

NATURAL
IMMUNO-
DEFICIENT



RAT
Mutant

GENETICALLY
ENGINEERED
MODELS
(GEM)

WILD TYPE

NATURAL
MUTANTS

Athymic Nude Rat

Strain name: Rj:ATHYM-Foxn1^{rnu/rnu}

Usual name: Athymic rat /
Athymic nude rat

Type: Mutant rat

Origin: Developed in JANVIER Labs
in 2018

Colour and related genotype:
Homozygotes for the rnu gene,
naked skin



Presentation of the model

The rnu mutation was discovered in 1953 in a HOODED rat colony at the Rowett Research Institute in Aberdeen, Scotland. This natural genetic mutation causes in the rat an absence of the thymus. In the rare cases where vestiges of thymus remain visible, it is generally not functional. This character is accompanied by a deficient immune system due to insufficient production of T lymphocytes cells. The last characteristic controlled by the rnu gene is abnormal growth of hair which ultimately results in bare or almost naked skin (sometimes retarded hair grow can be observed). The phenotype of the model ATHYMIC nude is characterized by an absence of hair, which earned him the "nude" nickname. The gene responsible for the mutation has been categorized as a member of the Fox gene family and the nomenclature recommends the name Foxn1rnu (genotype rnu/rnu).

The ATHYMIC rat or ATHYMIC nude rat in JANVIER Labs was obtained by fixing the Foxn1rnu gene starting from the LOU Nude strain (LOU/MRj-Foxn1rnu/rnu) on a LOU-FISCHER mixed genetic background using the speed congenics technique,

until obtain a 75 % FISCHER background (F344/HanZtmRj). Subsequently the strain obtained is raised as outbred, while taking into account the transmission characteristic of the rnu gene.

The ATHYMIC Nude rat is valuable for research because it can serve as a recipient for different autologous and heterologous tumour cell strain implantations, for example in oncology research.

Characteristics: Females with the homozygous gene are not effective breeders.

Comparison of immunodeficiency and phenotype of Nude and Scid mutant rat			
Strain	ATHYMIC NUDE	LOU NUDE	FISCHER NUDE
Species	Rat	Rat	Rat
Skin	Nude	Nude	Nude
Cell Lymphocyte T	Absent	Absent	Absent
Cell Lymphocyte B	Present	Present	Present
Cells Natural Killer	Present	Present	Present
Mode	Outbred	Inbred	Inbred



Main application and research fields

ONCOLOGY

TRANSPLANTATION : XENOGRAFT ET ALLOGRAFT

IMMUNOLOGY

EXPERIMENTAL INFECTIONS

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