Cdc42ep4 Cas9-CKO Strategy

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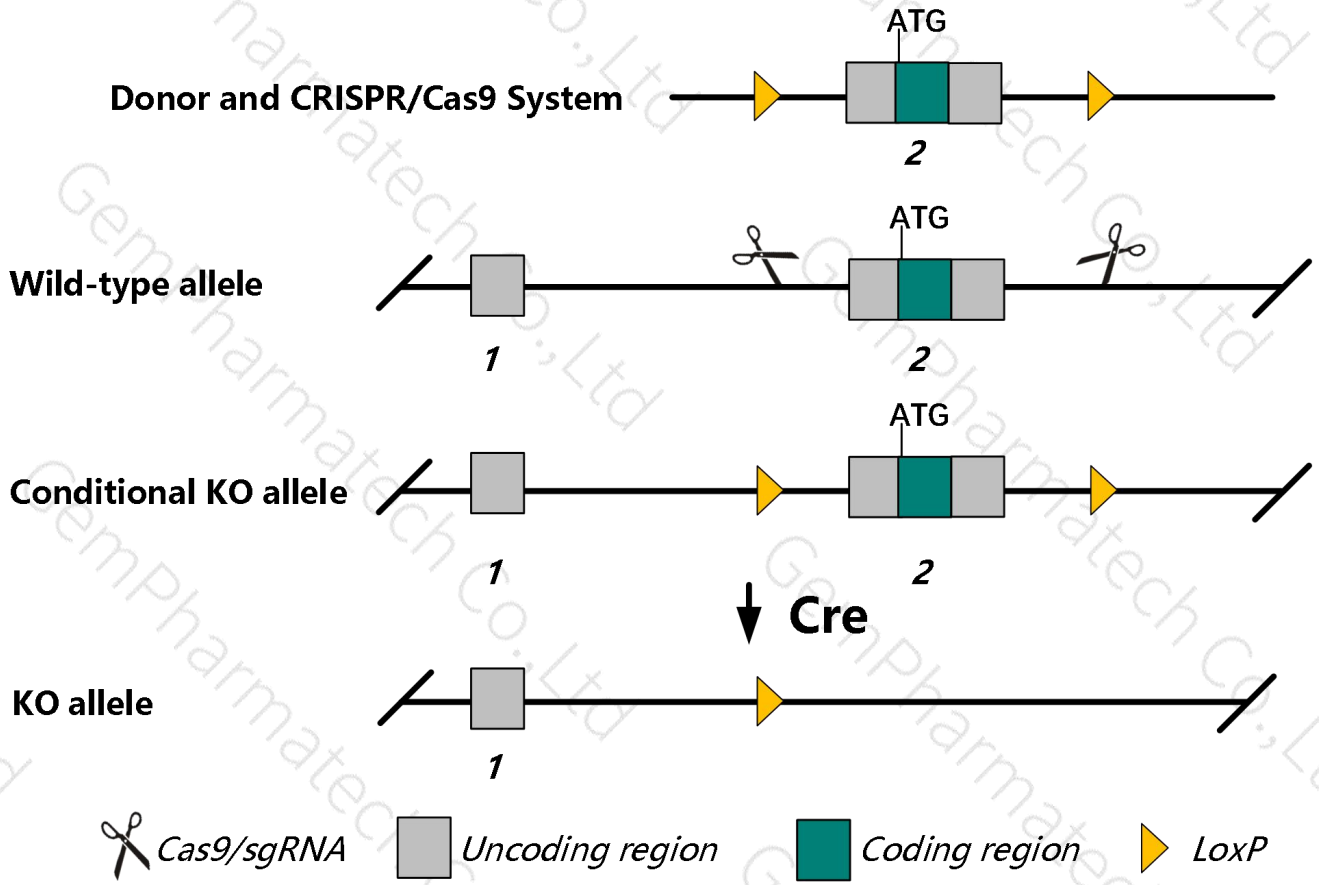
Date:2020-02-25

Project Overview

Project Name	***Cdc42ep4***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdc42ep4* gene. The schematic diagram is as follows:



Technical routes

- The *Cdc42ep4* gene has 4 transcripts. According to the structure of *Cdc42ep4* gene, exon2 of *Cdc42ep4-202* (ENSMUST00000106616.1) 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 *Cdc42ep4* 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.

Notice

➢ According to the existing MGI data,Mice homozygous for a null allele display impaired glutamate clearance and motor learning.

➢ The *Cdc42ep4* gene is located on the Chr11. 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）

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Cdc42ep4 CDC42 effector protein (Rho GTPase binding) 4 [*Mus musculus* (house mouse)]

Gene ID: 56699, updated on 8-Oct-2019

Summary

Official Symbol	Cdc42ep4 provided by MGI
Official Full Name	CDC42 effector protein (Rho GTPase binding) 4 provided by MGI
Primary source	MGI:MGI:1929760
See related	Ensembl:ENSMUSG00000041598
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	CEP4; Borg4; 1500041M20Rik
Expression	Ubiquitous expression in adrenal adult (RPKM 59.8), lung adult (RPKM 30.8) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 11; 11 E2

See Cdc42ep4 in Genome Data Viewer

Exon count: 5

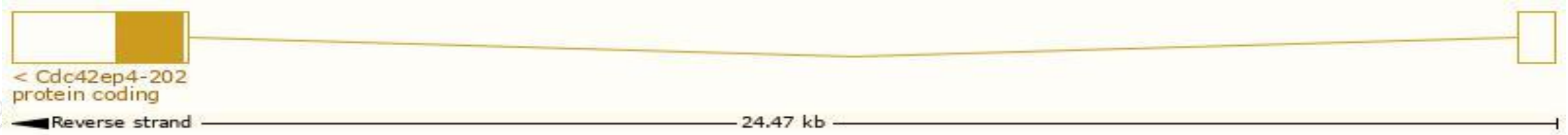
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	11	NC_000077.6 (113726850..113752543, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	11	NC_000077.5 (113588164..113613129, complement)

Transcript information（Ensembl）

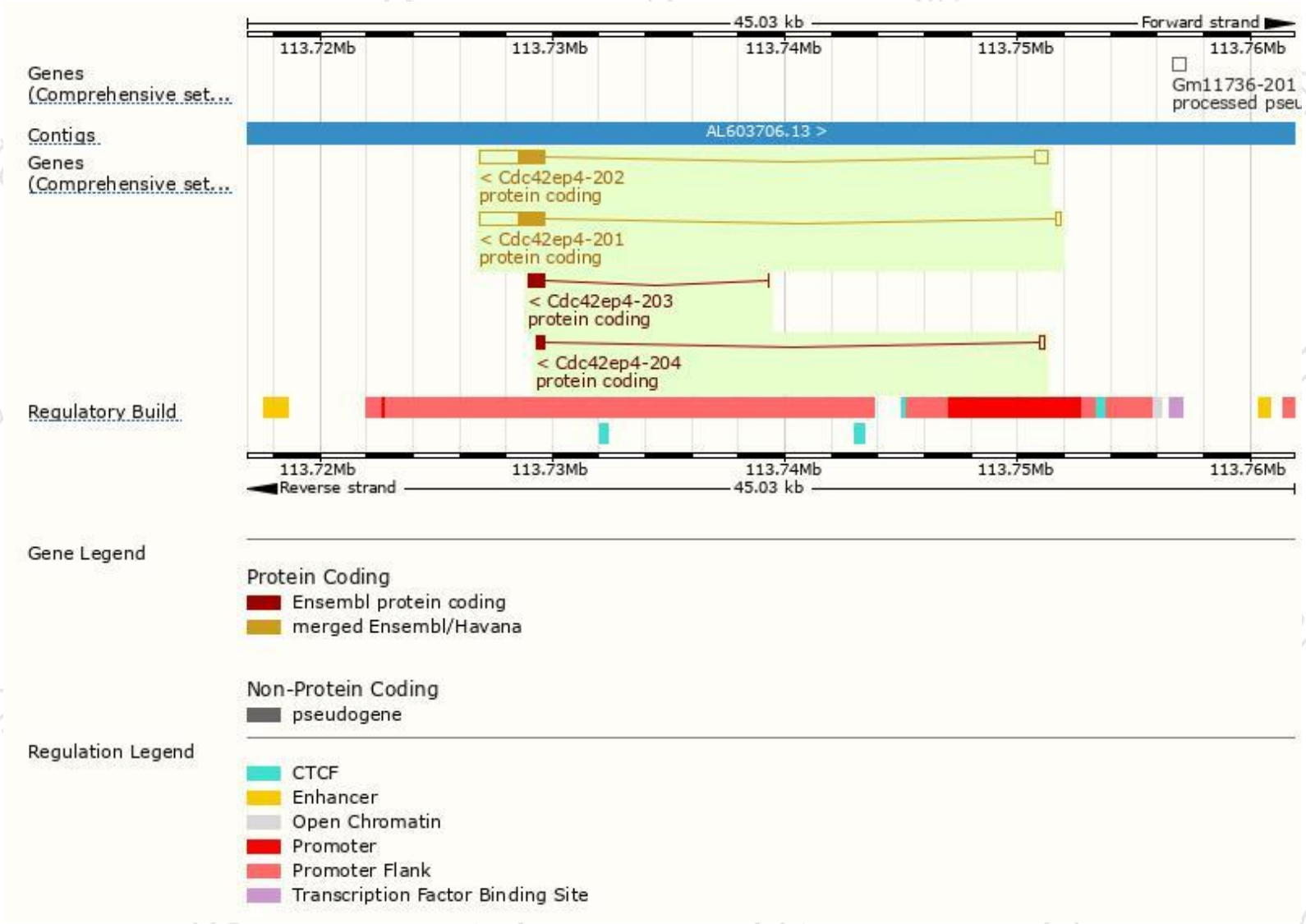
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdc42ep4-202	ENSMUST00000106616.1	3405	349aa	Protein coding	CCDS25604	Q9JM96	TSL:1 GENCODE basic APPRIS P1
Cdc42ep4-201	ENSMUST00000053536.4	3008	349aa	Protein coding	CCDS25604	Q9JM96	TSL:1 GENCODE basic APPRIS P1
Cdc42ep4-203	ENSMUST00000131488.1	727	193aa	Protein coding	-	A2A6Q2	CDS 3' incomplete TSL:5
Cdc42ep4-204	ENSMUST00000153453.1	562	86aa	Protein coding	-	A2A6Q3	CDS 3' incomplete TSL:2

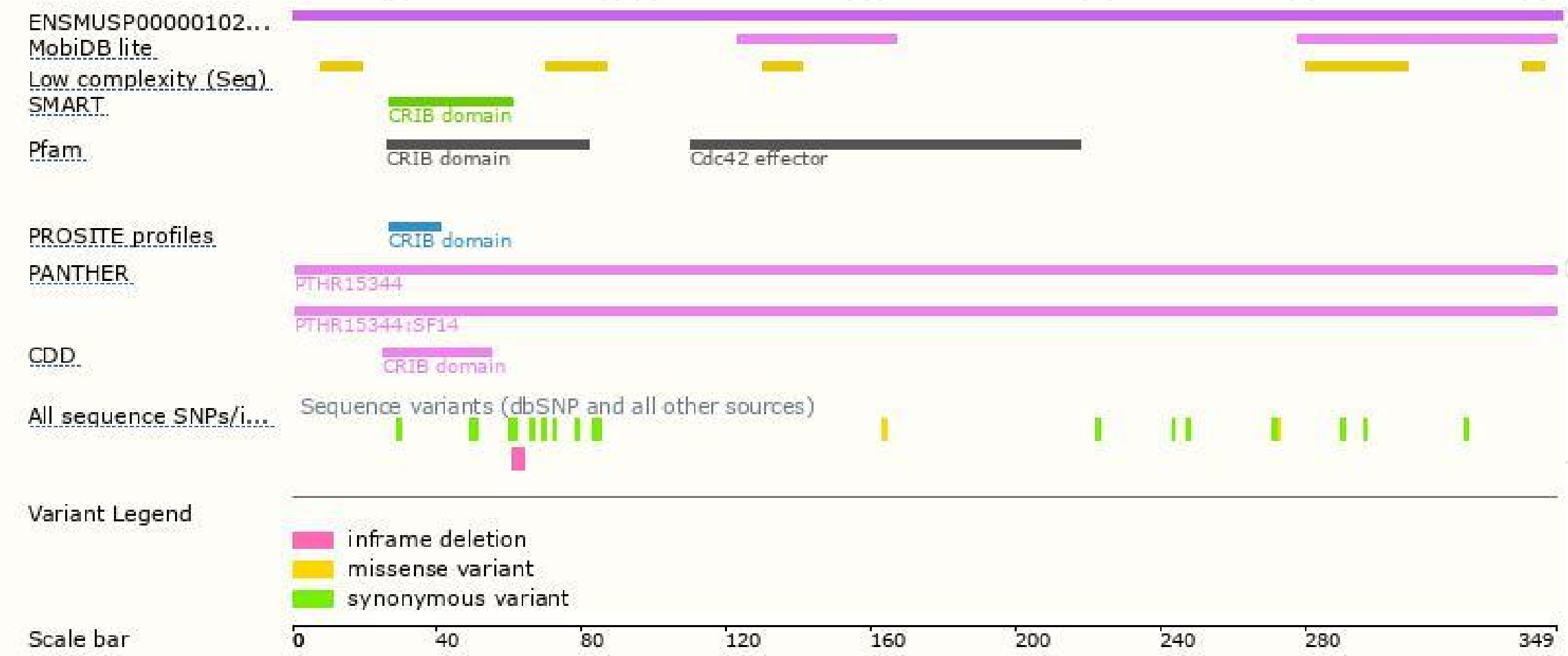
The strategy is based on the design of *Cdc42ep4-202* transcript,The transcription is shown below



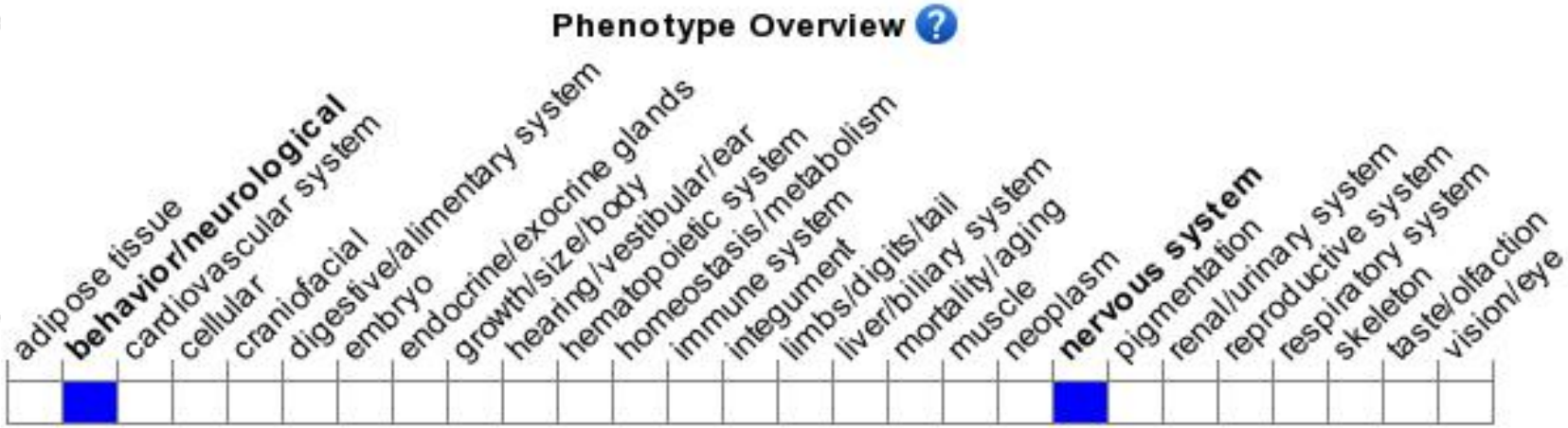
Genomic location distribution



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 null allele display impaired glutamate clearance and motor learning.

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

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