite endpoint MAKE90 (death, dialysis or ≥ 25% eGFR loss)
  - FDA recommends MAKE90 as primary endpoint in Phase 3 20% risk reduction sufficient for approval

**Results support progression to Phase 2b** 

## RMC-035 PREVENTS LOSS OF RENAL FUNCTION AFTER OPEN-HEART SURGERY





### MMRM model

4.3 mL/min **p=0.06\*** 

Pre-defined alpha level was 0.1. P-values < 0.1 are statistically significant.

Day

# RMC-035 CONSISTENTLY REDUCES MAKE90 USING VARIOUS THRESHOLDS OF eGFR LOSS

Secondary endpoint MAKE90 (death, dialysis, ≥ 25% eGFR loss) met

	RMC-035 Evs/PtsRate (90% CI)	<b>Placebo</b> Evs/PtsRate (90% CI)		Risk ratio (90 % CI) p-value
MAKE 90 days (10 % eGFR cutoff)	18/8920.2 (13.2-27.2)	25/8828.4 (20.5-36.3)		0.71 (0.46-1.10) 0.200
MAKE 90 days (15 % eGFR cutoff)	14/89 15.7 (9.4-22.1)	22/8825.0 (17.4-32.6)		0.64 (0.39-1.05) 0.138
MAKE 90 days (20 % eGFR cutoff)	11/89 12.4 (6.6-18.1)	18/8820.5 (13.4-27.5)		0.61 (0.35-1.08) 0.150
MAKE 90 days (25 % eGFR cutoff)	6/89 6.7 (2.4-11.1)	14/88 15.9 (9.5-22.3)	•	0.41 (0.19-0.88) 0.047
MAKE 90 days (30 % eGFR cutoff)	4/89 4.5 (0.9-8.1)	14/88 15.9 (9.5-22.3)	•	0.30 (0.13-0.70) 0.010
			0.25 0.5 1  Favours RMC-035	1.5

### PHASE 2b POINTER STUDY - STATUS UPDATE



- Final optimization step before Phase 3
- 170 patients randomized and dosed (Europe & North America)
- Two RMC-035 dose arms (30 & 60 mg) and Placebo (2:2:3 randomization)
  - Simplified dosing: 3 infusions within 24 hours, switch from weight-based to flat dose
- Primary endpoint: change in eGFR from before surgery to Day 90

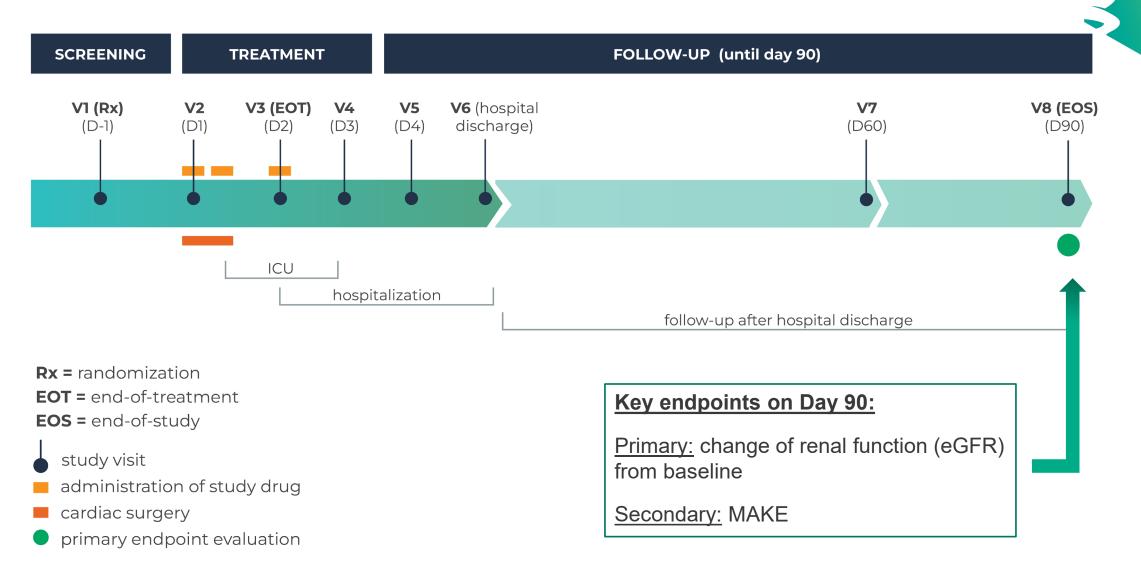
### Important study milestones

- ✓ Positive outcome of DSMC safety reviews (no safety signals identified)
- ✓ Enrolment completed in June 2025, ahead of schedule (9 months enrollment time)
- Top-line results anticipated in Q4 2025

eGFR, estimated glomerular filtration rate; DSMC, data safety monitoring committee

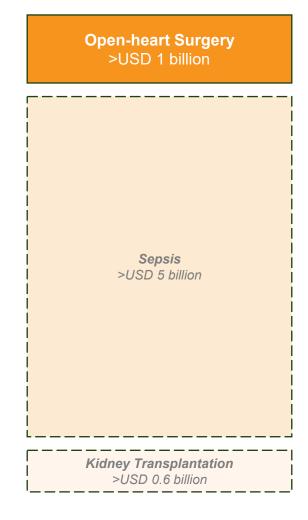
## **ONGOING PHASE 2b POINTER STUDY**

### - FLOWCHART



### **CLEAR PATH TOWARDS MARKET APPROVAL FOR RMC-035**

- Fast Track Designation granted by the US FDA
  - Reducing risk for death, dialysis or irreversible loss of kidney function in patients undergoing open-chest cardiac surgery at high risk for acute kidney injury
- Indication eligible for Breakthrough Therapy Designation
- Single pivotal Phase 3 study sufficient to support market approval
  - Primary endpoint MAKE at Day 90 after surgery (~600 patients)
  - Potential for accelerated approval based on interim analysis of eGFR (~300 patients)
  - First-to-market potential
- Phase 3 Expansion Opportunities
  - Sepsis Phase 3 ready and Kidney Transplant Phase 2a/b ready, following successful Phase 2b POINTER results



# FIRST-TO-MARKET POTENTIAL WITH NO APPROVED THERAPIES - COMPETITOR LANDSCAPE

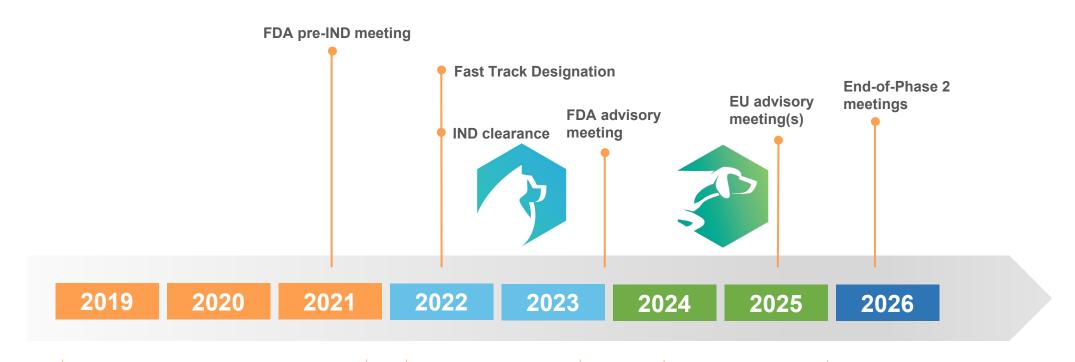
COMPANY (DRUG)	PHASE	MODE OF ACTION	POC DATA HEART SURGERY	COMMENT
Guard Therapeutics (RMC-035)	<b>2</b> b	A1M analog	Yes	Ongoing – expected results year-end 2025
Novartis (TIN-816)	2a	Human CD39 enzyme	-	Ongoing – expected results Q3 2025 N=120, acute primary endpoint Study did not reach primary endpoint and stopped for futility
AstraZeneca / Alexion (Ultomiris)	3	Complement 5 inhibitor	-	Ongoing – expected results Q1 2027 N=736, MAKE is primary endpoint No efficacy data available in open-heart surgery
Genentech (GDC-8264)	2	RIP-1 inhibitor	-	Ongoing – expected results Q4 2027 N=404, MAKE is primary endpoint No efficacy data available
AM Pharma (Ilofotase alfa)	2a	ALP analog	-	Ongoing – results expected Q4 2025 N=250, acute primary endpoint No efficacy data available in open-heart surgery
Renibus Therapeutics (RBT-1)	3	Iron sucrose + stannus protoporhyrin	-	Targets acute endpoints like length of hospital stay & hospital readmission rate. Did not show efficacy on renal endpoints in Phase 2a study.

## RECENT PHARMA DEALS IN NEPHROLOGY

## - TOTAL DEAL VALUE OVER \$12BN 2023-25 YTD

TARGET	ACQUIRER	YEAR	DEAL VALUE	STAGE	LEAD ASSET	INDICATION
Regulus Tx	Novartis	2025	\$800m + \$900m milestones	Phase 1b	Farabursen	Autosomal Dominant Polycystic Kidney Disease
Alpine Immune Sciences	Vertex Pharma	2024	\$4.9bn	Phase 2	Povetacicept	IgAN
Human Immunology Biosciences	Biogen	2024	\$1.15bn + milestones	Phase 2	Feltzartamab	IgAN, Primary membranous nephropathy & antibody-mediated rejection
Jnana Tx	Otsuka	2024	\$800m	Preclinical	Panel of solute carrier inhibitors	lon transporter kidney disease
Calliditas	Asahi Kasei	2024	\$1.1bn	Marketed	Tarpeyo (Budesonide)	IgAN
Chinook Tx	Novartis	2023	\$3.5bn	Phase 3	Atrasentan & Zigakibart	IgAN
CinCor Pharma	AstraZeneca	2022	\$1.8bn	Phase 2	Baxdrostat	Treatment-resistant hypertension, primary aldosteronism and CKD
Vifor Pharma	CSL	2021	\$12.3bn	-	Product portfolio in nephrology	-
Sanifit Tx	Vifor Pharma	2021	\$205m + milestones	Phase 3	SNF472	Treatment for calciphylaxis ESRD patients
Corvidia Tx	Novo Nordisk	2020	\$2.1bn	Phase 2	Zilitivekimab	Therapies within CKD segments

### **KEY MILESTONES & DELIVERY ACCORDING TO PLAN**



### **Clinical Phase 1 program**

- ✓ ROS-01 (single dose, healthy subjects)
- √ ROS-02 (multiple doses, healthy subjects)
- ✓ ROS-03 (renal impairment study)
- ✓ ROS-04 (safety/PK study in heart surgery)

### Phase 2a AKITA study

✓ ROS-05 (proof-of-concept, heart surgery)

### Phase 1b study

✓ ROS-06, kidney transplant

#### Phase 2b *POINTER* study

ROS-07 (dose-finding)

#### Phase 3 study heart surgery

Optional Phase 3 study in sepsis

Optional Phase 2a/b study in kidney transplantation

# GTX platform – small A1M-derived peptides

Treatment of chronic kidney disease

### GTX PEPTIDES – 2<sup>nd</sup> GENERATION A1M DRUGS

### **Delivered SC**

Intended as chronic therapy with intermittent dosing (e.g., for CKD)

- Panel of novel A1M-derived peptides with preserved functionality vs native A1M
  - ~15-35 aa, chemical synthesis
- Enables clinically validated A1M mechanism in non-acute settings
- Robust preclinical efficacy across diverse acute and chronic kidney models
- Strong IP, composition of matter until 2044
- Broad clinical development opportunity with unique positioning in CKD
  - High degree of optionality strategy yet to be refined
- Candidate drug nomination pending; transfer into slow-release formulation
- ~2 years to IND

### GTX PEPTIDES – MASSIVE OPPORTUNITY IN LATE-STAGE CKD

- High potency and efficacy, comparable to RMC-035
- Broad impact across CKD etiologies, including orphan diseases
  - Demonstrated robust efficacy in a wide range of preclinical disease models
- Unique opportunity in late-stage CKD patients:
  - Highest risk for progression to ESRD
  - Often excluded from clinical trials
  - Current CKD therapies ineffective or contraindicated



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# **Appendix**

### **ADDITIONAL OPPORTUNITY FOR RMC-035**

### - SEPSIS

- Sepsis is leading cause of acute kidney injury (AKI). Multifactorial etiology, kidney cell stress
  due to reduced perfusion, oxidative stress, endotoxins and inflammation
- RMC-035 efficacious in preclinical sepsis models
- In the US, ~1.7 million patients develop sepsis each year; ~800,000 patients with sepsis develop AKI; and ~250,000 patients develop CKD
- Dosing regimen: once daily up to 5 days; First dose given at sepsis diagnosis (ICU admission)
- Clear regulatory path to market approval Major Adverse Kidney Events (MAKE) at 90 days
- Single confirmatory Phase 3 study sufficient for approval
  - Sample size ~400-600 patients depending on eligibility criteria
  - Recruitment time ~2 years
- Pivotal Phase 3 study in sepsis enabled by Phase 2b POINTER study (heart surgery)
  - Interim analysis with sample size re-estimation to be built in in the absence of preceding efficacy study
  - Should be preceded by a Phase 1b study of approximately 15-20 patients to evaluate exposure & safety

### **ADDITIONAL OPPORTUNITY FOR RMC-035**

### KIDNEY TRANSPLANTATION

- Phase 1b study of RMC-035 completed
- Acute kidney graft dysfunction & impaired long-term dysfunction in deceased donor transplantation due to graft ischemia & ischemia-reperfusion injury, and inflammatory / fibrotic response
- Approximately 20,000 deceased donor kidney transplantation performed annually in US eligible for orphan drug designation
- Treatment goal: protect long-term graft function in recipient, avoiding need for re-transplantation
- Dosing regimen: once daily up to 5 days; First dose given intra-operatively to graft recipient
- Clear regulatory path to market approval eGFR at 1 year after transplantation
- Single confirmatory Phase 3 study sufficient for approval
  - Sample size 300-600 patients depending on eligibility criteria
  - Recruitment time 2-3 years
- New formulation considered, may enable higher price point than in open-heart surgery

eGFR, estimated glomerular filtration rate.

## GLOBAL MARKET OPPORTUNITY FOR RMC-035 SUPPORTS BLOCKBUSTER POTENTIAL

- Open-heart surgery: >USD 1 billion (global)
  - 100,000 patients annually in the US (~30,000 with CKD). Total US population ~250,000 patients.
  - Price estimate: USD 5,000 10,000 per patient
  - Total US market potential: USD 0.5 1 billion
- Sepsis: >USD 5 billion (global)
  - ~1.7 million adults in the US develop sepsis each year
  - ~500,000 patients in scope for treatment
  - Total US market potential: USD 2.5 5 billion
- Kidney transplantation: >USD 0.6 billion (global)
  - ~20,000 patients in the US undergoing deceased donor kidney transplantation each year
  - Total US market potential: USD 0.3 0.6 billion (estimated price USD 15,000 30,000 per patient)

## STRONG VALUE PROPOSITION – EFFICACY & COST-BENEFIT PROFILE

### Robust kidney protection in AKITA study



~5 x greater eGFR effect than one year of standard-of-care CKD treatment



3 x greater risk reduction of MAKE than required for FDA approval

## **Strong evidence for eGFR in Cost Effectiveness Models**



Value dossier supported by available health economic data in patients with CKD

### **Short-term therapeutic benefit**

(AKI, dialysis, length of hospital stay & re-admission)



Acute benefits offer direct & indirect hospital savings

### Attractive cost-benefit profile



Anticipated formulary inclusion with marginal impact on hospital cost



Fulfils NTAP criteria

Value dossier based on HEOR & available Cost Effectiveness Models in AKI & CKD



### Critical Pre- and Post-Launch activities

Cost Effectiveness
Analysis: quality-adjusted
life years (QALYs)

Budget Impact Model & Budget Analysis Tool

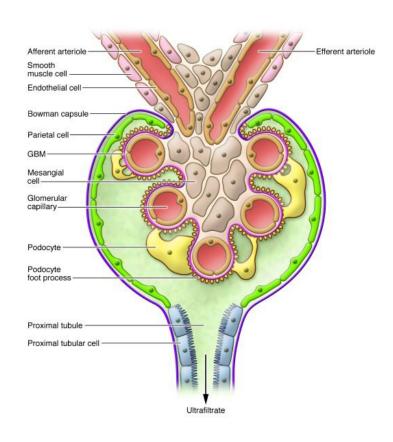
## Preclinical GTX data

### THERAPEUTIC A1M RAPIDLY DISTRIBUTES TO KIDNEYS

- Renal clearance of LMW proteins and peptides (glomerular filtration)
- Targeted uptake in proximal tubules
  - Tubular injury is a hallmark of AKI & progressive CKD, driving tubulointerstitial
     & glomerular fibrosis
- Distribution profile enables global kidney protection
  - Glomerular barrier (endothelium, glycocalyx, podocytes, basal membrane)
  - Proximal tubules primary site of intracellular uptake in kidneys



Combined glomerular & tubular protection against albuminuria & hematuria (not addressed by available therapies)



### THERAPEUTIC POTENTIAL ACROSS THE SPECTRUM OF KIDNEY DISEASE

Glomerular dysfunction, podocyte & mesangial activation<sup>1</sup>

Loss of filtration barrier

Inflammatory mediator release & tubular cell injury

Metabolic dysfunction

Pathophysiology Podocyte effacement Mesangial expansion **ROS & NOX4** Inflammation

**Proteinuria** Hematuria

Tubular inflammation **Fibrosis ROS & NOX4** 

Metabolic dysfunction **ROS & NOX4** 





Maintenance of glomerular structure<sup>2,3</sup>



Antioxidant activity & tubular cell activation<sup>4,5,6</sup>



Stabilization of mitochondrial structure & function, reduced ROS<sup>7,8</sup>

GTX intervention

Protection of podocytes / mesangial cells<sup>2,3</sup>

Targeting critical & common disease pathways in late-stage CKD – independent of CKD etiology

ROS, reactive oxygen species; NOX4, nicotinamide adenine dinucleotide phosphate oxidase 4

<sup>1</sup> Wickman et al 2016. PLoS One. 11(5): e0155255.

<sup>2</sup> Nääv et al 2015. PLoS One. 0125499

<sup>3</sup> Wester-Rosenlöf et al 2014. 9(1): e86353. 7 Kristiansson et al. 2020. Int J Mol Sci. 21(6): 5825

<sup>5</sup> Burmakin et al. 2024 Am J Physiol Renal Physiol. doi: 10.1152/ajprenal.00067.2024

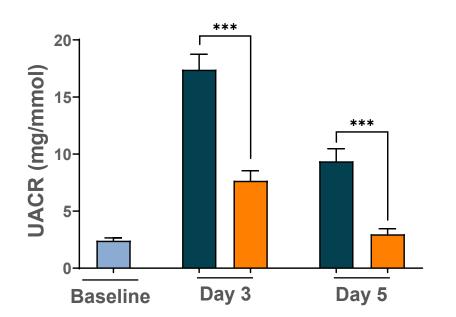
<sup>6</sup> Study reports with in vitro and in vivo GTX activity on file

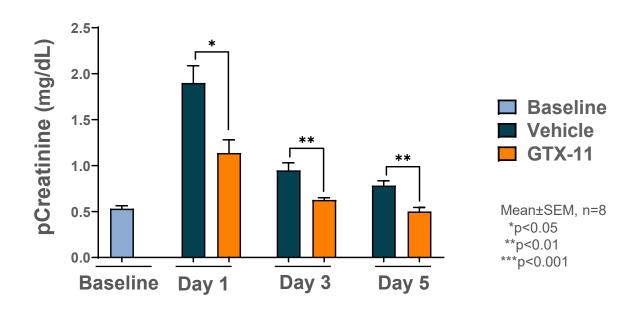
<sup>4</sup> Åkerström et al 2019, Antioxidants & Redox Signal, 30(4): 489, 8 Olsson et al 2013, Antiox & Redox Signal, 18(6): 2017

### **GTX-11 IMPROVES KIDNEY FUNCTION & REDUCES ALBUMINURIA**

### Rat kidney IRI model

- GTX-11 dosed by IV injection at 5 mg/kg
  - 30 min before renal pedicle clamp ischemia & 4, 8, 24, 48 hours post-reperfusion

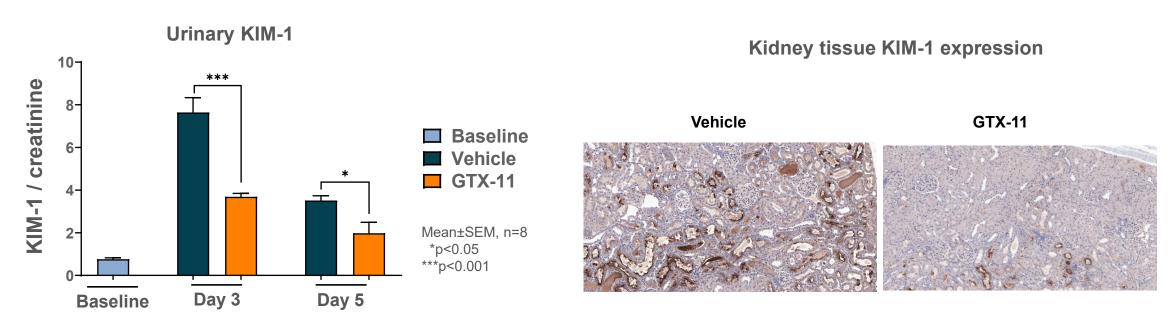




### GTX-11 REDUCES KIDNEY INJURY (TISSUE & URINE BIOMARKERS)

### Rat kidney IRI model

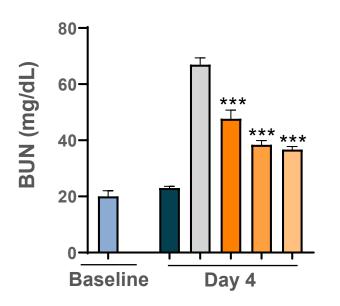
- KIM-1 (tubular cell injury marker) expression assessed at sacrifice
  - KIM-1 protein assessed in urine by ELISA & tissue expression by IHC
- GTX-11 dosed by IV injection at 5 mg/kg
  - 30 min before ischemia & 4, 8, 24, 48 hours post-reperfusion

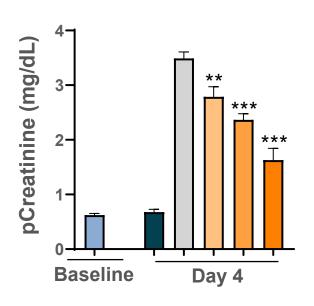


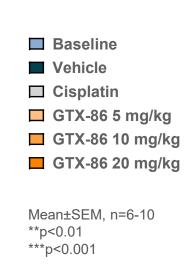
### **GTX-86 IMPROVES KIDNEY FUNCTION – DOSE RESPONSE**

### Mouse cisplatin nephropathy model

- GTX-86 dosed by SC injection at 5, 10 or 20 mg/kg
  - Once daily injection until sacrifice (first dose in conjunction with cisplatin induction)



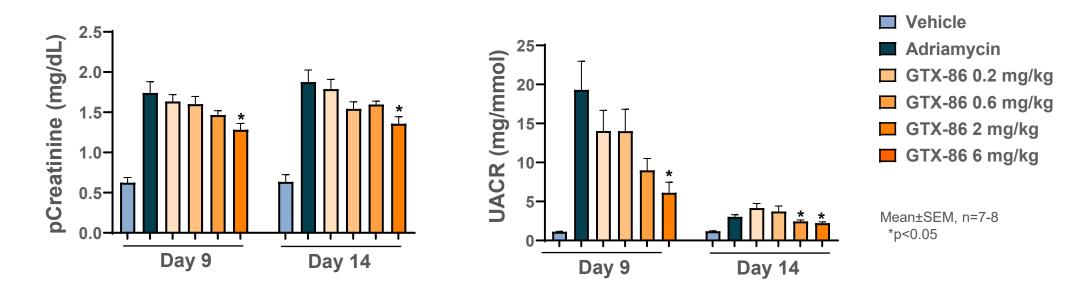




# GTX-86 IMPROVES KIDNEY FUNCTION & REDUCES ALBUMINURIA – DOSE RESPONSE

### Mouse FSGS model

 GTX-86 administered SC at 0.2, 0.6, 2 or 6 mg/kg once daily (initiated before induction with adriamycin)



## GTX-86 REDUCES ALBUMINURIA & IMPROVES KIDNEY FUNCTION – DOSE RESPONSE

### Mouse diabetic kidney disease model

- Diabetes and renal dysfunction apparent by Day 21 after streptozocin (STZ) administration
- At that point (Day 0), GTX-86 injected SC once daily at either 0.2, 0.6 or 2 mg/kg for 28 days

