The Jackson Laboratory
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NOD.Cg-*Prkdc*^{scid} *Il2rg*^{tm1Wjl}/SzJ

Stock Number: 005557
Strain Common Name: NOD *scid* gamma (NSG) *Type:* Congenic

Key Features

- Superior human hematopoietic engraftment
- Significant human lymphoid expansion
- Newborn recipients do not require IL-7 for thymopoiesis
- Lack of NK activity improves quality and duration of xenografts

Availability

NSG mice are available from our Bar Harbor, ME, and Sacramento, Calif facilities

For detailed information visit the strain data sheet at: www.jax.org/jaxmice/strain/005557

Technical Support
www.jax.org/jaxmice/micetech

Strain Highlights

The JAX® Mice strain NOD.Cg-*Prkdc*^{scid} *Il2rg*^{tm1Wjl}/SzJ (005557), commonly known as the NOD *scid* gamma (NSG), represents the latest breakthrough in the development of immunodeficient models. These mutant mice combine the features of the NOD/ShiLtJ background that has a number of deficiencies in innate immunity, the severe combined immune deficiency mutation (*scid*) and IL2 receptor gamma chain deficiency due to gene targeting. As a result, the NSG mice lack mature T cells, B cells, or functional NK cells, and are deficient in cytokine signaling[1]. Histological examination of lymphoid tissues reveals absence of lymphoid cells and some cystic structures in the thymus, an absence of follicles in the spleen and markedly diminished cellularity of lymph nodes[1]. Please note that the NSG mouse carries the true null interleukin-2 receptor gamma chain mutation and should not be confused with the other strains that express a truncated interleukin-2 receptor gamma chain[2].

Engraftment of human hematopoietic stem cells and peripheral-blood mononuclear cells in these animals has been shown to be greater than that in any other mouse strain[1, 3]. Recent publications have demonstrated this strain's outstanding utility in the studies of islet transplantation[4], hematopoietic stem cells[5], leukemic stem cells[6] and tumor-stromal cell interactions *in situ*[7].

Characteristics

- Lacks mature lymphocytes (B and T cells) without leakiness
- Lacks IL2R-γ (gamma c) expression
- Does not produce detectable serum immunoglobulin
- No NK cell activity
- Resistance to lymphoma leads to longer lifespan than that of NOD.CB17-*Prkdc*^{scid}/J (001303) mice

References

1. Shultz LD, *et al.,* 2005. *J Immunol* 174:6477-89.
2. Ito M, *et al.,* 2002. *Blood* 100:3175-3182.
3. Shultz LD, Ishikawa F, Greiner DL. 2007. *Nat Rev Immunol* 7:118-30.
4. King M, *et al.,* 2008. *Clin Immunol* 126:303-14.
5. Majeti R, Park CY, Weissman IL. 2007. *Cell Stem Cell* 6:635-45.
6. Ishikawa F, *et al.,* 2007. *Nat Biotechnol* 25:1315-21.
7. Simpson-Abelson MR, *et al.,* 2008. *J Immunol* 180:7009-18.

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