Overview

Also Known As: parkin-

Homozygous Parkinson disease (autosomal recessive, juvenile) 2, parkin (Park2^tm1Skn^) knock-out mice have increased extracellular dopamine concentration in the striatum, dysfunctional nigrostriatal pathways, and dysfunctional mitochondria. These mice model the exon 3 deletion mutation most common in human autosomal recessive juvenile parkinsonism patients and may be useful in studies of Parkinson's disease, dopamine regulation, nigrostriatal function, mitochondrial function, and other neurobiological research.

Donating Investigator

Jie Shen, Harvard Med Sch/Brigham Women's Hosp
GENETIC OVERVIEW

**Genetic Background**

N22+N3F1
(2019-05-17 00:00:00)

**Prkn<sup>Im1Shn</sup>**

<table>
<thead>
<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
<th>Gene Name</th>
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<tbody>
<tr>
<td>Targeted (Null/Knockout)</td>
<td>Prkn</td>
<td>parkin RBR E3 ubiquitin protein ligase</td>
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RESEARCH APPLICATIONS

Neurobiology Research

 BASE PRICE

Starting at:

$236.78 Domestic price for female

Details

**Detailed Description**

Homozygous mice are viable and fertile, and exhibit grossly normal brain morphology. Western blot analysis using antibody specific to C-terminal sequences indicates the absence of full length gene product. RT-PCR shows that exon 2 splices to exon 4, skipping exon 3 entirely, resulting in a frame shift and a premature stop codon in exon 5. While EGFP transcripts are present, little parkin-EGFP fusion protein is detectable by Western analysis. Homozygous mice have increased extracellular dopamine concentration in the striatum. Further, medium-sized striatal spiny neurons require greater currents to induce synaptic responses, suggesting a reduction in synaptic excitability in the absence of the endogenous gene. Homozygotes also exhibit deficits in behavioral paradigms sensitive to dysfunction of the nigrostriatal pathway. The numbers of dopaminergic neurons in the substantia nigra, however, are normal up to the age of 24 months, in contrast to the substantial loss of nigral neurons characteristic of Parkinson’s disease. Homozygous mice and their isolated cells exhibit mitochondrial dysfunction and impaired protection from oxidative stress. Muscle cells isolated from homozygous mice have defective skeletal muscle mitochondrial homeostasis and increased sensitivity to amyloid-beta toxicity. These mice model the exon 3 deletion mutation most common in human autosomal recessive juvenile parkinsonism (AR-JP) patients and may be useful in studies of Parkinson's disease, dopamine regulation, nigrostriatal function, mitochondrial function, and other neurobiological research.

In an attempt to offer alleles on well-characterized or multiple genetic backgrounds, alleles are frequently moved to a genetic background different from that on which an allele was first characterized. Mice with this mutation were originally published on a mixed B6;129S4 genetic background. It should be noted that the phenotype could vary from that originally described. The strain description will be modified as published results become available.
Genotyping Protocols
Standard PCR: Park2<sup>tm1Shn</sup>
MELT: Park2<sup>tm1Shn</sup>
Genotyping resources and troubleshooting

Dietary Information
LabDiet® 5K52 formulation (6% fat)

Breeding Considerations
When maintaining a live colony, homozygous mice may be bred together.
Additional Breeding and Husbandry Support

Mating System
Homozygote x homozygote

Citation
When using the parkin mouse strain in a publication, please cite the originating article(s) and include JAX stock #006582 in your Materials and Methods section.

Pricing & Availability
Live mice available in varying quantities. Ask Customer Service for details.

### Domestic Pricing effective for USA, Canada and Mexico shipping destinations

<table>
<thead>
<tr>
<th>Live Mouse</th>
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<tr>
<td>AGE</td>
<td>SEX</td>
<td>GENOTYPE</td>
<td>PRICE</td>
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<tr>
<td>Approx 4-8 weeks</td>
<td>Female</td>
<td>Homozygous for Prknt^tn1Shn</td>
<td>$236.78</td>
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<tr>
<td></td>
<td>Male</td>
<td>Homozygous for Prknt^tn1Shn</td>
<td>$236.78</td>
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### Related Products and Services

- **Frozen Mouse Embryo**: $2,595.00 per straw or vial

**Payment Terms and Conditions**

Terms are granted by individual review and stated on the customer invoice(s) and account statement. These transactions are payable in U.S. currency within the granted terms. Payment for services, products, shipping containers, and shipping costs that are rendered are expected within the payment terms indicated on the invoice or stated by contract. Invoices and account balances in arrears of stated terms may result in The Jackson Laboratory pursuing collection activities including but not limited to outside agencies and court filings.

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Terms of Use

*General Terms and Conditions*

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**Licensing Information**

Phone: 207-288-6470

Email: TechTran@jax.org

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