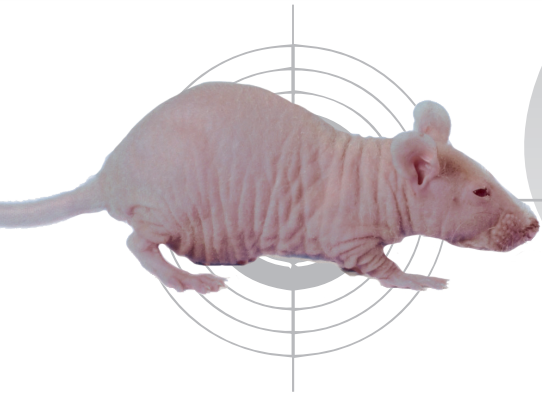


360° MODEL RANGE



Rat LOU-nu

- **Strain name:** Lou/MRj-*Foxn1^{nu}*
- **Type:** Inbred mutant rat
- **Origin:** Institut Pasteur, Lille France, in 2008
- **Colour and related genotype:** Albino rat - a/a, *Tyr^c/Tyr^c*, h/h
MHC : *RT1^u* (Stephenson et al., 1985), contradiction: *RT1^w* (Hashim et al., 1991)

PRESENTATION OF THE MODEL

In 1970, H. BAZIN and A. BECKERS started to breed LOU rats likely coming from a WISTAR colony from the university of Leuven in Belgium. From this breeding, 28 sub-lineages were simultaneously selected: the LOU/C for their high plasmacytomas and the LOU/M for their low plasmacytoma levels.

In 1953, nude rats first appeared in an outbred hooded rat colony at the Rowett Research Institute in Aberdeen, Scotland. But no precaution was taken at that time to isolate the mutation. In the 1970s, the mutation reappeared in the same colony (May et al., 1977; Festing et al., 1978). The researchers concluded that the mutation had been kept in the colony but at a low frequency.

The autosomal recessive mutation is symbolized by the *nu* acronym for rowett nude. The Institut Pasteur de Lille (IPL) acquired the mutation in collaboration with M CAPRON and M BAZIN (1977). In 1993, the IPL decided to transfer the mutation to a LOU/M background by successive backcross. *nu* spontaneous mutation affects the *Foxn1* (forkhead box N1) gene on chromosome 10 which encodes for a transcription factor, the *Foxn1* (also called *Whn*: wingedhelix-nude).

Foxn1 regulates the expression of the keratin gene and intervenes in *Foxn1* the growth and the differentiation of the thymic cells. The *nu* mutation is associated with a lack of hair and a thymus aplasia:

- "Hairless" character (it may have sparse hair): the *Foxn1^{nu}/Foxn1^{nu}* rat has some short and fine hair, hair follicles are normal but their keratinization is defective and the hair does not come out. Keratinization of the epidermis is also defective.
- Immunological status: the main feature is a congenital aplasia of the thymus that remains present in a rudimentary form, without lymphocytic cell population (Fossum et al., 1980; Vos et al., 1980). This deficiency results in an absence of T lymphocytes; B lymphocytes remain functional.
- Nude females have a development defect of the mammary gland and are unable to raise their pups. (Guillaumot, 1986).
- *Foxn1^{nu}/Foxn1⁺* heterozygous animals show no partial expression of *nu* phenotype. No link is described between the presence of transient down and the degree of immunosuppression.

Reproduction data*

Strain bred in monogamy

Litter size at birth	3.62 (homozygous mutants)
Wearing %	92 (homozygous mutants)
Productivity index	0.60 (homozygous mutants)
Sterility %	21
Gestation time	Between 20 et 23 days

* JANVIER LABS 2011 data, for information.

Main application and research fields

- ✕ Endocrine deficit, athymia
- ✕ Dermatology
- ✕ Immunology
- ✕ Experimental infections
- ✕ Oncology
- ✕ Transplantation/ Graft