Clcn1 Cas9-KO Strategy

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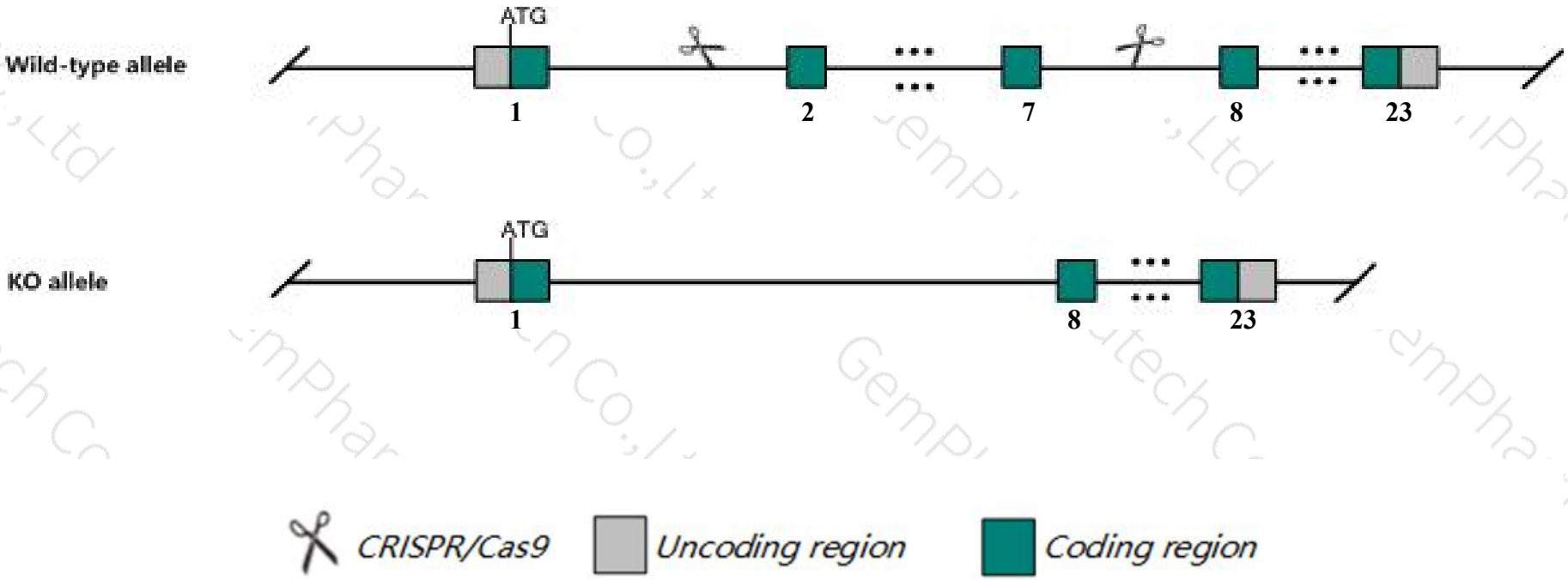
Project Overview

Project Name	***Clcn1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Clcn1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Clcn1* gene has 10 transcripts. According to the structure of *Clcn1* gene, exon2-exon7 of *Clcn1-201* (ENSMUST00000031894.12) transcript is recommended as the knockout region.The region contains 673bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Clcn1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mutant mice exhibit mild to severe spasms of the hind limbs and abnormal hind limb reflexes.

- Transcript *Clcn1*-202&203&209 may not be affected.

- The *Clcn1* gene is located on the Chr6. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

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Clcn1 chloride channel, voltage-sensitive 1 [*Mus musculus* (house mouse)]

Gene ID: 12723, updated on 12-Aug-2019

Summary

Official Symbol	Clcn1 provided by MGI
Official Full Name	chloride channel, voltage-sensitive 1 provided by MGI
Primary source	MGI:MGI:88417
See related	Ensembl:ENSMUSG00000029862
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	adr; mto; Clc1; Clc-1; SMCC1; nmf355; myotonia
Expression	Biased expression in mammary gland adult (RPKM 3.1), cerebellum adult (RPKM 2.5) and 12 other tissues See more
Orthologs	human all

Genomic context

Location: 6 B2.1; 6 20.57 cM

See Clcn1 in Genome Data Viewer

Exon count: 25

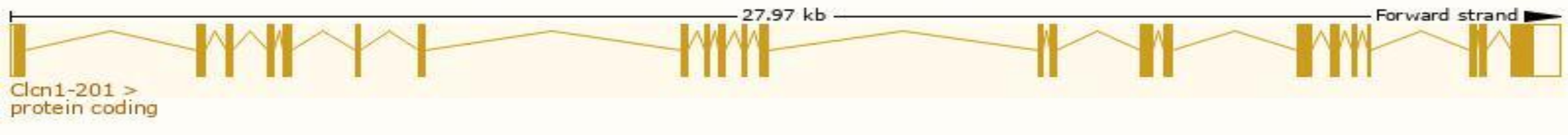
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	6	NC_000072.6 (42284851..42315764)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	6	NC_000072.5 (42236684..42264655)

Transcript information（Ensembl）

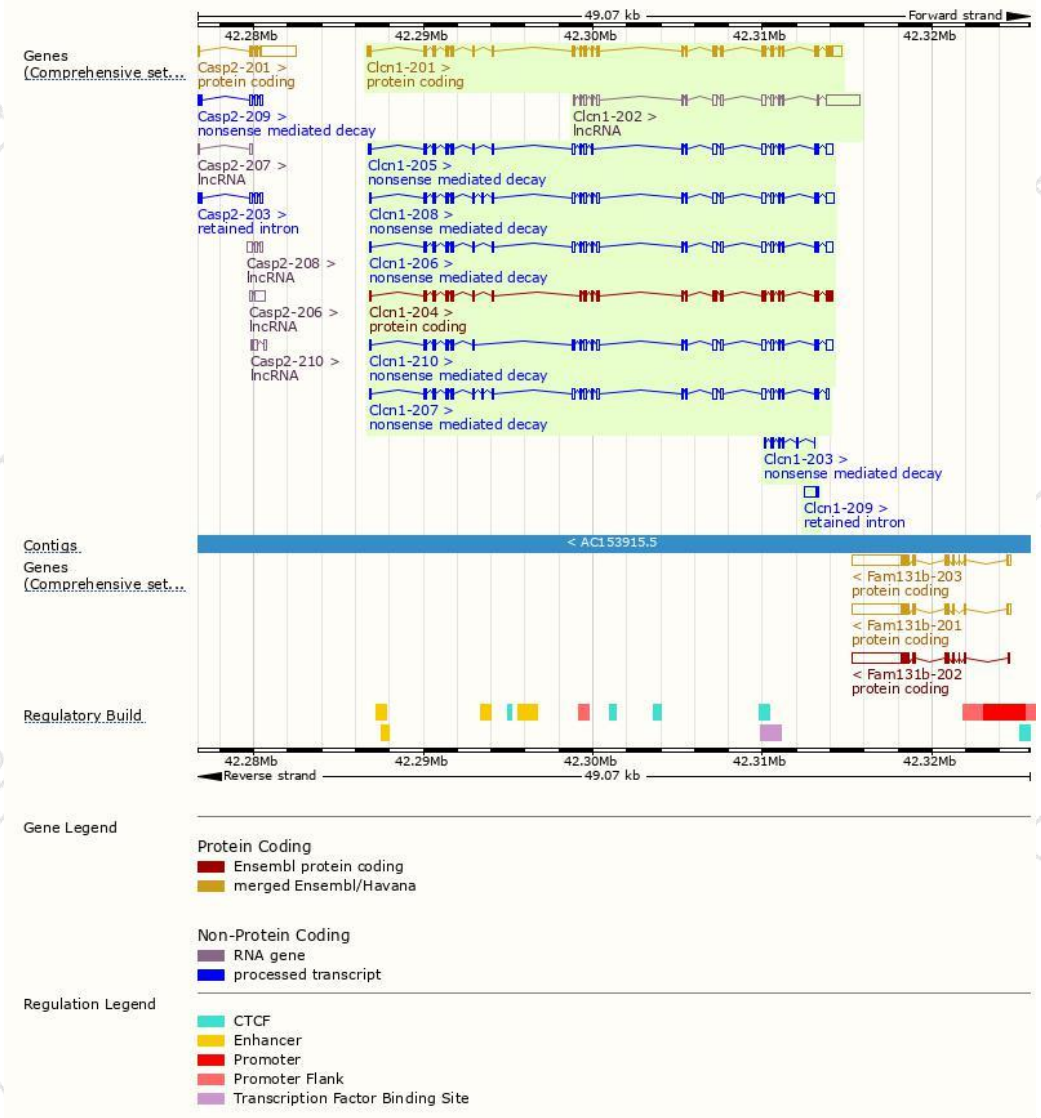
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Clcn1-201	ENSMUST00000031894.12	3545	994aa	Protein coding	CCDS39471	Q64347	TSL:1 GENCODE basic APPRIS P1
Clcn1-204	ENSMUST00000163936.7	2770	923aa	Protein coding	-	F6QI82	CDS 5' incomplete TSL:5
Clcn1-208	ENSMUST00000169024.7	3029	262aa	Nonsense mediated decay	-	F7C9S1	CDS 5' incomplete TSL:5
Clcn1-206	ENSMUST00000165780.7	2899	229aa	Nonsense mediated decay	-	F6QL23	CDS 5' incomplete TSL:5
Clcn1-205	ENSMUST00000164091.7	2838	258aa	Nonsense mediated decay	-	E9Q2N3	TSL:5
Clcn1-210	ENSMUST00000170028.7	2817	289aa	Nonsense mediated decay	-	F6X177	CDS 5' incomplete TSL:5
Clcn1-207	ENSMUST00000168660.3	2744	257aa	Nonsense mediated decay	-	F7A9J6	CDS 5' incomplete TSL:2
Clcn1-203	ENSMUST00000163235.1	417	104aa	Nonsense mediated decay	-	F6VSA8	CDS 5' incomplete TSL:5
Clcn1-209	ENSMUST00000169902.1	774	No protein	Retained intron	-	-	TSL:3
Clcn1-202	ENSMUST00000114684.7	3504	No protein	lncRNA	-	-	TSL:1

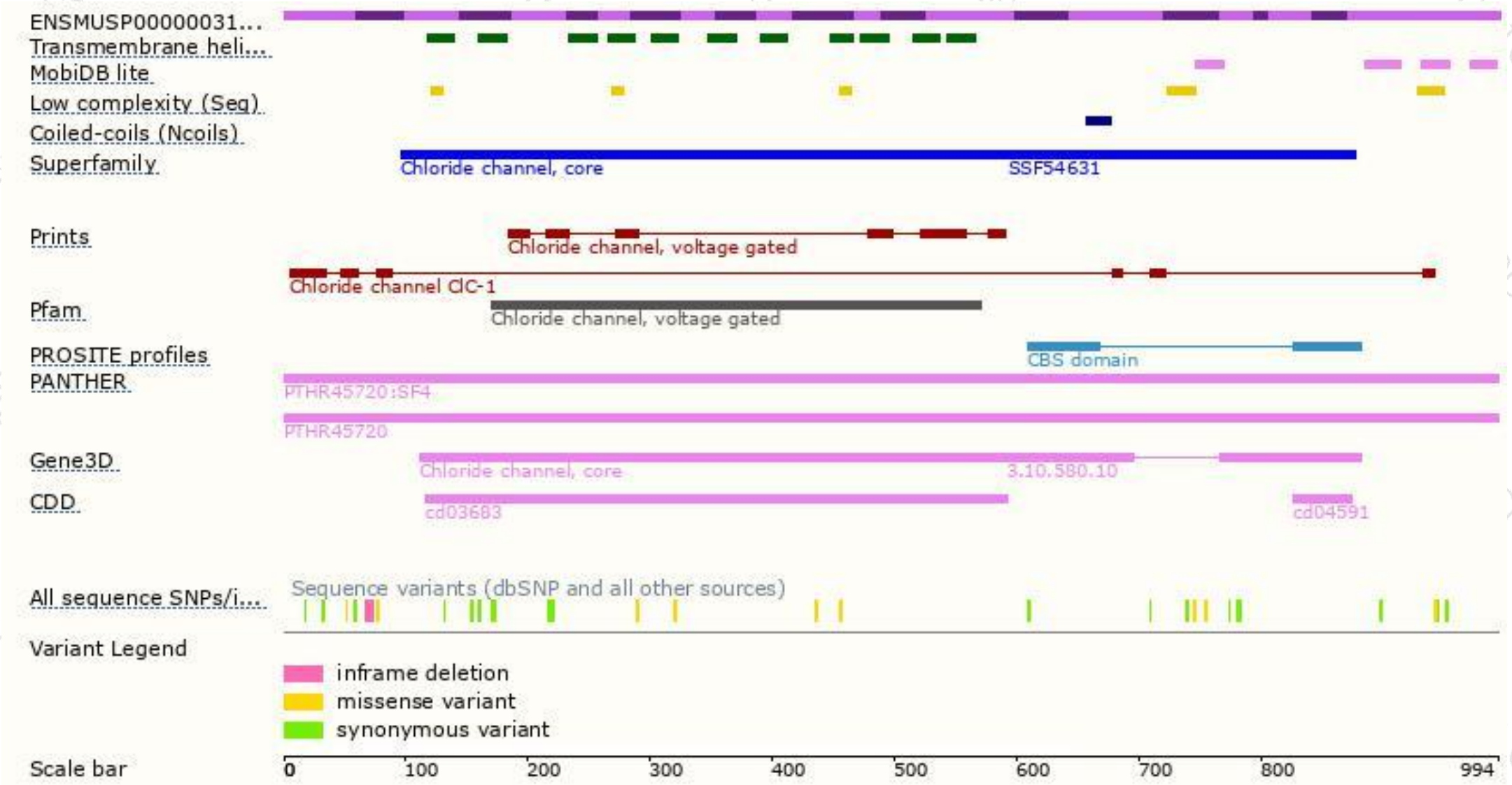
The strategy is based on the design of *Clcn1-201* transcript,The transcription is shown below



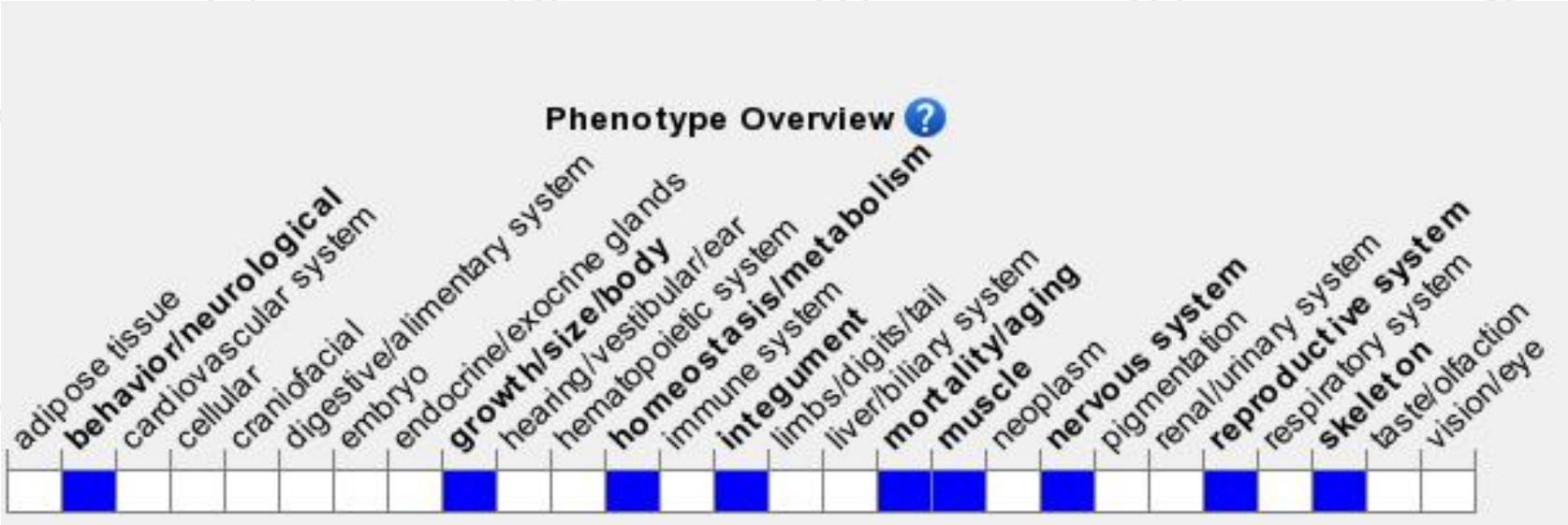
Genomic location distribution



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,Mutant mice exhibit mild to severe spasms of the hind limbs and abnormal hind limb reflexes.

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

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