

# Unilateral nephrectomy and ischemia/reperfusion injury (NIR)

## AN *IN VIVO* MODEL FOR ACUTE KIDNEY INJURY

### Model

Ischemia/reperfusion injury (IRI) is characterized by restriction of blood supply to an organ followed by restoration of blood flow and re-oxygenation. Ischemia is a leading cause of acute kidney injury (AKI) which temporarily interrupts the supply of oxygen and nutrients to the kidney, initiating a cascade of deleterious cellular and molecular responses primarily in tubular epithelial cells.

In this model, IRI is induced in nephrectomized rats by unilateral renal pedicle clamping impairing renal function and eliciting tubular injury.

### Specie

Rat

### Interest

A model mimicking IR occurring after renal transplant.

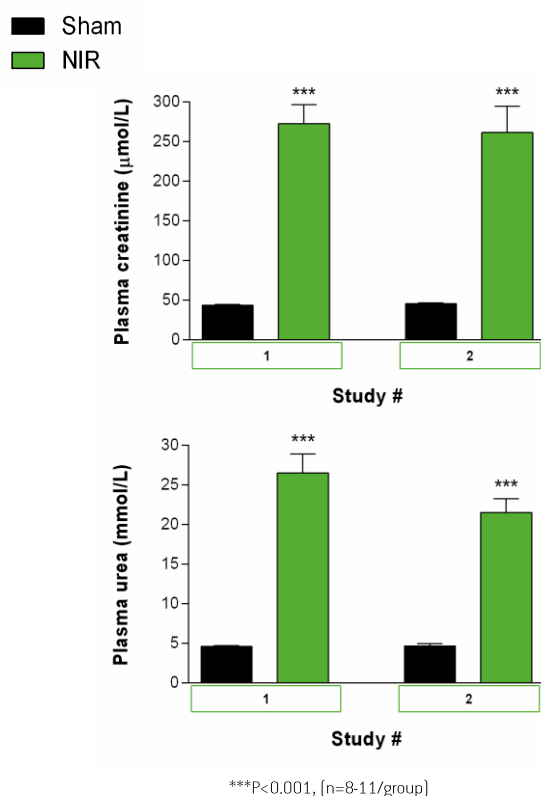
### Model Description

- Surgical procedure: unilateral nephrectomy followed by atraumatic clamping of contralateral renal pedicle [ischemia] and blood flow restoration during 24 hours [reperfusion].
- Pathophysiological features: impaired renal function and tubular injury.

### Parameters evaluated

- Body and kidney weight
- Renal function:
  - Biochemical dosage of plasma and urinary creatinine and urea
  - Estimated and transdermal Glomerular Filtration Rate (GFR)
- Tubular injury:
  - ELISA dosage of specific markers (NGAL and KIM-1)
  - Histomorphometry: evaluation of tubular damage on Hematoxylin/Eosin stained kidney sections

Impaired renal function in NIR rats



Kidney tubular damage in NIR rats

