inotiv
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Genetically engineered models **(GEMS)**

Park2 Parkin knockout rat

MODEL	Park2 Parkin knockout rat
STRAIN	HsdSage: LE-*Park2*^{em1Sage}
LOCATION	U.S.
AVAILABILITY	Live colony

CHARACTERISTICS/HUSBANDRY

- Homozygous knockout rats exhibit complete loss of target protein as demonstrated by Western blot
- Park2 knockout rats show normal motor performance on rotarod
- Background strain: Long Evans Hooded

ZYGOSITY GENOTYPE

- Homozygous

RESEARCH USE

- Parkinson's disease
- Dopaminergic cell toxicity

ORIGIN

The Park2 Parkin knockout rat model was originally created at SAGE Labs, Inc. in St. Louis, MO. The animal inventory was acquired by Envigo in 2019 and then by Inotiv in 2021. The line continues to be maintained through the original SAGE Labs animal inventory and is distributed out of the Boyertown, PA facility.

DESCRIPTION

Developed in collaboration with The Michael J. Fox Foundation, this model contains a deletion of the Park2 (Parkinson disease [autosomal recessive, juvenile] 2) gene, encoding for the protein Parkin. Mutations in Parkin have been linked to early-onset Parkinson's disease (PD), making this model useful to further understand the role of Parkin in PD.

In humans, loss of function of Park2 leads to a form of familial PD. The Parkin protein is part of the ubiquitin-proteasomal enzyme pathway and may help degrade other proteins that are toxic to neurons. Roughly 20% of patients with PD onset before age 40 have mutations within Park2, making this an ideal model for the study of PD.

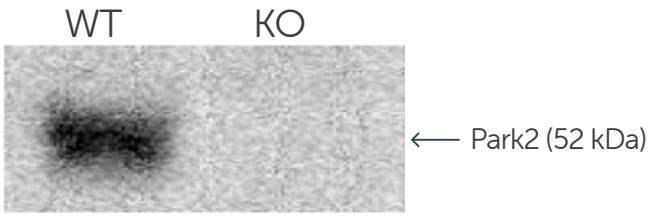

Figure 1: Loss of Parkin protein in Park2 Parkin knockout (KO) rats. Parkin protein expression is disrupted in Park2 Parkin KO rats as compared to wild type (WT) controls as demonstrated by Western blot.

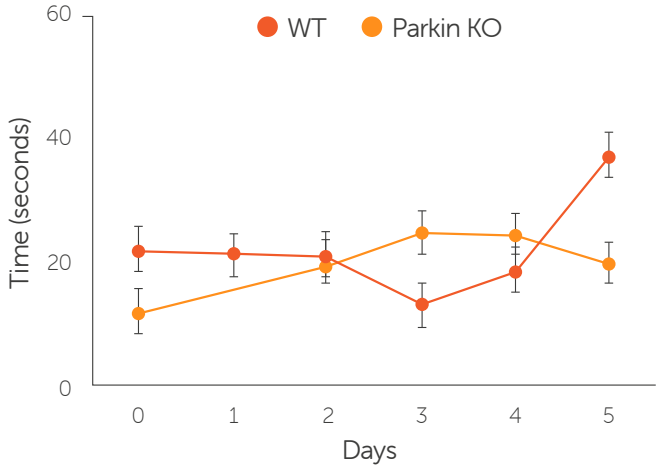

Figure 2: Rotarod performance of Park2 Parkin KO rats at 12 months of age. Park2 Parkin KO animals show no deficits in motor activity as assessed by rotarod at 12 months of age.

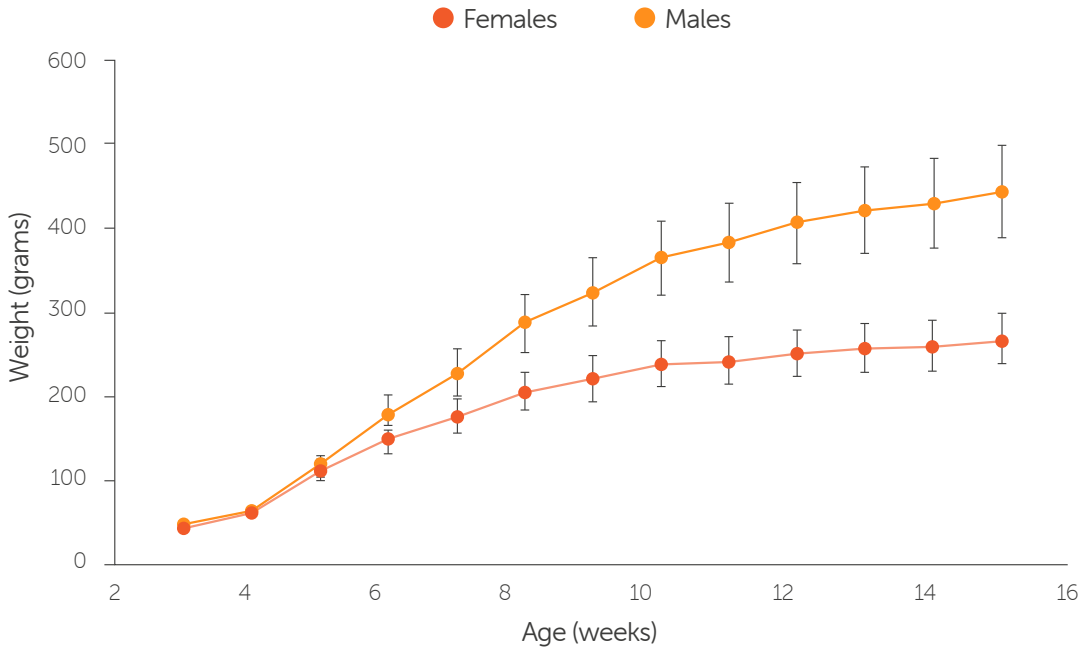

Figure 3: A graph showing the correlation between the age and weight of Park2 Parkin KO rats.