

Park7 DJ-1 knockout rat



MODEL	Park7 DJ-1 knockout rat
STRAIN	HsdSage: LE- <i>Park7^{em1Sage}</i>
LOCATION	U.S.
AVAILABILITY	Live colony

CHARACTERISTICS/HUSBANDRY

- Homozygous knockout (KO) rats exhibit complete loss of target protein as demonstrated by Western blot
- Approximately 30% of DJ-1 KO rats show a hindlimb-dragging phenotype that emerges at 4-6 weeks of age and worsens at 5 months
- DJ-1 KO rats show impaired open-field mobility at 8 months of age. DJ-1 KO rats show gait impairments at 8 months of age
- Preliminary reports have suggested DJ-1 KO rats show a ~50% reduction in dopaminergic neurons in the substantia nigra at 8 months of age
- Background Strain: Long Evans Hooded

ZYGOSITY GENOTYPE

- Homozygous

RESEARCH USE

- Parkinson's disease
- Dopaminergic cell toxicity

ORIGIN

The Park7 DJ-1 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 Park7 (Protein deglycase DJ-1) gene, encoding for the protein DJ-1. Mutations in DJ-1 have been linked to autosomal recessive early-onset Parkinson's disease (PD), making this model useful to further understand the role of DJ-1 in PD.

In humans, loss of function of Park7 leads to a form of early-onset PD. This occurs due to the role Park7 plays in protecting neurons from oxidative stress and cell death, making this an ideal model for the study of PD.

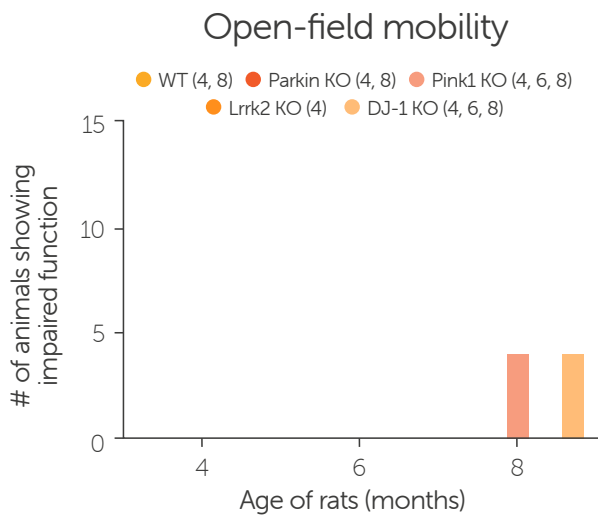


Figure 1: Decreased open-field mobility in DJ-1 KO rats. Impairments in open-field mobility were seen in 5 of 15 DJ-1 KO rats at 8 months of age.

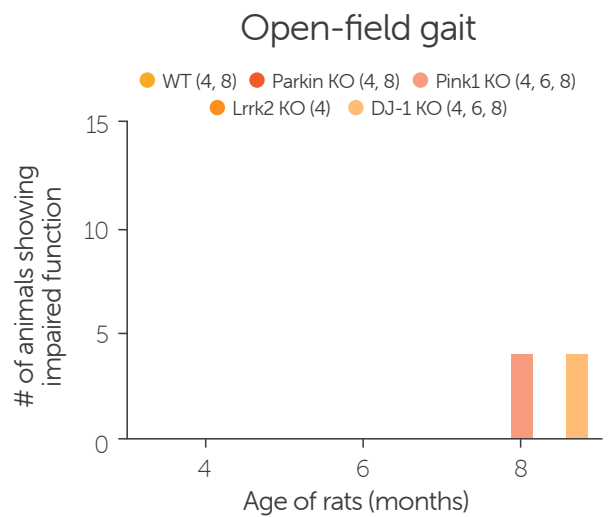


Figure 2: Impaired gait in DJ-1 KO rats. DJ-1 KO rats show impaired gait in an open field. Impairment was seen in 5 of 15 animals at 8 months of age.

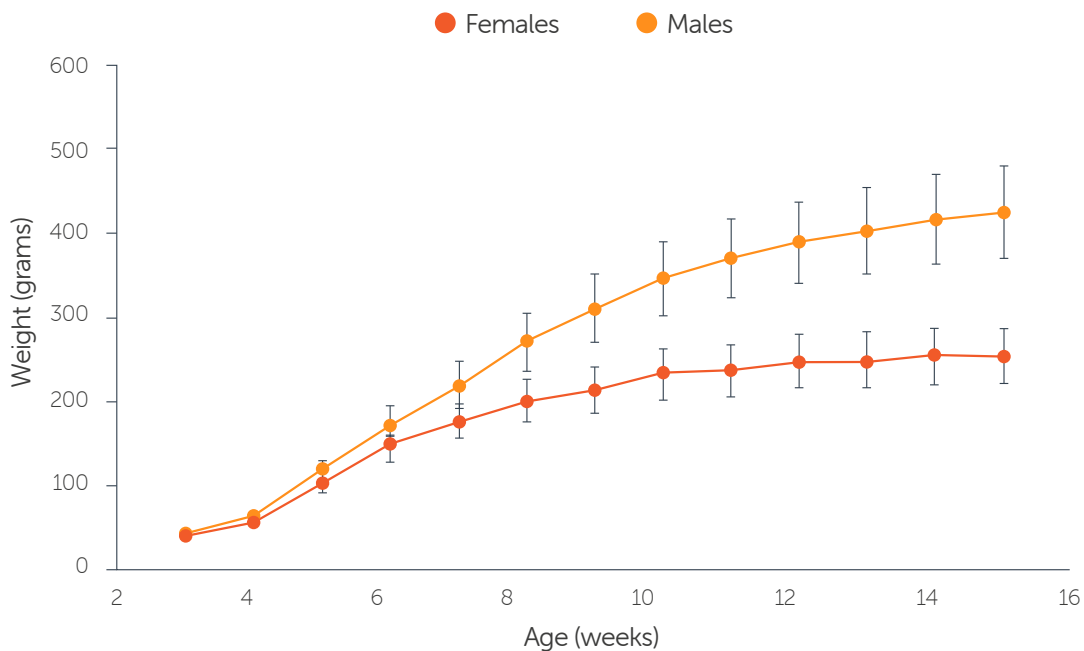


Figure 3: A graph showing the correlation between the age and weight of Park7 DJ-1 KO rats.