BKS.Cg-Lepr<sup>db</sup> Nos3<sup>tm1Unc</sup>/RhrsJ

Stock No: 008340 | eNOS<sup>−/−</sup> C57BLKS/J<sup>db</sup>

Congenic Spontaneous Mutation, Targeted Mutation

PLACE ORDER

3–6 week average lead time depending on quantity and age requests are not accepted

Also Known As: eNOS<sup>−/−</sup> C57BLKS/J<sup>db</sup>

eNOS<sup>−/−</sup> C57BLKS/J Lepr<sup>db</sup> double mutant mice harbor both the spontaneous Lepr<sup>db</sup> mutation and nitric oxide synthase 3, endothelial cell (Nos3 or eNOS) knock-out targeted mutation. Double homozygous eNOS<sup>−/−</sup> C57BLKS/J db/db mice (also called eNOS<sup>−/−</sup> db/db, or db/db/eNOS<sup>−/−</sup> double mutant mice) are a robust model of type II diabetic nephropathy and may be useful for studying eNOS-mediated events in the development and progression of diabetic nephropathy.

Donating Investigator

Dr. Raymond C. Harris, Vanderbilt University Med Center

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**GENETIC OVERVIEW**

<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
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<tr>
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<td>(2018-04-17 00:00:00)</td>
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**Nos3<sup>tm1Unc</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>Nos3</td>
<td>nitric oxide synthase 3, endothelial cell</td>
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**Lepr<sup>db</sup>**

<table>
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<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
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<tbody>
<tr>
<td>Spontaneous</td>
<td>Lepr</td>
<td>leptin receptor</td>
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VIEW GENETICS

**RESEARCH APPLICATIONS**

Diabetes and Obesity Research
Internal/Organ Research
Cardiovascular Research
Details

Detailed Description

These double mutant mice harbor both the Lepr<sup>db</sup> spontaneous mutation and the Nos3 (eNOS) targeted mutation and are congenic on C57BLKS/J genetic background. Mice homozygous for both mutations (called eNOS<sup>−/−</sup> C57BLKS/J db/db, eNOS<sup>−/−</sup> db/db, or db/db/eNOS<sup>−/−</sup> double mutant mice) are viable with development of type II diabetes and diabetic nephropathy. The eNOS<sup>−/−</sup> C57BLKS/J db/db mice develop type II diabetes with significant obesity and hypertension: while both mutations are associated with insulin resistance, the mutated leptin receptor in db/db mice chiefly accounts for the observed hyperglycemia and defective leptin signaling (leading to persistent hyperphagia and obesity), and the eNOS-deficiency accounts for the moderate systemic hypertension. In addition, eNOS<sup>−/−</sup> C57BLKS/J db/db mice exhibit rapid onset and progression of pathologic diabetic nephropathy (DN) features by 26 weeks of age, developing severe albuminuria and other DN characteristics (including arteriolar hyalinosis, increased glomerular basement membrane thickness, mesangial expansion, mesangiolysis, and focal segmental and early nodular glomerulosclerosis), also with remarkably decreased glomerular filtration rate (GFR; on the basis of impaired insulin clearance and increased serum creatinine). Double homozygous eNOS<sup>−/−</sup> C57BLKS/J db/db mice are a robust model of type II diabetic nephropathy and may be useful for studying eNOS-mediated events in the development and progression of diabetic nephropathy.

Development

Control Suggestions

Selected References

Genetics

Nos3<sup>−/−</sup>Lepr<sup>−/−</sup>

Lepr<sup>−/−</sup>

Disease/Phenotype
Genotyping Protocols
Restriction Enzyme Digest: Lepr\textsuperscript{db}
End Point Analysis: Lepr\textsuperscript{db}
Standard PCR: Nos3\textsuperscript{tm1Unc}
High Resolution Melting: Nos3\textsuperscript{tm1Unc}
Genotyping resources and troubleshooting

Dietary Information
LabDiet\textsuperscript{®} 5K52 formulation (6% fat)

Breeding Considerations
When maintaining a live colony, mice heterozygous for the Lepr\textsuperscript{db} spontaneous mutation and homozygous for the Nos3 (eNOS\textsuperscript{fl/fl}) targeted mutation may be bred together. NOTE: These mice have significant breeding difficulties. Approximately 16% of Het Hom x Het Hom matings are non-productive; approximately 23% of females only produce one litter; pre-wean loss is approximately 10%; 20% of breeders are found dead prior to retirement at 6-8 months of age.
Additional Breeding and Husbandry Support

Mating System
See “Breeding Considerations”

Citation
When using the eNOS\textsuperscript{fl/fl} C57BLKS/J\textsuperscript{db} mouse strain in a publication, please cite the originating article(s) and include JAX stock #008340 in your Materials and Methods section.

Animal Health Reports

Facility Barrier Level Descriptions
- FGB29 (Standard)
- AX12 (Maximum)

Pricing & Availability

3–6 week average lead time depending on quantity and age requests are not accepted

Domestic | International
Pricing effective for USA, Canada and Mexico shipping destinations
Live Mouse

<table>
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<tr>
<th>AGE</th>
<th>SEX</th>
<th>GENOTYPE</th>
<th>PRICE</th>
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<tr>
<td>Approx 4-8 weeks</td>
<td>Female</td>
<td>Heterozygous for Lepr$^{db}$, Homozygous for Nos3$^{tm1Unc}$</td>
<td>$271.00</td>
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<tr>
<td>Male</td>
<td></td>
<td>Heterozygous for Lepr$^{db}$, Homozygous for Nos3$^{tm1Unc}$</td>
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<tr>
<td>Approx 4-8 weeks</td>
<td>Male</td>
<td>Wild-type for Lepr$^{db}$, Homozygous for Nos3$^{tm1Unc}$</td>
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Breeder Pair

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<tr>
<th>SEX</th>
<th>GENOTYPE</th>
<th>PRICE</th>
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<tbody>
<tr>
<td>Female</td>
<td>Heterozygous for Lepr$^{db}$, Homozygous for Nos3$^{tm1Unc}$</td>
<td>$542.00</td>
</tr>
<tr>
<td>Male</td>
<td>Heterozygous for Lepr$^{db}$, Homozygous for Nos3$^{tm1Unc}$</td>
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- All
- By Allele
- By Gene
- By Collection

All Related Strains
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TOMORROW'S CURES