

Lingo1 Cas9-CKO Strategy

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Project Overview

Project Name

Lingo1

Project type

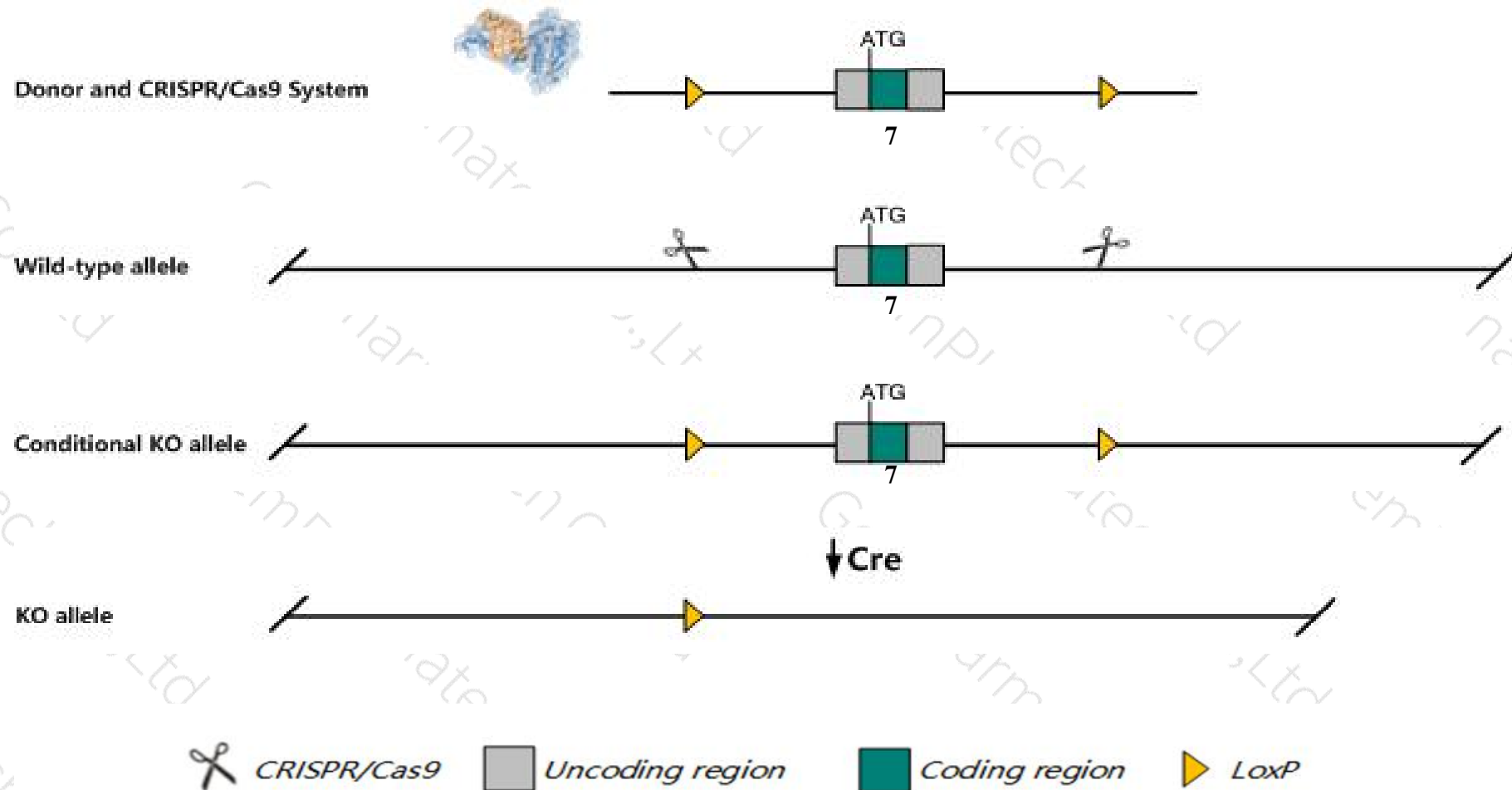
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lingo1* gene. The schematic diagram is as follows:



- The *Lingo1* gene has 8 transcripts. According to the structure of *Lingo1* gene, exon7 of *Lingo1*-206 (ENSMUST00000210032.1) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Lingo1* gene. The brief process is as follows: CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit early-onset CNS myelination.
- The *Lingo1* gene is located on the Chr9. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Lingo1 leucine rich repeat and Ig domain containing 1 [Mus musculus (house mouse)]

Gene ID: 235402, updated on 26-Mar-2019

Summary



Official Symbol	Lingo1 provided by MGI
Official Full Name	leucine rich repeat and Ig domain containing 1 provided by MGI
Primary source	MGI:MGI:1915522
See related	Ensembl:ENSMUSG00000049556
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930471K13Rik, AV148400, LERN1, LINGO-1, Lrm6a, UNQ201
Expression	Biased expression in cortex adult (RPKM 56.6), frontal lobe adult (RPKM 39.0) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

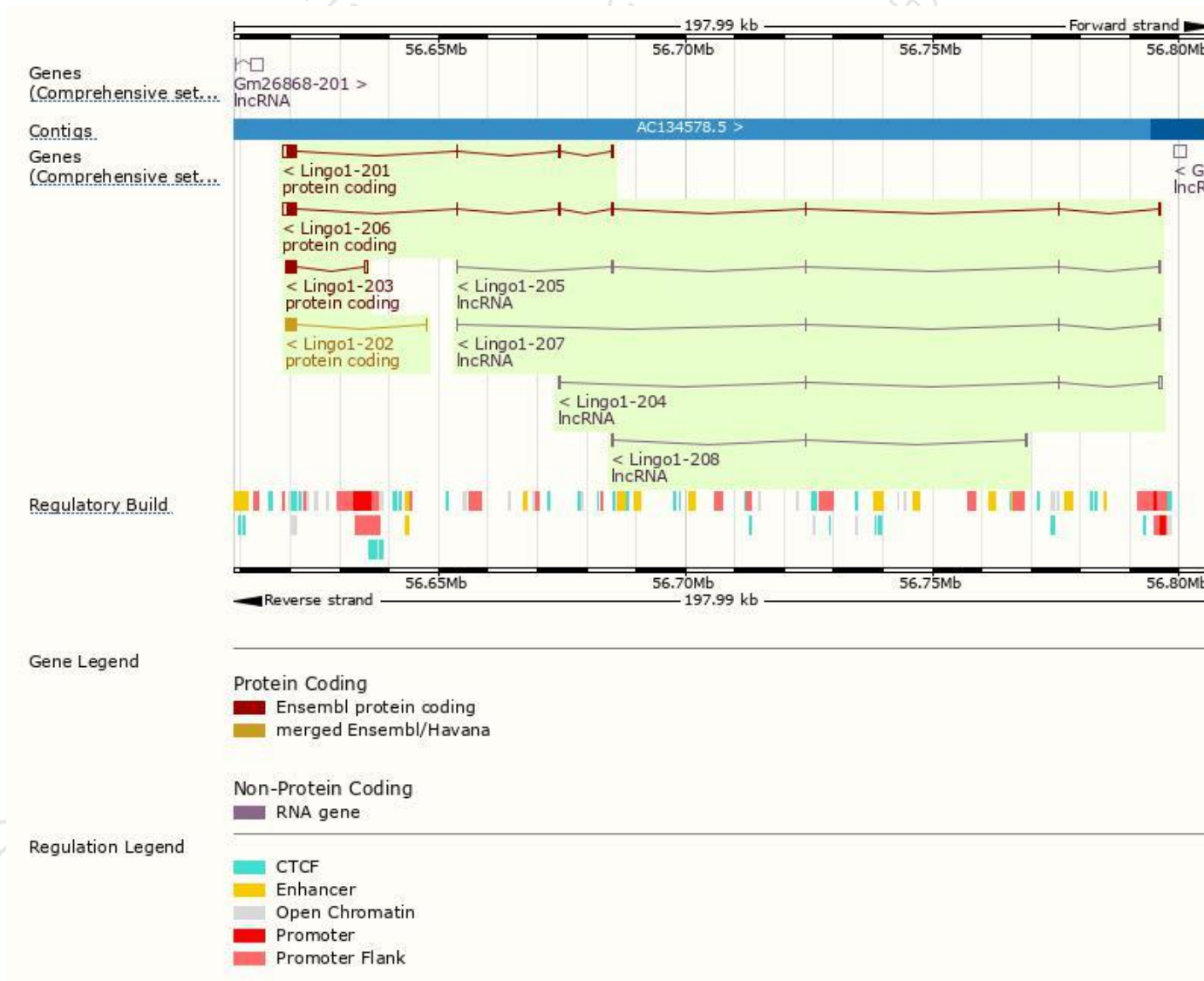
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lingo1-206	ENSMUST00000210032.1	3627	614aa	Protein coding	CCDS23209	Q9D1T0	TSL:5 GENCODE basic APPRIS P3
Lingo1-201	ENSMUST00000053568.1	3295	614aa	Protein coding	CCDS23209	Q9D1T0	TSL:1 GENCODE basic APPRIS P3
Lingo1-203	ENSMUST00000114256.1	2782	620aa	Protein coding	CCDS81004	A9DA50	TSL:1 GENCODE basic APPRIS ALT 1
Lingo1-202	ENSMUST00000114247.1	2287	614aa	Protein coding	CCDS23209	Q9D1T0	TSL:1 GENCODE basic APPRIS P3
Lingo1-205	ENSMUST00000209596.1	777	No protein	lncRNA	-	-	TSL:3
Lingo1-204	ENSMUST00000209332.1	700	No protein	lncRNA	-	-	TSL:3
Lingo1-207	ENSMUST00000210332.1	474	No protein	lncRNA	-	-	TSL:3
Lingo1-208	ENSMUST00000210995.1	265	No protein	lncRNA	-	-	TSL:2

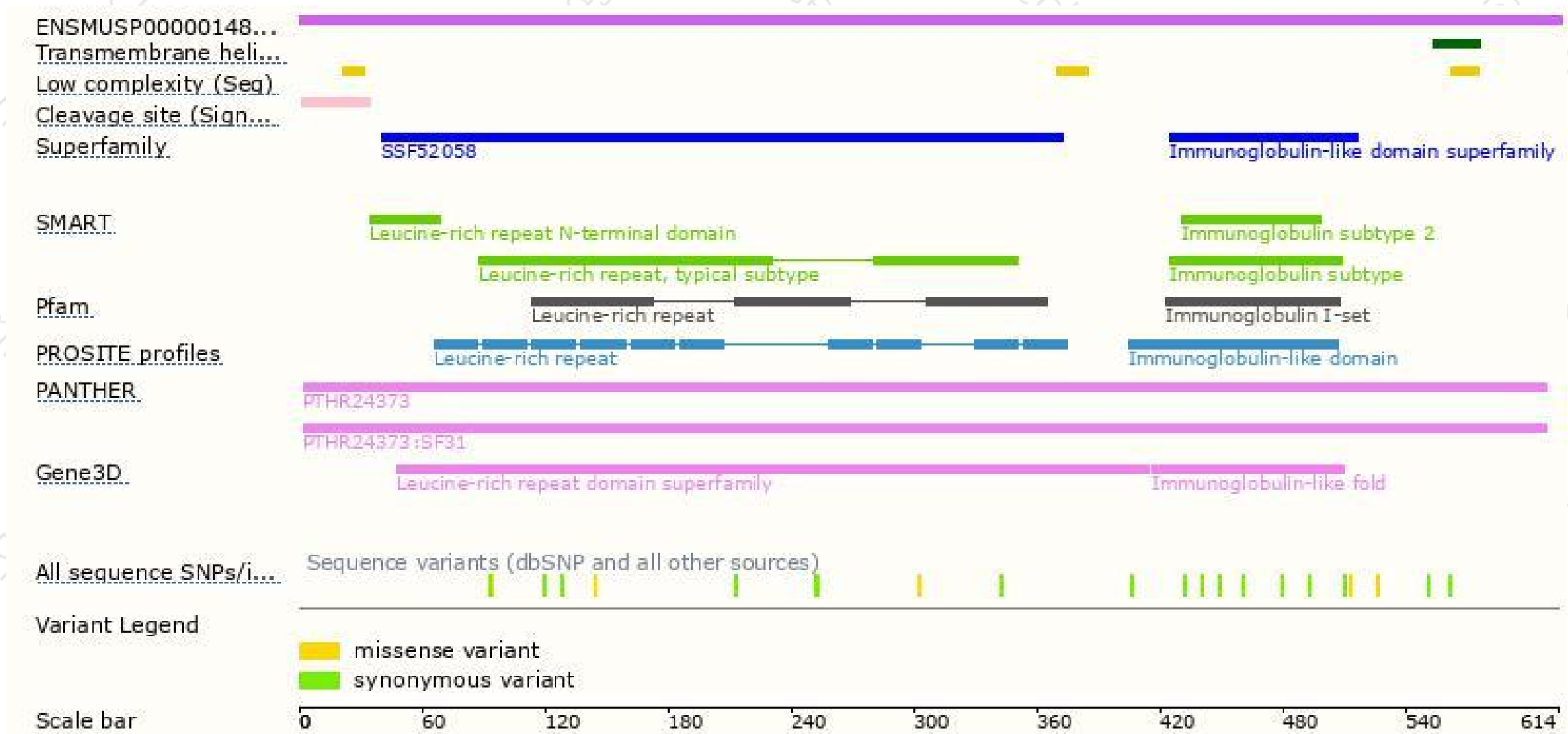
The strategy is based on the design of *Lingo1-206* transcript,The transcription is shown below



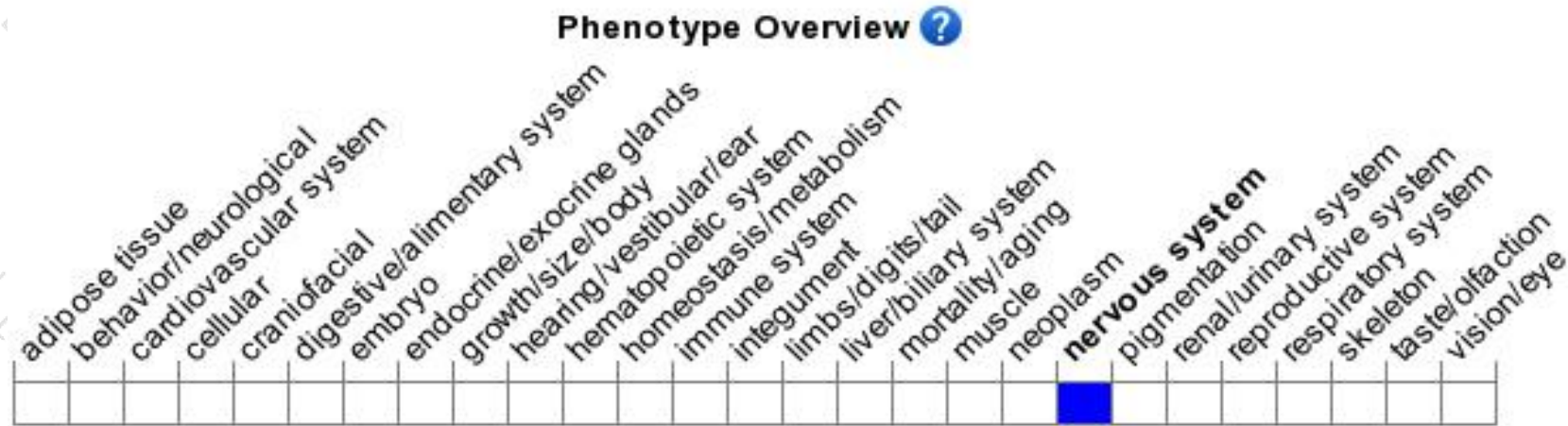
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, Mice homozygous for a knock-out allele exhibit early-onset CNS myelination.

If you have any questions, you are welcome to inquire.

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