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Research Models and Services
Neuroscience – Outbred Rats

Sprague Dawley® Rat

Hsd:Sprague Dawley® SD®

Established in 1925 by Robert Dawley, the original Sprague Dawley rat colony was obtained by Harlan in 1980 through the acquisition of Sprague-Dawley, Inc. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021. The Hsd:Sprague Dawley® SD® rat has a wide array of historical research use including in the field of neuroscience. In order to provide historical and reference data for the research community, several of these articles are noted below.

Custom Neuroscience Models

- Neuroendocrine Deficiency - Hypophysectomy
- Adrenalectomy
- Adrenal Demedullation

RESEARCH USE

Genetics

- Gene therapy (53)
- Microarray analysis (36, 50, 65)
- Genomic response following ischemia (8, 55)

Neuronal Function

- Neuronal differentiation (30, 36, 51)
- Neuronal protection (7, 41)
- Sensory neurons (21)
- Motoneurons (24, 33)
- Corticospinal axon branching (15)

Memory

- Spatial memory (22, 66)
- Induced memory impairment (6, 40)
- Working memory (6)

Neuroendocrinology

- Neurotransmitter activity (29, 32, 35, 37)
- Dopaminergic neurons (10, 44, 45)
- Dopamine metabolism (37)
- Glutamate (25, 56, 43, 54)
- Hypothalamic glucose concentration (17)
- Orexin effects and distribution (13, 57, 58)

Oxidative Stress

- Induction of oxidative stress (9, 31, 39, 41, 45)
- Protection from oxidative stress (11, 44)

Stress

- Trauma stress response (4)
- Activation of MAP kinase pathway (4, 70)

Nociception

- Isoprotane function (20)
- Pain sensitivity (26)
- Peripheral nerve injury (28, 62, 71)
- Nociceptive signaling (46)
- Spinal nociceptive neurons (64)

Drug Addiction

- Fetal alcohol exposure (1)
- Tobacco toxins (9)
- Cocaine and behavior (2, 27, 59)

Depression

- Antidepressant activity (3, 34)

Neurological Effects of Nutrition

- Dietary iron (19, 47, 52)
- Zinc deficiency (29)
- Carbohydrate source (68)
- Vitamin E (50)

Seizures

- Induced excitotoxicity (41)
- Medical intractability (61)
- Epilepsy (49, 61, 63)

Ischemia

- Neuroprotection (12, 39, 56, 62, 69)
- Treatment (12, 60)
- Neurotrophin levels (14)
- Neuronal damage (12)
- Ischemic tolerance (8)
- Anesthesia effects (18)
- Behavioral impairments (23, 60, 69)
- Dietary restriction effects (69)
- Protein expression (38, 67)

Brain Injury

- Chemical lesions (16)
- Hypoxia-induced hippocampal injury (48)
- Intracerebral hemorrhage (52)
- Percussion brain injury (73)
- Gene expression profile following injury (55)
- Thrombin induced injury (40)

Neurotoxicity

- Exogenous (10, 42, 45, 72)
- Endogenous (11, 40, 56)

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