



## Research Models and Services

### Toxicology - Outbred Rats

# Wistar Han<sup>®</sup> Rat

## RccHan<sup>®</sup>:WIST

### Origin

The original Hannover Institute colony was obtained by the Institute for Biomedical Research (IBM) and received by Harlan by acquisition of RCC, formerly Biological Research Laboratories Limited (BRL), Füllinsdorf, Switzerland. Harlan became Envigo in 2015.

#### Improving Toxicology Outcomes

- + Smaller body size - less compound and cost
- + Lower tumor incidence - reduced variables
- + Longer survival - improved study outcome
- + More than 20 years of stable control data

### Research Use

#### Inhalation

- + Changes in rat lung after intratracheal instillation of polymers (13)
- + Particulate air pollution and biological effect in samples from four European cities (55)
- + Biopersistence and histopathology following exposure to asbestos and tremolite (8)
- + Short-term assays to evaluate toxicity of new biosoluble glasswool fibers (27)

#### Cardiotoxicity

- + Biomarker identification (62)

#### Hepatotoxicity

- + Reduction of CCl<sub>4</sub>-induced hepatotoxicity (27)
- + Hepatotoxic effects from a hypoglycemic agent and conazole fungicides (2, 26)

#### Nephrotoxicity

- + Cyclosporine A nephrotoxicity and vitamin D pathway impairment (1, 24)
- + Chronic inhibition of metabolizing enzymes on renal function (54)

#### Neurotoxicity

- + Immunohistochemical analysis for Pulmonary Neuroendocrine Cells (25)
- + Minimizing creatine kinase variability for neuromuscular research purposes (23)
- + Organic cation activity on a plasma membrane serotonin
- + Dopamine function due to conditional fear responses (46, 47)

#### Risk Assessment

- + Grass pollen allergy vaccine (3)
- + Stevia-derived sweetener, rebaudioside A (18)
- + Animal anaesthetics on pro-inflammatory cytokines (10)
- + Improved risk assessment through various sperm screening parameters (48)
- + Genotoxicity and human health risk of kojic acid (40)

#### Carcinogenesis

- + Treatment with tumorigenic and non-tumorigenic conazole fungicides (61)
- + Induced and spontaneous lesions in teeth of laboratory animals (60)
- + Mortality and in-life patterns in Han Wistar rat (28)
- + Oral squamous cell carcinoma incidence with a calcium channel blocker and diet (36)

### Efficacy and Metabolism

- + Induction of metabolic acidosis of renal and hepatic mitochondria (7)
- + Drug efficacy through inhibition of cellular oxidative metabolism (38)
- + Ranitidine and acetylcysteine administration in barium examination preparation (55)
- + Nicotinic acetylcholine receptor agonists as tomography tracers in the CNS (9, 44)
- + Serotonin neuronal transporter inhibitor fluoxetine (37)
- + Cyclosporine A on expression of Calbindin-D 28 (59)
- + Receptor antagonists, antipsychotic drugs, and amphetamine withdrawal (35, 64, 51, 52, 53)

### Pharmacology

- + Reduction of cold-induced cell injury with iron chelators in rat kidney (4)
- + Functional expression of multidrug resistance protein 2 following gentamicin exposure (42)
- + Pyridostigmine bromide on food motivation (58)
- + Hypersensitivity and prepulse inhibition through use of neurotransmitter antagonist (6)
- + Behavioral differences on the peripheral benzodiazepine receptor system (34)
- + Analgesic characterization in a rodent model of osteoarthritis (29)

### Selected Pharmaceutical References

#### Simvastatin

- + Characterization of rat heart alkaline phosphatases including simvastatin (40)
- + Simvastatin effects on endothelial function after chronic inhibition of nitric oxide synthase (46)

#### Orlistat

- + Fatty-acid amine hydrolase inhibitor affect on triacylglycerol hydrolysis (13)
- + Increase in urinary oxalate excretion through lipase inhibitor (20)
- + Anti-obesity agent, Orlistat, associated with increase in colonic preneoplastic markers (21)
- + The intestine as source of cytotoxic mediators in shock (45)

### Bosentan

- + Bosentan ameliorates cyclosporine A-induced hypertension in rats and primates (5)
- + Pharmacological characterization of Bosentan (16)
- + Combination of Bosentan and Sildenafil in monocrotaline model of pulmonary hypertension in rats (17)
- + Bosentan inhibits canalicular bile salt export pump (19)
- + Renal denervation on renal effects of acute nitric oxide and ETA/ETB receptor inhibition (22)
- + Physiological concentration of 17 $\beta$ -Estradiol on sympathetic reinnervation in ovariectomized infarcted rats (33)
- + Inhibition of *in vivo* constriction of fetal ductus arteriosus by endothelin receptor blockade (39)
- + Effect of Bosentan on the renal response to contrast media (43)

### Celecoxib

- + Cyclooxygenase and NO synthase inhibitors on antinociceptive action of acetaminophen (11)
- + Cyclooxygenase and nitric oxide synthase inhibitors on vincristine induced hyperalgesia (12)
- + Prevention of gastric mucosa effects caused by indomethacin and celecoxib (14)
- + Involvement of prostaglandins in inflammation induced by latex (32)
- + Involvement of subcellular organelles in oxidative stress and apoptosis in rat hepatocytes (50)
- + Chemoprevention implications on cell kinetic changes in rat stomach cancer after treatment with celecoxib or indomethacin (63)

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## Contact us

North America 800.793.7287 [rms.na@envigo.com](mailto:rms.na@envigo.com)



Envigo RMS Division, 8520 Allison Pointe Blvd., Suite 400, Indianapolis, IN 46250, United States

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