NOD.Cg-Prkdc<sup>scid</sup> H<sup>2-K<sub>1</sub></sup> H<sup>2-D<sub>1</sub></sup> Ill2<sup>tr<sub>1Wjl</sub></sup> Ssz

Stock No: 023848 | NSG-(K<sup>bD<sub>b</sub></sup>) null

Congenic, Spontaneous Mutation, Targeted Mutation

AVAILABLE

PLACE ORDER

Live mice available in varying quantities. Ask Customer Service for details.
Overview

**Also Known As:** NSG-(K<sup>b</sup>D<sup>b</sup>)null

NSG-(K<sup>b</sup>D<sup>b</sup>)null mice are NOD.scid.Il2Rγ<sup>null</sup> ("NSG") animals with knockout alleles of the MHC class I genes (K<sup>b</sup> null and D<sup>b</sup> null). Homozygous NSG-(K<sup>b</sup>D<sup>b</sup>)null mice lack murine major histocompatibility complex (MHC) class I and exhibit reduced xenogeneic graft-versus-host disease response (xeno-GVHD) following human peripheral blood mononuclear cells (PBMC) engraftment. These mice may be useful for transplantation studies to investigate the role of MHC class I and central and peripheral tolerance in the xeno-GVHD.

Donating Investigator

Dr. Leonard D. Shultz, The Jackson Laboratory

### GENETIC OVERVIEW

<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
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<tr>
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**H2-K1<sup>tm1Bpe</sup>**

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<th>Gene Name</th>
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<tr>
<td>Targeted (Null/Knockout)</td>
<td>H2-K1</td>
<td>histocompatibility 2, K1, K region</td>
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**Prkdc<sup>scid</sup>**

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<tr>
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<td>protein kinase, DNA activated, catalytic polypeptide</td>
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**Il2rg<sup>tm1Wjl</sup>**

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<th>Allele Type</th>
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<th>Gene Name</th>
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<tbody>
<tr>
<td>Targeted (Null/Knockout)</td>
<td>Il2rg</td>
<td>interleukin 2 receptor, gamma chain</td>
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</tbody>
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**H2-D1<sup>tm1Bpe</sup>**
**Details**

**Detailed Description**

NSG-(K^{b}_{null}, D^{b}_{null}) mice are NOD.scid II2Rγc^{null} ("NSG"; Stock No. 005557) animals also harboring knockout alleles of the MHC class I genes (K^{b}_{null} and D^{b}_{null}). NSG-(K^{b}_{null}, D^{b}_{null}) females homozygous for all three mutations, and males homozygous for scid, homozygous for K^{b}_{null}, homozygous for D^{b}_{null} and hemizygous for the X-linked II2Rγc^{null} may be collectively referred to as homozygous NSG-(K^{b}_{null}, D^{b}_{null}) mice.

Although viable and fertile, homozygous NSG-(K^{b}_{null}, D^{b}_{null}) mice are immunodeficient: they have no mature T cells or B cells, lack functional natural killer (NK) cells, are deficient in cytokine signaling, and do not express murine major histocompatibility complex (MHC) class I molecules (lack classical MHC class I-region associated (Ia) heavy chains).

While both homozygous NSG and homozygous NSG-(K^{b}_{null}, D^{b}_{null}) mice readily allow engraftment of human peripheral blood mononuclear cells (PBMC), the MHC class I-deficiency of homozygous NSG-(K^{b}_{null}, D^{b}_{null}) mice attenuates development of the xenogeneic graft-versus-host disease (xeno-GVHD) observed for homozygous NSG animals.

xeno-GVHD is mediated by donor T cell recognition of murine MHC classes I and II. The role of central and peripheral tolerance in development of GVHD was examined in NSG, MHC class I-deficient NSG-(K^{b}_{null}, D^{b}_{null}) and MHC class II-deficient NSG-Ab^o (see Stock No. 021885). Following an engraftment protocol using CD34+ hematopoietic stem cells (HSC) from human fetal liver, the human CD45+ cell chimerism was comparable in all three strains. However, the survival of NSG-(K^{b}_{null}, D^{b}_{null}) was significantly reduced.

Similar to other immunodeficient strains, maintaining homozygous NSG-(K^{b}_{null}, D^{b}_{null}) mice in high health status (specific pathogen-free) vivaria promotes overall colony health. If homozygous NSG-(K^{b}_{null}, D^{b}_{null}) animals are maintained in low health status barrier rooms, the use of medicated water (e.g., sulfatrim/trimethoprim-sulfa or enrofloxacin/Baytril) is suggested to increase overall colony.
View our Resources for the NSG mouse model, including discussion forum, immunodeficient model comparison, and categorized, up-to-date references.

- Development
- Control Suggestions
- Selected References

**Genetics**

- **H2-K1<sup>tm1Bpe</sup>**
- **Prkdc<sup>scid</sup>**
- **I<sub>2rg</sub><sup>tm1Wjl</sup>**
- **H2-D1<sup>tm1Bpe</sup>**

**Disease/Phenotype**

- Disease Terms
- Research Areas By Phenotype
- Mammalian Phenotype Terms by Genotype
- References

**Technical Support**

Genotyping Protocols
Standard PCR: H2-D1 Alternate3
Probe: I<sub>2rg</sub>-PROBE
End Point Analysis: Prkdc End Point
Standard PCR: I<sub>2rg</sub>
Standard PCR: H2-K1Alternate2
Standard PCR: H2-D1
Probe: H2-K1 Probe Alternate5

Genotyping resources and troubleshooting

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

NSG-(K\textsuperscript{b}D\textsuperscript{b}null) females homozygous for all three mutations, and males homozygous for \textit{scid}, homozygous for K\textsuperscript{b}null, homozygous for D\textsuperscript{b}null and hemizygous for the X-linked \textit{Il2Rγc}\textsuperscript{null} may be collectively referred to as homozygous NSG-(K\textsuperscript{b}D\textsuperscript{b}null) mice. When maintaining a live colony, homozygous NSG-(K\textsuperscript{b}D\textsuperscript{b}null) females may be bred with homozygous NSG-(K\textsuperscript{b}D\textsuperscript{b}null) males. Homozygous NSG-(K\textsuperscript{b}D\textsuperscript{b}null) mice are immunodeficient. As such, and similar to other immunodeficient strains, maintenance in high health status (specific pathogen-free) vivaria promotes overall colony health. If homozygous NSG-(K\textsuperscript{b}D\textsuperscript{b}null) animals are maintained in low health barrier rooms, the use of medicated water (e.g., sulfatrim/trimethoprim-sulfa or enrofloxacin/Baytril) is suggested to increase overall colony health.

Additional Breeding and Husbandry Support

Mating System

See "Breeding Considerations"

Appearance

Albino

Related Genotype: \textit{A/A Tyr\textsuperscript{+/−}}/\textit{Tyr\textsuperscript{+/−}}

Citation

When using the NSG-(K\textsuperscript{b}D\textsuperscript{b}null) mouse strain in a publication, please cite the originating article(s) and include JAX stock #023848 in your Materials and Methods section.

Animal Health Reports

For additional details see AX12 (Maximum)

Pricing & Availability

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

Available

Domestic Pricing for

- Commercial & For-Profit
- Not-For-Profit & Academic

Live Mouse

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<td>Male</td>
<td>Homozygous for \textit{Prkdc}\textsuperscript{scid}, Homozygous for H2-K1\textsuperscript{tm1Wjl}, Homozygous for H2-D1\textsuperscript{tm1Bpe},</td>
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## Related Products and Services

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<th>Age</th>
<th>Description</th>
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<td>8 weeks</td>
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### Cryorecovery - Domestic Pricing

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<th>DESCRIPTION</th>
<th>PRICE</th>
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<tr>
<td>Cryo Recovery</td>
<td>Homozygous for Prkdc&lt;sup&gt;scid&lt;/sup&gt;, Heterozygous for H2-K1&lt;sup&gt;tm1Bpe&lt;/sup&gt;, Heterozygous or wildtype for H2-D1&lt;sup&gt;tm1Bpe&lt;/sup&gt;, X linked Homozygous females and wildtype males, 1 pair minimum</td>
<td>$2,854.50</td>
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### Related Products and Services

| Frozen Mouse Embryo | NOD.Cg-Prkdc<sup>scid</sup> H2-K1<sup>tm1Bpe</sup> H2-D1<sup>tm1Bpe</sup> Il2rg<sup>tm1Wjl</sup> | $2595.00 |

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Licensing Information
Phone: 207-288-6470
Email: TechTran@jax.org

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