Also Known As:Cul3

Cul3 (loxP::frt-neo::frt::exons4-7::loxP) is a cullin 3 hypomorphic allele that is converted to a null allele after Cre recombinase exposure. These mice may be useful in studying the function of CUL-RING-based BTB-CUL3-RBX1 E3 ubiquitin-protein ligase complexes in multiple areas, including autism and cancer.

Donating Investigator
Jeffrey D Singer, Portland State University

Typically mice are recovered in 10-14 weeks. Contact Customer Service to place an order or for more information.
**Detailed Description**

*Cul3* encodes the ubiquitin scaffold protein cullin 3; the core component of multiple cullin-RING-based BCR (BTB-CUL3-RBX1) E3 ubiquitin-protein ligase complexes that function to mediate the ubiquitination and subsequent proteasomal degradation of target proteins.

The *Cul3*<sup>flox</sup> allele has *loxP* sites flanking exons 4-7 of the *Cul3* gene. The floxed region also contains a *frt*-flanked PGK-neo cassette upstream of exon 4. *Cul3*<sup>flox</sup> is a hypomorphic allele that is converted to a null allele (*Cul3<sup>−/−</sup>*, or *C<sup>R</sup>*) after Cre recombinase exposure. Compared to wildtype (*Cul3<sup>+/+</sup>* ) MEFs, the *Cul3* expression levels are diminished to ~85% in *Cul3<sup>flox<sup>+</sup></sup>* MEFs, ~70% in *Cul3<sup>flox<sup>flox</sup></sup>* MEFs. Removal of the *frt*-flanked PGK-neo via Flp recombinase generates the *Cul3<sup>flox<sup>Δneo</sup></sup>* allele, which is also a hypomorph (*Cul3* expression reduced to ~90% in *Cul3<sup>flox<sup>Δneo</sup></sup>* MEFs).

When bred to mice that express Cre recombinase, the resulting offspring may be useful in generating tissue-specific CUL3 knockout.

For example, when *Cul3<sup>flox</sup>* are bred to also harbor an Albumin-Cre transgene (see Stock No. 016832) and a p53<sup>flox</sup> allele (see Stock No. 008462), the resulting triple mutant mice with liver-specific simultaneous ablation of CUL3 and p53 are useful to study hepatic progenitor cell transformation into malignant tumor-initiating cells and the subsequent primary hepatocellular carcinoma.

Breeding *Cul3<sup>flox</sup>* mice to also have the Pax8-rtTA transgene (Stock No. 007176) and Tet-promoter-driven Cre recombinase transgene (see Stock No. 006234), the resulting triple mutant mice allow doxycycline-inducible renal tubule–specific CUL3 knockout. When temporally induced in adult animals, this triple mutant can be used to study familial hyperkalemic hypertension (FHHt) without the systemic/developmental effects of early CUL3-deficiency.

Mice homozygous for the floxed allele (*Cul3<sup>flox<sup>flox</sup></sup>* ) are viable and fertile with no reported abnormalities (born at the expected rate and appear normal at birth and throughout development).

**Development**

**Control Suggestions**

**Selected References**
Genotyping Protocols
Separated PCR: Cul3-Alternate 1
Genotyping resources and troubleshooting

Breeding Considerations
When maintaining a live colony, heterozygous mice may be bred together, to wildtype mice from the colony or to C57BL/6NJ inbred mice (Stock No. 005304). Alternatively, homozygous mice may be bred together.

Additional Breeding and Husbandry Support
Mating System
Homozygote x Homozygote

Citation
When using the Cul3<sup>flox</sup> mouse strain in a publication, please cite the originating article(s) and include JAX stock #028349 in your Materials and Methods section.

Animal Health Reports
Facility Barrier Level Descriptions

Production of mice from cryopreserved embryos or sperm occurs in a maximum barrier room, G200
Pricing & Availability

Typically mice are recovered in 10-14 weeks. Contact Customer Service to place an order or for more information.

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