ENVIGO

Genetically engineered models (GEMS)

Park2 Parkin knockout rat

Model	Park2 Parkin knockout rat
Strain	HsdSage: LE-*Park2*^{tm1Sage}
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 KO rat model was originally created at SAGE Labs, Inc. in St. Louis, MO and distributed out of the Boyertown, PA facility. The line continues to be maintained through the original SAGE Labs animal inventory acquired by Envigo.

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 Parkinson's disease. 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 Parkinson's disease onset before age 40 have mutations within Park2, making this an ideal model for the study of Parkinson's disease.

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

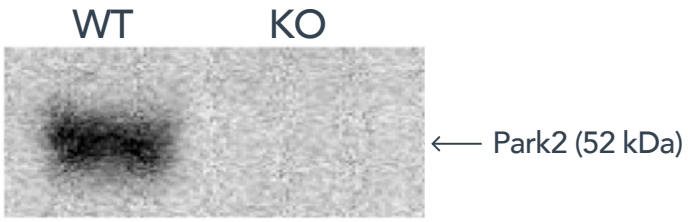


Figure 2: Rotarod performance of Park2 knockout rats at 12 months of age. Park2 knockout animals show no deficits in motor activity as assessed by rotarod at 12 months of age.

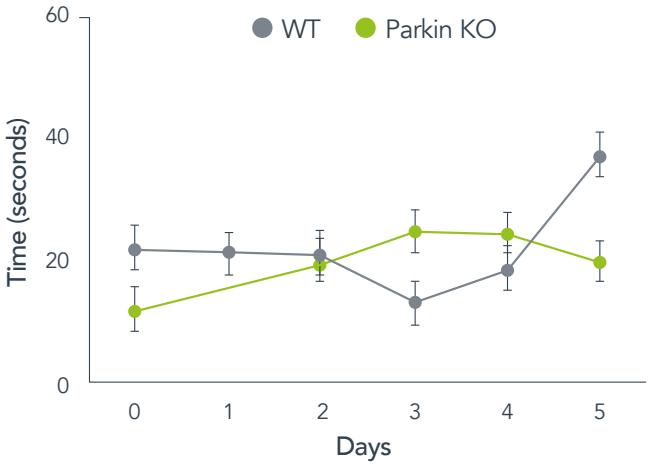
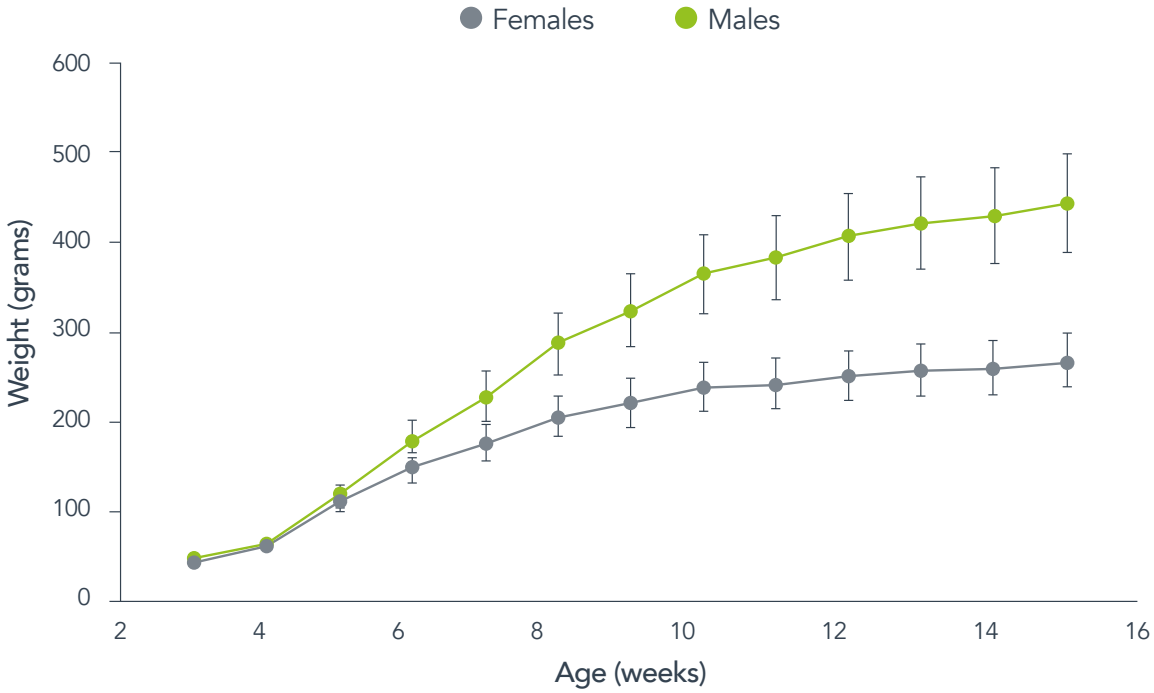


Figure 3: A graph showing the correlation between the age and weight of Park2 Parkin knockout rats.



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