COMPREHENSIVE IMMUNODEFICIENT SUITE

NOD *scid* gamma (NSG™)

NOD Rag gamma (NRG)

NOD *scid* gamma Il3, GM-CSF, SCF (NSG-SGM3)

Name & Stock Number	NOD.Cg-*Prkdc*^{scid} *Il2rg*^{tm1Wjl}/SzJ (005557)	NOD.Cg-*Rag1*^{tm1Mom} *Il2rg*^{tm1Wjl}/SzJ (007799)	NOD.Cg-*Prkdc*^{scid} *Il2rg*^{tm1Wjl} Tg(CMV-IL3,CSF2,KITLG)1Eav/MloySzJ (013062)
Mature B cells	Absent	Absent	Absent
Mature T cells	Absent	Absent	Absent
Dendritic Cells	Defective	Defective	Defective
Macrophages	Defective	Defective	Defective
Natural killer cells	Absent	Absent	Absent
Complement	Absent	Absent	Absent
Leakiness	Very low	Absent	Absent
Irradiation tolerance	Low	High	Low
Lymphoma incidence	Low	Low	Low
Benefits	• Engrafts the widest range of solid and hematological cancers, including ALL and AML • Most sensitive host for cancer stem cells when compared to NOD *scid* or nude mice • Longer lifespan than NOD *scid*; supports long-term engraftment studies and capabilities; >89 weeks median survival	• Long-term multilineage hematopoietic stem cell repopulation similar to NSG™ mice • Engrafts human PBMC without irradiation similar to NSG™ • Engrafts a wide range of solid and hematological cancers	• Increased CD4+ FoxP3+ regulatory T cell population • Enhanced human myelopoiesis and terminal differentiation, • Increased efficiency of engrafting human acute myeloid leukemia (AML)
Considerations	• No thymic lymphomas—can be used for long and short-term experiments • Sensitive to irradiation	• No thymic lymphomas—can be used for long-term experiments • Requires higher dose of irradiation to obtain human HSC engraftment	• Compromised human stem cell regeneration • Suppression of human erythropoiesis • Reduction of human B-lymphopoiesis
References	Ishikawa et al. 2005 (PMID: 15920010) Shultz et al. 2005 (PMID: 15879151)	Pearson et al. 2008 (PMID: 18785974) Brehm et al. 2010 (PMID: 20096637) Maykel et al. 2014 (PMID: 24798995)	Nicolini et al. 2004 (PMID: 14628073) Wunderlich et al. 2010 (PMID: 20686503) Billerbeck et al. 2015 (PMID: 21252091)

NOD *scid*

NOD.CB17-*Prkdc*^{scid}/J
(001303)

BALB *scid*

CBySmn.CB17-*Prkdc*^{scid}/J
(001803)

B6 Rag1

B6.129S7-*Rag1*^{tm1Mom}/J
(002216)

Outbred and Inbred Nude

J:NU (007850)
NU:J (002019)

NOD *scid*	BALB *scid*	B6 Rag1	Outbred and Inbred Nude
Absent	Absent	Absent	Present
Absent	Absent	Absent	Absent
Defective	Present	Present	Present
Defective	Present	Present	Present
Defective	Present	Present	Present
Absent	Present	Present	Present
Very low	Very low	Absent	N/A
Low	Low	High	High
High (thymic lymphoma)	High (thymic lymphoma)	Low	Low
• Higher take-rates for slow-growing cancer cell lines than BALB *scid* or nude xenograft models • Xenotransplantation of some solid human tumors • Adoptive transfer from strains on NOD background enables study of cell function & track cell movement	• Allows allogeneic and xenogeneic cancer cell lines & tissues • Engrafts hematopoietic cancer cell lines, some primary cells • Improvements in engraftment efficiency over nude models for some cancer cell lines	• Radiation resistant, providing an alternative to *scid* mutants • Adoptive transfer from strains on B6 background permits to study cell function and track cell movement	• Engraftment of human & mouse tumor cell lines • Easy assessment of subcutaneous tumor growth due to lack of fur
• Develops thymic lymphomas by 8-9 months—best used in short-term experiments • Sensitive to irradiation	• Innate immunity intact • NK cell activity limits engraftment • Sensitive to irradiation	• Innate immunity intact • Poor host for primary cell transplantation	• Innate immunity intact • Little engraftment of hematopoietic cancer cells • Not suitable for primary cell transplantation
Shultz et al.1995 (PMID: 7995938)	Nonoyama et al. 1993 (PMID: 8473734)	Mombaerts et al.1992 (PMID: 1547488)	