

Preclinical Kidney Disease Research

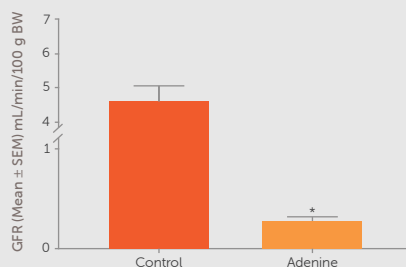
Translational Disease Models for Drug Discovery

Inotiv offers a comprehensive portfolio of validated kidney disease models spanning acute and chronic indications, including diabetic nephropathy and glomerulopathies, with standard-of-care validation. Beyond off-the-shelf models, we partner with clients to develop customized and comorbid disease models supported by integrated *in vivo* pharmacology expertise, enabling robust study design and improved translation to human disease.

Chronic Kidney Disease (CKD) Rodent Models

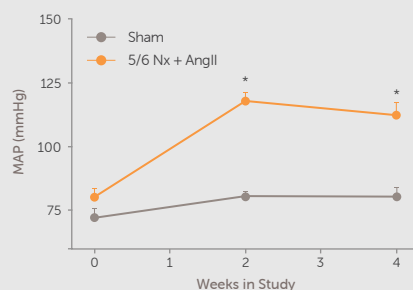
- Unilateral Ureteral Obstruction (UUO)
- 5/6 Nephrectomy (5/6 Nx)
- Adenine-Induced
- DOCA-Salt Rat
- Adriamycin-Induced
- Dahl Salt Sensitive Rat
- Angiotensin II Infusion
- Uni-Nephrectomy + Unilateral Ischemia/Reperfusion (I/R)

Figure 1 GFR in Adenine-Induced CKD Rat Model



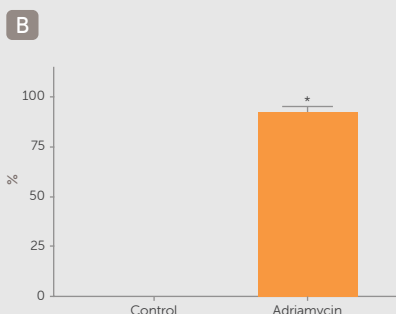
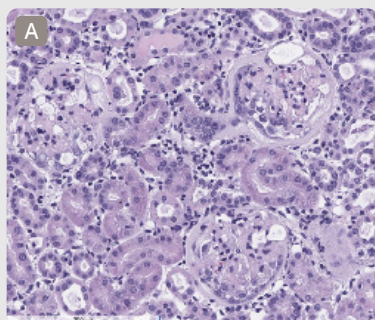
Glomerular filtration rate (GFR), measured by MediBeacon® transdermal device, shows loss of renal function in the Adenine-Induced CKD Rat Model. * $p < 0.05$ vs control.

Figure 2 MAP in 5/6 Nx Mouse CKD Model



Chronic hypertension in the 5/6 Nx C57BL/6 mouse CKD model, in combination with angiotensin II infusion, assessed by mean arterial pressure (MAP) measured via conscious tail cuff. * $p < 0.05$ vs sham.

Figure 3 Glomerulosclerosis in Adriamycin-Induced CKD Rat Model



Severe glomerulosclerosis in an H&E-stained kidney section from an Adriamycin-Induced CKD Rat Model (A). Quantification performed by a board-certified pathologist. * $p < 0.05$ vs vehicle (B).

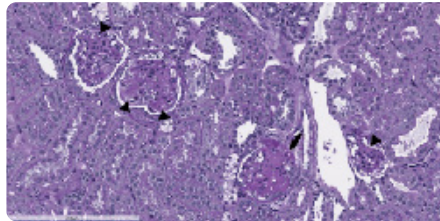
In Vivo Capabilities

- Survival surgeries
- Glomerular filtration rate (MediBeacon®)
- Blood pressure (tail-cuff)
- Body composition (qNMR)
- Ultrasound imaging and analysis
- Blood glucose (Glucometer)
- Glucose (GTT) and insulin (ITT) tolerance tests
- 24-hour urine collection (metabolic cages)
- Sample collection (e.g., blood, BALF, urine, tissue)
- Compound dosing (e.g., i.p., i.v., p.o., s.c., infusion)

Diabetic Kidney Disease Rodent Models

- Streptozotocin-Induced Diabetic Nephropathy
- ZSF-1 and ZDF Rat
- *db/db* Mouse \pm AAV-Renin

Figure 4 Glomerulosclerosis in Diabetic Nephropathy Model



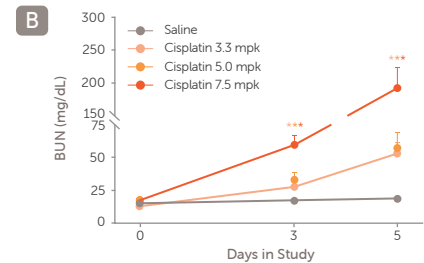
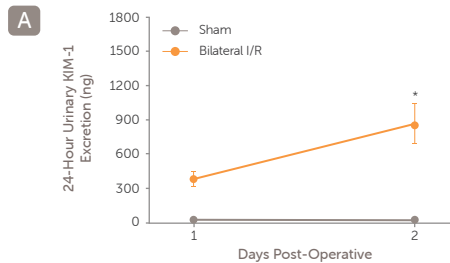
Glomerulosclerosis (arrow) and glomerular expansion (arrowheads) in a PAS-stained kidney section from a *db/db* mouse following unilateral nephrectomy and AAV-renin administration.

Acute Kidney Injury Rodent Models

- Bilateral Renal I/R
- Cisplatin-Induced

Increased urine KIM-1 levels in Sprague Dawley rats following 40 minutes of bilateral renal I/R. * $p < 0.05$ vs *sham*. (A). Increased plasma blood urea nitrogen (BUN) levels in Sprague Dawley rats following cisplatin administration. * $p < 0.05$ vs *saline* (B).

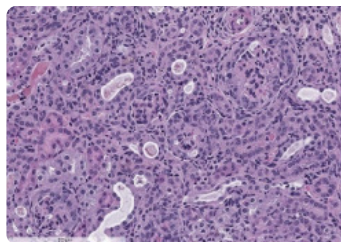
Figure 5 AKI Biomarker Elevation in Rat Models



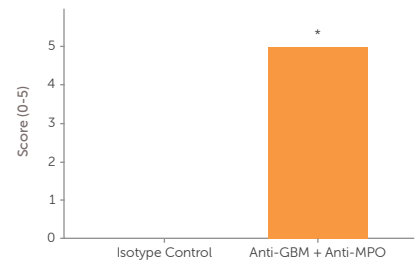
Nephritis and Nephrotic Syndrome Rodent Models

- Anti-GBM-Induced Nephrotoxic Serum Nephritis
- Anti-Fx1a-Induced Passive Heymann's Nephritis
- ANCA-Associated Nephritis
- Puromycin Aminonucleoside Nephrosis

Figure 6 Crescent Formation in Nephritis Model



Marked crescent formation in an H&E-stained kidney section from a Passive ANCA-Associated Nephritis Mouse Model (A). Quantification performed by a board-certified pathologist. * $p < 0.05$ vs *isotype control* (B).



Translational Biomarkers and Pathways

- Clinical chemistry
- Hematology
- Flow cytometry
- mRNA expression analysis
- Protein quantification
- Global and targeted proteomics
- Spatial transcriptomics
- Customized analyte development
- Pharmacokinetics and drug metabolism
- Investigative and molecular pathology
- Immunohistochemistry/Immunofluorescence
- Image analysis by veterinary pathologist

Contact us at [inotiv.com/contact](https://www.inotiv.com/contact) to discuss how our models and services can support your CVRM drug development program.