B6.Cg-Ifng1tm1Aglt Ifnar1tm1.2Ees/J

Stock No: 029098 | Ifng1 Ifnar1 double knockout

Congenic, Targeted Mutation

PLACE ORDER

0–2 week average lead time for 10 or more mice with age range

Also Known As: Ifng1 Ifnar1 double knockout

These C57BL/6J-congenic Ifng1 Ifnar1 double mutant animals harbor knockout alleles of the receptors for interferon-γ and interferon-α/β. When homozygous for each allele, the double knockout mice exhibit a reduced immune response and increased susceptibility to infectious agents. These mice may be useful in studying antiviral immune responses, as well as interferon stimulation. Mouse mutants involving these genes have been used in studies of Zika virus pathogenesis.

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GENETIC OVERVIEW

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<tr>
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<th>Generation</th>
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Ifng1tm1Aglt

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<th>Allele Type</th>
<th>Gene Symbol</th>
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<td>Ifng1</td>
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Ifnar1tm1.2Ees

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<tr>
<td>Targeted (Null/Knockout)</td>
<td>Ifnar1</td>
<td>interferon (alpha and beta) receptor 1</td>
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VIEW GENETICS

RESEARCH APPLICATIONS

Cancer Research
Immunology, Inflammation and Autoimmunity Research
Virology Research
Research Tools
Cell Biology Research
Details

Detailed Description

These C57BL/6J-congenic Ifngr1 Ifnar1 double mutant animals harbor null alleles of the receptors for interferon-α and interferon-β. The phenotype of each individual mutation is described below. When homozygous for each null allele, the Ifngr1 Ifnar1 double knockout mice (Ifngr1 Ifnar1 dKO) may have even greater susceptibility to certain infections/agents. These mice may be useful in studying antiviral immune responses, as well as interferon stimulation. Mouse mutants involving these genes have been used in studies of Zika virus pathogenesis.

Ifngr1 encodes the ligand-binding chain (alpha) of the heterodimeric IFN-α receptor (found on macrophages). Ifnar1 encodes the type-I interferon-β receptor (type-I IFN receptor). Binding of their ligands (type-II IFN and type-I IFN, respectively) activates JAK-STAT signaling pathways critical for regulating growth, survival, differentiation, pathogen resistance and antiviral immune responses.

The Ifngr1 null allele (Stock No. **003288**), often referred to as ‘G129’ when maintained on a 129 genetic background, encodes a non-functional protein lacking the cytoplasmic domain needed for signaling. Mice singly homozygous for this null allele (Ifngr1<sup>−/−</sup>) have normal T cell responses but are defective in natural resistance, evidenced by an increased susceptibility to infection by Listeria monocytogenes and vaccinia virus. Homozygotes are viable and fertile with the immune deficiencies described above.

The Ifnar1 null allele (from Stock No. **028288**) has exon 3 deleted; resulting in a non-functional protein (the exon 2-4 splice variant and frameshift leads to translation of 11 arbitrary [missense] amino acids within the N-terminal extracellular domain followed by a stop codon). Mice singly homozygous for this null allele (Ifnar1<sup>−/−</sup>) lack type-I IFN receptor function; leading to reduced immune response and increased susceptibility to viral infection. For example, in response to Pneumocystis lung infection, Ifnar1<sup>−/−</sup> animals develop a transient bone marrow crisis largely due to loss of neutrophils. Homozygous null mice are viable and fertile, with the immune deficiencies described above. Heterozygous mice are viable and fertile with no reported abnormalities.

Similar to other immunodeficient strains, maintaining Ifnar1<sup>−/−</sup> mice in high health status (specific pathogen-free) vivaria promotes overall colony health. If homozygous null animals are maintained in low health barrier rooms, the use of medicated water (e.g., sulfadiazine/sulfamethazine or enrofloxacin/Baytril®) is suggested to increase overall colony health.

Development

Control Suggestions

Selected References

Genetics
Genotyping Protocols
MELT: Ifnar1<sup>tm1.2Ees</sup>
MELT: Ifngr1<sup>tm1Agt</sup>, Alternate 1
Genotyping resources and troubleshooting

Breeding Considerations
When maintaining a live colony, mice homozygous for both null alleles (Ifnr1 Ifnar1 dKO) may be bred together.

Mice homozygous for both null alleles (Ifnr1 Ifnar1 dKO) are viable and fertile but immunodeficient. As such, and similar to other immunodeficient strains, maintaining Ifngr1 Ifnar1 dKO mice in high health status (specific pathogen-free) vivaria promotes overall colony health. If Ifngr1 Ifnar1 dKO 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
Hom Hom x Hom Ho

Citation
When using the Ifnar1<sup>tm1.2Ees</sup> double knockout mouse strain in a publication, please cite the originating article(s) and include JAX stock #029098 in your Materials and Methods section.
Facility Barrier Level Descriptions
- AX18 (Maximum)
## Live Mouse

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

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<th>AGE</th>
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<th>GENOTYPE</th>
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<td>$224.00</td>
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### Related Products and Services

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

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