Kcnn3 Cas9-KO Strategy

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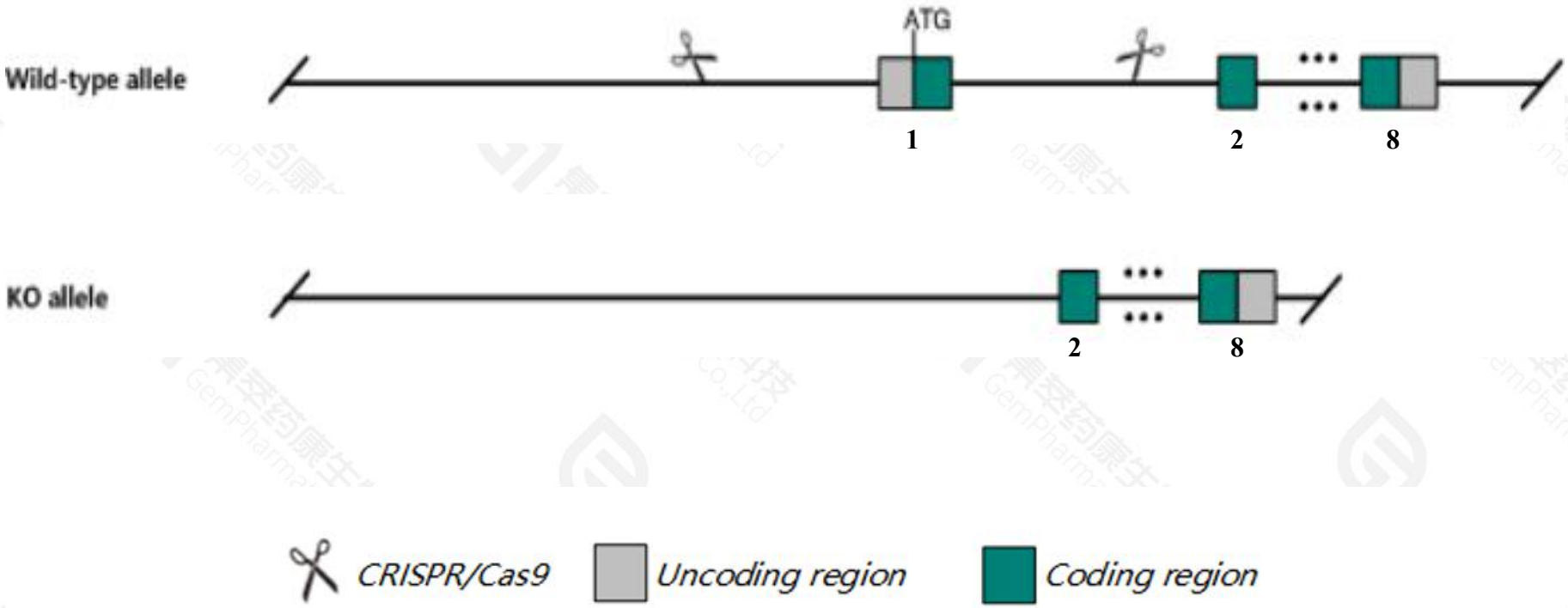
Design Date: 2021-5-13

Project Overview

Project Name	***Kcnn3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcnn3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Kcnn3* gene has 2 transcripts. According to the structure of *Kcnn3* gene, exon1 of *Kcnn3-201*(ENSMUST00000000811.8) transcript is recommended as the knockout region.The region contains start codon ATG.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Kcnn3* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ According to the existing MGI data,mice homozygous for an insertion of a tetracycline-regulated gene switch display no overt phenotype when expression is abolished by doxycycline treatment; in contrast, untreated homozygotes show abnormal respiratory responses to hypoxia, impaired parturition, and pregnancy-related premature death.

➢ The *Kcnn3* gene is located on the Chr3. 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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Kcnn3 potassium intermediate/small conductance calcium-activated channel, subfamily N, member 3 [Mus musculus (house mouse)]

Gene ID: 140493, updated on 25-Sep-2020

Summary

Official Symbol	Kcnn3 provided by MGI
Official Full Name	potassium intermediate/small conductance calcium-activated channel, subfamily N, member 3 provided byMGI
Primary source	MGI:MGI:2153183
See related	Ensembl:ENSMUSG00000000794
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	KCa2.3, SK, SK3, SKCA3
Expression	Broad expression in subcutaneous fat pad adult (RPKM 3.1), bladder adult (RPKM 2.7) and 23 other tissuesSee more
Orthologs	human all

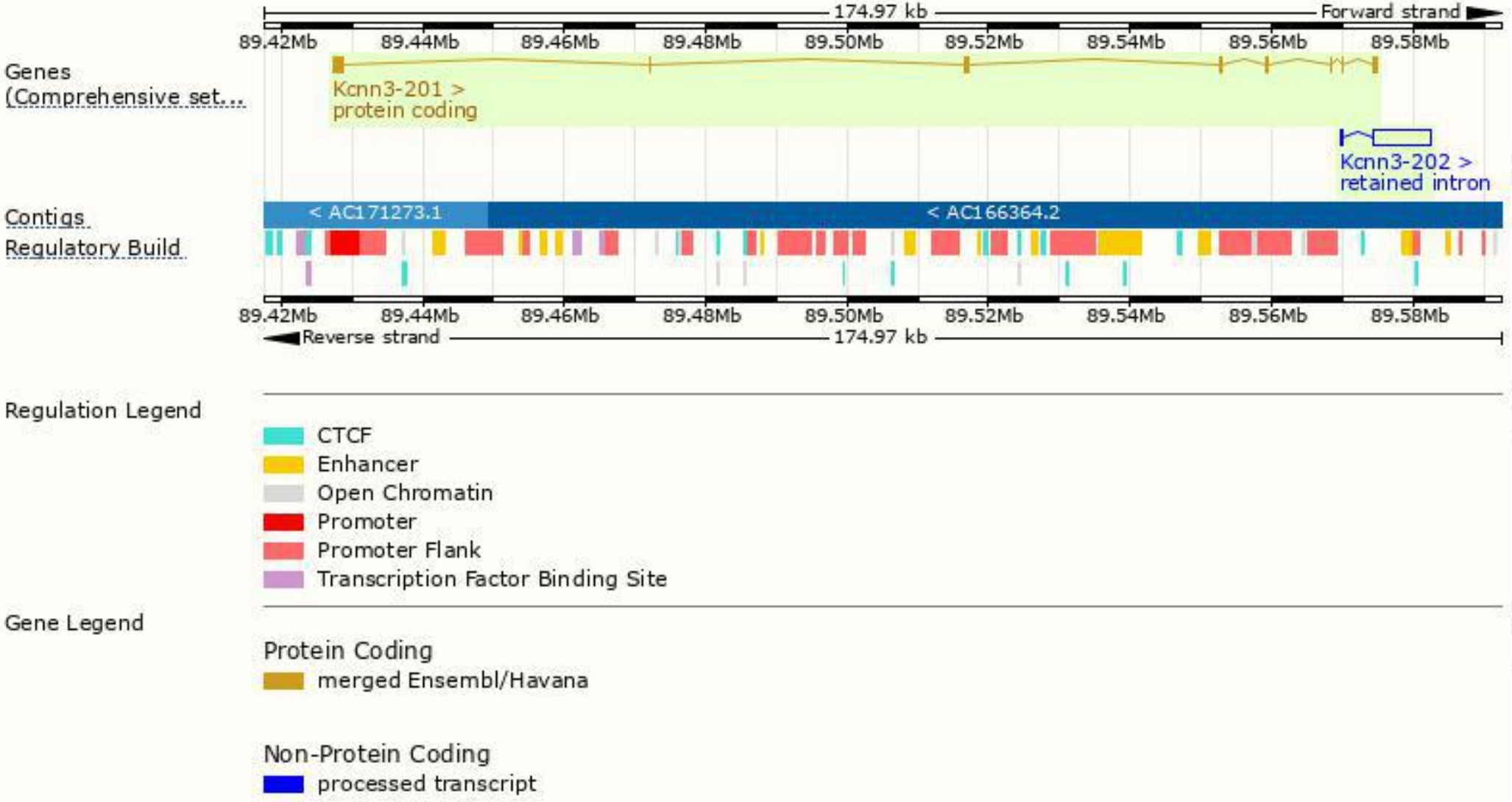
Transcript information（Ensembl）

The gene has 2 transcripts,all transcripts are shown below:

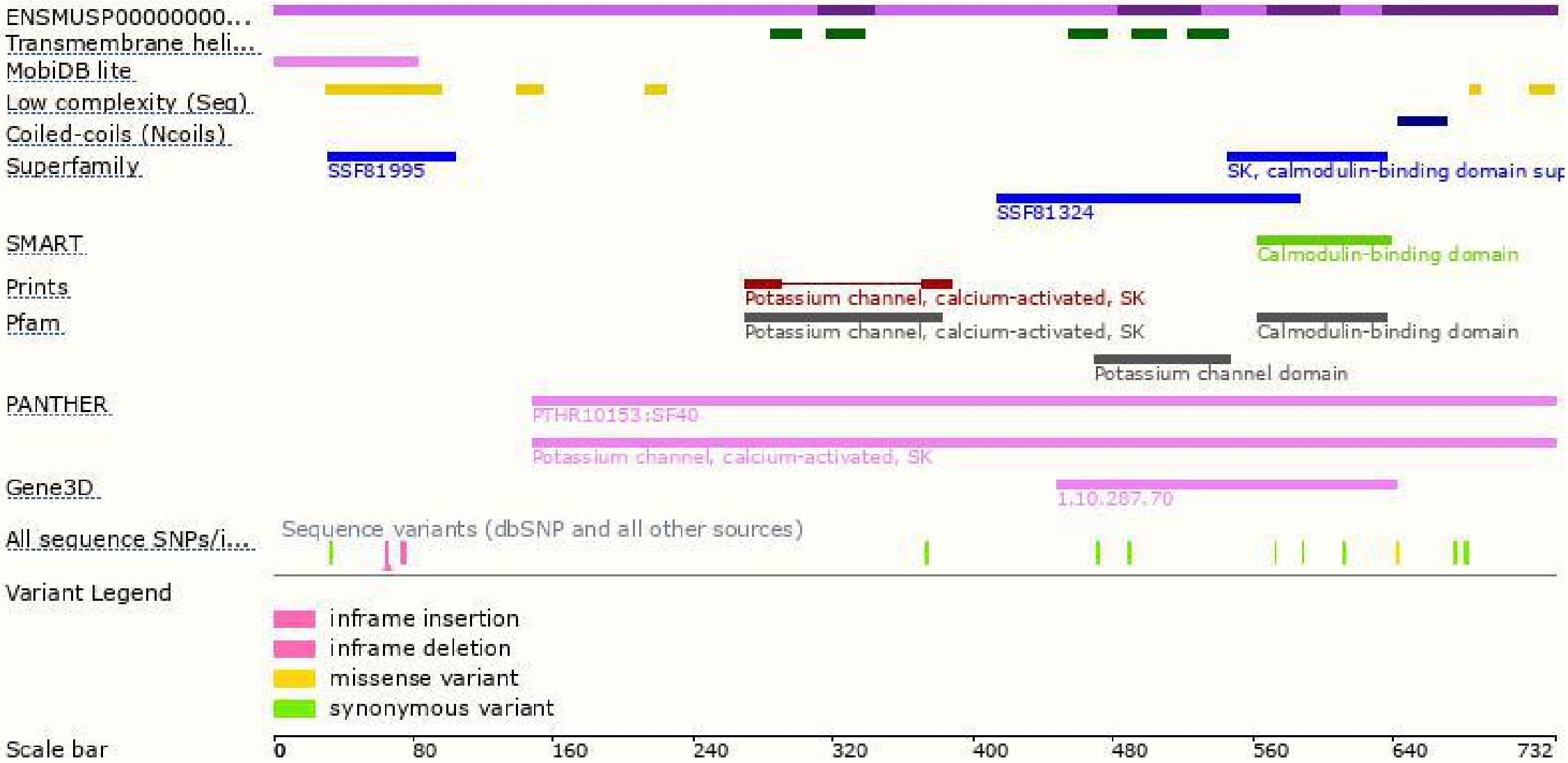
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcnn3-201	ENSMUST00000000811.8	2884	732aa	Protein coding	CCDS38495		TSL:1 , GENCODE basic , APPRIS P1 ,
Kcnn3-202	ENSMUST00000124584.4	8314	No protein	Retained intron	-		TSL:1 ,

The strategy is based on the design of *Kcnn3-201* transcript,the transcription is shown below:

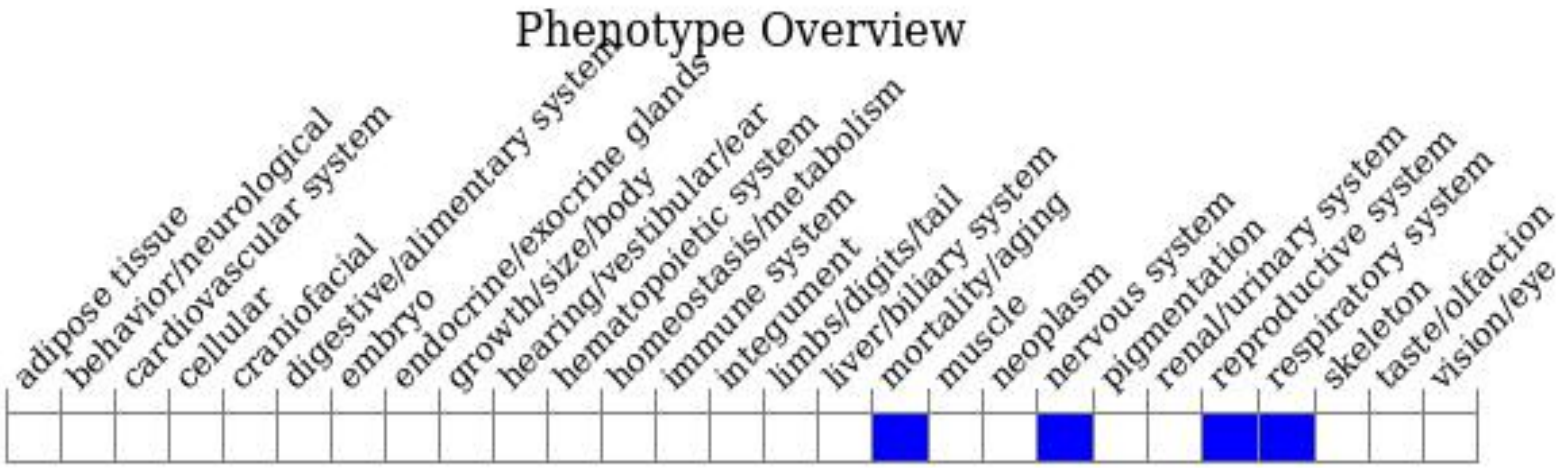
Genomic location distribution



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/).

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