This humanized mutant strain combines the features of the NOD/ShiLt background, the severe combined immune deficiency (scid), IL2 receptor gamma chain deficiency and expresses human HLA-A2.1 MHC class I molecule. This model may be useful for studying response to human antigens, such as Epstein-Barr virus, possibly representing a unique preclinical model for vaccine development.

Donating Investigator
Dr. Leonard D. Shultz, The Jackson Laboratory

**GENETIC OVERVIEW**

<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>005557 NOD.Cg-Prkdc&lt;sup&gt;scid&lt;/sup&gt; Il2rg&lt;sup&gt;tm1Wjl&lt;/sup&gt;/SzJ</td>
<td>?+N2F8 (2019-11-01 00:00:00)</td>
</tr>
</tbody>
</table>

**Prkdc<sup>scid</sup>**

<table>
<thead>
<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
<th>Gene Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous</td>
<td>Prkdc</td>
<td>protein kinase, DNA activated, catalytic polypeptide</td>
</tr>
</tbody>
</table>

**Il2rg<sup>tm1Wjl</sup>**

<table>
<thead>
<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
<th>Gene Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted (Null/Knockout)</td>
<td>Il2rg</td>
<td>interleukin 2 receptor, gamma chain</td>
</tr>
</tbody>
</table>

**Mcpht1<sup>Tg(HLA-A2.1)1Enge</sup>**

<table>
<thead>
<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
<th>Gene Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transgenic (Null/Knockout, Inserted expressed sequence, Humanized sequence)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The NOD.Cg-Prkdc<sup>scid</sup>Il2rg<sup>tm1Wjl</sup>Tg(HLA-A2.1)1Enge/SzJ mice, commonly known as NOD scid gamma, HLA-A2.1 (NSG-A2, NSG-HLA), express human class I MHC Ag HLA-A2.1, but do not express the Prkdc gene nor the X-linked Il2rg gene. The Tg(HLA-A2.1)1Enge transgene integrated into chromosome 8 causing a duplication in Mcph1 (microcephaly, primary autosomal recessive 1). The duplication results in a functional knock-out of Mcph1 in homozygous mice. Founder line 1 has a copy number of 3-8. Triple mutant mice are viable, fertile, normal in size and do not display any gross physical or behavioral abnormalities. NSG mice, carrying the HLA-A2.1 transgene (homozygous or hemizygous), overcome one of the limitations of immune response seen in the NSG model (Stock No. 005557), in that they develop protective T cell responses against human viral infections, specifically Epstein-Barr virus, exhibiting traits similar to those seen in humans. This model may be useful for studying response to human antigens and represent a unique preclinical model for vaccine development.

Please note that this strain carries the true null interleukin-2 receptor gamma chain mutation and should not be confused with other strains that express a truncated interleukin-2 receptor gamma chain as described in: "Modulation of hematopoiesis in mice with a truncated mutant of the interleukin-2 receptor gamma chain" Ohbo K. et al. Blood 1996; 87:956-67.
Genotyping Protocols
Probe: Il2rg-PROBE
End Point Analysis: Prkdc End Point
QPCR: Tg(HLA-A)-2
End Point Analysis: Smcx/Smcy-PROBE
Standard PCR: Tg(HLA-A2.1)1Enge
Standard PCR: Il2rg
Genotyping resources and troubleshooting
Breeding Considerations

When maintaining a live colony, mice hemizygous for the human transgene and homozygous for the other mutations may be bred together.

Additional Breeding and Husbandry Support

Mating System
See "Breeding Considerations"

Hemizygous for Mcph1<
Tg(HLA-A2.1)1Enge>
, Homozygous for Prkdc<
scid>
, Homozygous for Il2rg<
tm1Wjl>

x

Hemizygous for Mcph1<
Tg(HLA-A2.1)1Enge>
, Homozygous for Prkdc<
scid>
, Hemizygous for Il2rg<
tm1Wjl>

Appearance

albino

Related Genotype: A/A Tyr< /Tyr> 

Citation

When using the NSG-A2 mouse strain in a publication, please cite the originating article(s) and include JAX stock #009617 in your Materials and Methods section.

Animal Health Reports

Facility Barrier Level Descriptions

- AX12 (Maximum)

Pricing & Availability

Ask Customer Service for an anticipated lead time

Please Inquire

Domestic & International

Pricing effective for USA, Canada and Mexico shipping destinations

Domestic Pricing for

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

LIVE MOUSE

<table>
<thead>
<tr>
<th>AGE</th>
<th>SEX</th>
<th>GENOTYPE</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 weeks</td>
<td>Female</td>
<td>Hemizygous for Mcph1&lt; Tg(HLA-A2.1)1Enge&gt;, Homozygous for Prkdc&lt;scid&gt;, Homozygous for Il2rg&lt;tm1Wjl&gt;</td>
<td>$322.38</td>
</tr>
<tr>
<td>SEX</td>
<td>Age</td>
<td>Tg(HLA-A2.1)1Enge, Homozygous for Prkdc&lt;sup&gt;scid&lt;/sup&gt;, Homozygous for Il2rg</td>
<td>Tg(HLA-A2.1)1Enge, Homozyzous for Mcph1&lt;sup&gt;tm1Wjl&lt;/sup&gt;, Homozygous for Prkdc&lt;sup&gt;scid&lt;/sup&gt;, Homozygous for Il2rg</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Male</td>
<td>4 weeks</td>
<td>$280.51$</td>
<td>$322.38$</td>
</tr>
<tr>
<td>Female</td>
<td>5 weeks</td>
<td>$322.38$</td>
<td>$280.51$</td>
</tr>
<tr>
<td>Male</td>
<td>5 weeks</td>
<td>$322.38$</td>
<td>$280.51$</td>
</tr>
<tr>
<td>Male</td>
<td>6 weeks</td>
<td>$322.38$</td>
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<tr>
<td>Male</td>
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<tr>
<td>Male</td>
<td>8 weeks</td>
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<td>Male</td>
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<td>$280.51$</td>
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<tr>
<td>SEX</td>
<td>GENOTYPE</td>
<td>PRICE</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------------------------------------------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>Hemizygous for Mcph1&lt;sup&gt;tm1Wjl&lt;/sup&gt;, Homozygous for Prkdc&lt;sup&gt;scid&lt;/sup&gt;, Homozygous for Il2rg&lt;sup&gt;tm1Wjl&lt;/sup&gt;</td>
<td>$602.89</td>
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<tr>
<td>Male</td>
<td>Hemizygous for Mcph1&lt;sup&gt;tm1Wjl&lt;/sup&gt;, Homozygous for Prkdc&lt;sup&gt;scid&lt;/sup&gt;, Homozygous for Il2rg&lt;sup&gt;tm1Wjl&lt;/sup&gt;</td>
<td>$280.51</td>
<td></td>
</tr>
</tbody>
</table>

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

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Related Strains

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<th>All</th>
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<tbody>
<tr>
<td>By Allele</td>
</tr>
<tr>
<td>By Gene</td>
</tr>
<tr>
<td>By Collection</td>
</tr>
</tbody>
</table>

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