360° MODEL RANGE

NXG mouse

- **Strain name:** NOD-*Prkdc*^{scid}-*IL2rg*^{Tm1}/Rj **Type:**
- Inbred transgenic mouse, GEMM
- **Origin:** JANVIER LABS, in 2019
- **Colour and related genotype:** Albino mouse

PRESENTATION OF THE MODEL

The NXG or NOD Xenograft Gamma strain is a model of an inbred strain (NOD fund) with 2 mutations of interest, similar to its genetic equivalents NSG, NcG, NOG, etc. (NOD SCID Gamma).

The *Prkdc*^{scid} mutation, commonly known as "SCID" for "Severe Combined Immunodeficiency", blocks the development of T and B cells and induces immune deficiency.
Mice homozygous for this mutation show a complete absence of T and B lymphocytes at the periphery.

The *IL2rg*^{Tm1} mutation called γc is a KO mutation of the gene coding for the c gamma chain that is common (in particular) to interleukins (IL-2, IL-4, IL-7, IL-9 and IL-15). This gene is necessary for the differentiation and the function of numerous hematopoietic cells with a full impact on the development of Natural Killer cells (NK).

The combination of these two mutations *Prkdc*^{scid} and *IL2rg*^{Tm1}, in NOD funds, induces a severe immunodeficiency with absence of T, B and NK lymphocyte compartments.

The NXG strain was also tested for the polymorphism of the Sirpα gene. The expression of the Sirpα protein (NOD fund alleles) on the surface of macrophages in the bone marrow allows high affinity binding with the CD47 markers of human hematopoietic cells. This binding induces a “don't eat me” signal that blocks murine macrophages and prevents phagocytosis of transplanted human cells. This is a key feature of the NOD fund which gives an advantage for human transplantation and xenografting in general.

JANVIER LABS obtained the NXG strain (NOD-*Prkdc*^{scid} -*IL2rg*^{Tm1}/ Rj) by homologous recombination of the *IL2rg*^{Tm1} mutation called γc (ES cells of B6N mice).
The congenic NOD SCID γc model was obtained by high speed backcross (N = 5).
The γc B6N model was created at the Center of Immunophenomics (Ciphe, Marseille, France) in 2019, and the NOD SCID backcross was performed by Janvier Labs in 2019.

Animals are bred to maintain both the genetic background and the mutations of interest in their homozygous forms.
The inbreeding mode is used for NXG strain and the phenotype is checked according to the JANVIER LABS GENETIC POLICY®.

Main application and research fields

Oncologie
- Tumor implantation studies
- Studies on gene therapy
- Studies of cancer therapies
- Study on hematopoietic cancer cells
- Studies focused on breast cancer
- Humanized model for the evaluation of anticancer gene therapy

Immunology and immunotherapy

Human cell implantation in a murine model

Implantation of hematopoietic cells of human origin in a murine model

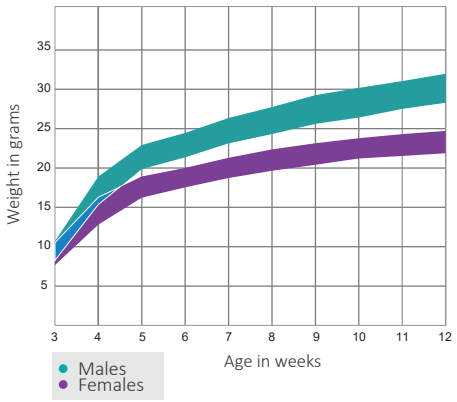
Transplants and grafts
- Human primary tumor xenografts of pulmonary origin
- A platform for the study of stem cells of epithelial origin
- Study the rejection of allograft after a pancreatic transplant against for type 1 diabetes

Infectious Diseases
- Humanized models for the study of humanspecific infectious diseases such

360° MODEL RANGE

GROWTH CURVE AND REPRODUCTIVE DATA

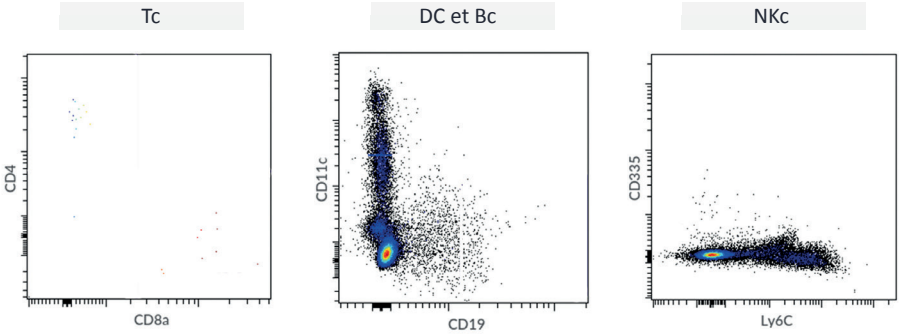
Growth curve



Haematological parameters

					Mean	Standard deviation
Concentration	Hemoglobin	Blood	(g/dL)	F	16	0
				M	16	1
	Mean corpuscular hemoglobin concentration	Blood	(g/dL)	F	31	1
				M	30	0
	Platelet absolute count	Blood	(K/uL)	F	972	49
				M	1,067	211
	Red blood cell absolute count	Blood	(M/uL)	F	10	0
				M	10	1
Frequencies	Hematocrite	Blood	(%)	F	50	2
				M	52	2
	High fluorescence ratio reticulocyte	Blood	(%)	F	42	3
				M	48	6
	Immature reticulocyte fraction	Blood	(%)	F	59	3
				M	63	4
	Low fluorescence ratio reticulocyte	Blood	(%)	F	41	3
				M	37	4
	Medium fluorescence ratio reticulocyte	Blood	(%)	F	16	1
				M	16	2
	Platelet larger cell ratio	Blood	(%)	F	4	0
				M	4	0
	Plateletcrite	Blood	(%)	F	1	0
				M	1	0
	Reticulocyte absolute count	Blood	(%)	F	6	1
				M	7	1
Quantity	Mean corpuscular hemoglobin	Blood	(pg)	F	16	0
				M	16	0
	Mean corpuscular volume	Blood	(fL)	F	51	1
				M	53	1

FLOW CYTOMETRY ANALYSIS, SPLEEN



All lymphoid organs of our models were analysed.

PHENOTYPIC CHARACTERISATION

This model has been entirely characterized. The immunological and hematological parameters were characterized by Center of Immunophenomics (Ciphe, Marseille, France).

Background	Breeding	Coat	T Lymphocytes	B Lymphocytes	Leakiness	NK cells	Dendritic cells
NOD	Inbred	Albino	Absent	Absent	-	Absent	Dysfunctional
Macrophages	**Complement**	**Irradiation tolerance**	**Life span**	**Humoral immunity**	**Lymphoma outcome**	**Genes of interest**	
Dysfunctional	-	Low	89 Wk.	Absent	Indefinite	Scid (Prkdc) IL2rg Sirpa	

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