

***Dyrk1b* Cas9-KO Strategy**

Designer: Jinlong Zhao

Reviewer: Shilei Zhu

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Project Overview

Project Name

Dyrk1b

Project type

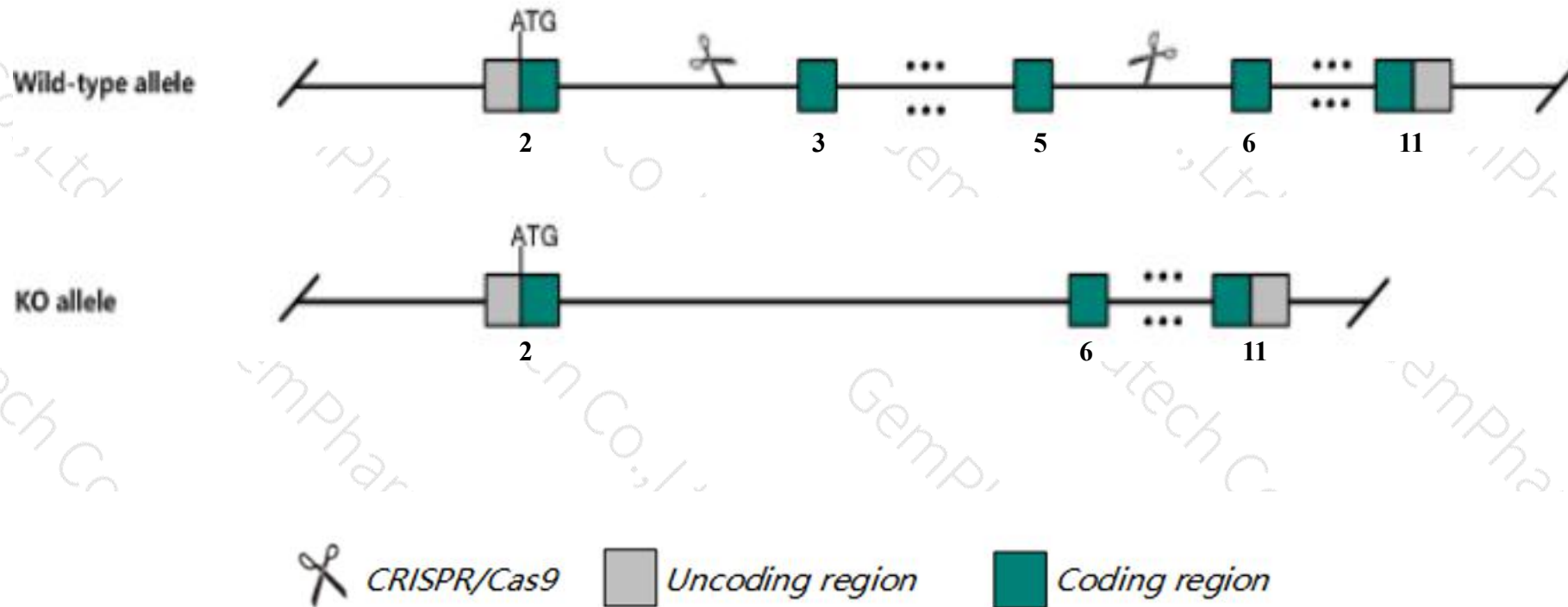
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dyrk1b* gene. The schematic diagram is as follows:



- The *Dyrk1b* gene has 3 transcripts. According to the structure of *Dyrk1b* gene, exon3-exon5 of *Dyrk1b*-201(ENSMUST00000085901.12) transcript is recommended as the knockout region. The region contains 457bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dyrk1b* 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.

- The *Dyrk1b* gene is located on the Chr7. 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)

Dyrk1b dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 1b [Mus musculus (house mouse)]

Gene ID: 13549, updated on 13-Mar-2020

Summary



Official Symbol Dyrk1b provided by [MGI](#)

Official Full Name dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 1b provided by [MGI](#)

Primary source [MGI:MGI:1330302](#)

See related [Ensembl:ENSMUSG00000002409](#)

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 Mirk

Expression Ubiquitous expression in testis adult (RPKM 39.4), thymus adult (RPKM 16.2) and 24 other tissues [See more](#)

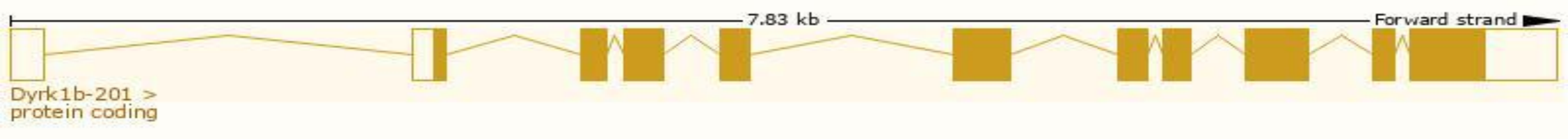
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

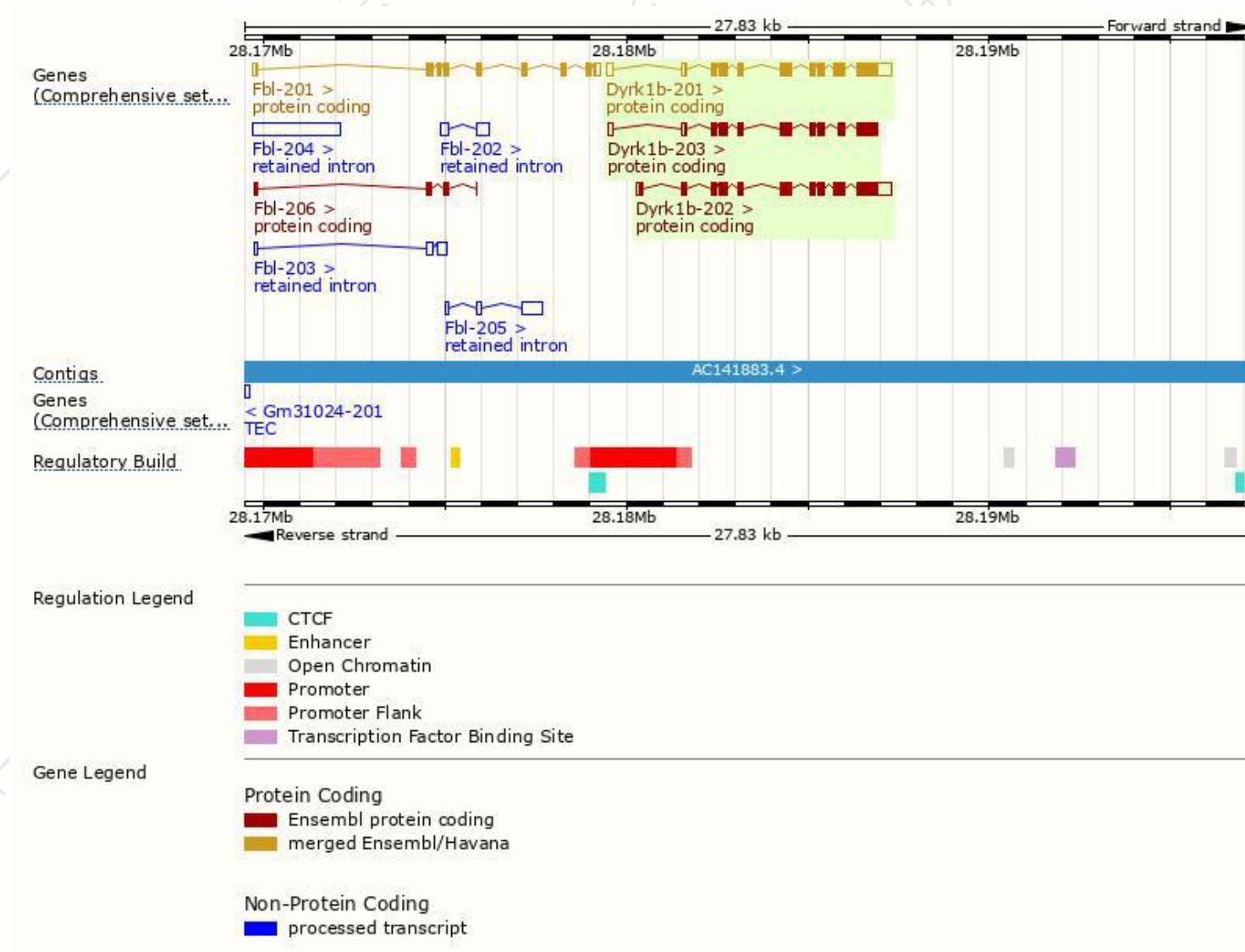
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dyrk1b-201	ENSMUST00000085901.12	2534	629aa	Protein coding	CCDS21037	Q9Z188	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Dyrk1b-202	ENSMUST00000172467.7	2523	689aa	Protein coding	CCDS85251	Q9Z188	TSL:1 GENCODE basic
Dyrk1b-203	ENSMUST00000172761.7	2018	589aa	Protein coding	CCDS57532	Q9Z188	TSL:1 GENCODE basic

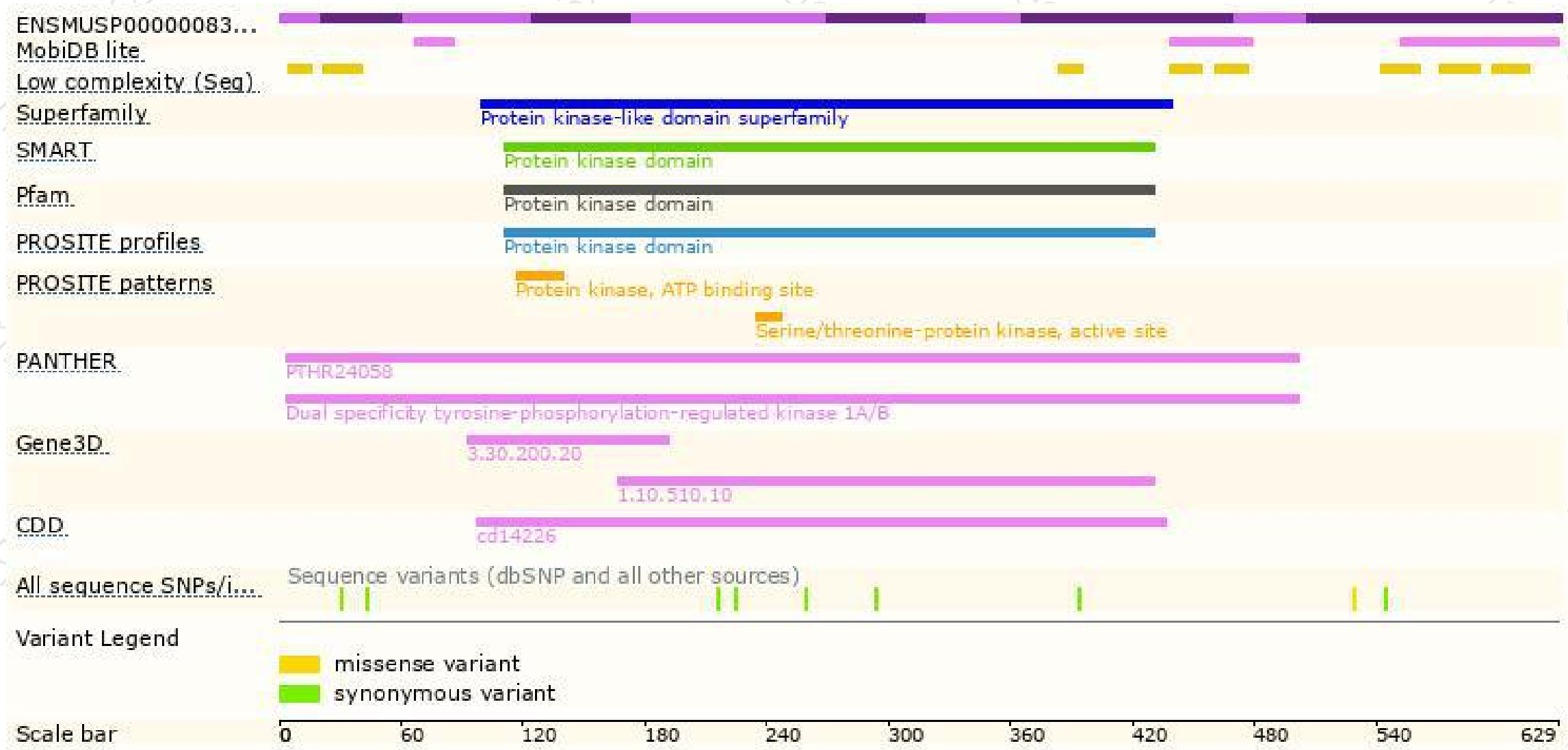
The strategy is based on the design of *Dyrk1b-201* transcript,the transcription is shown below:



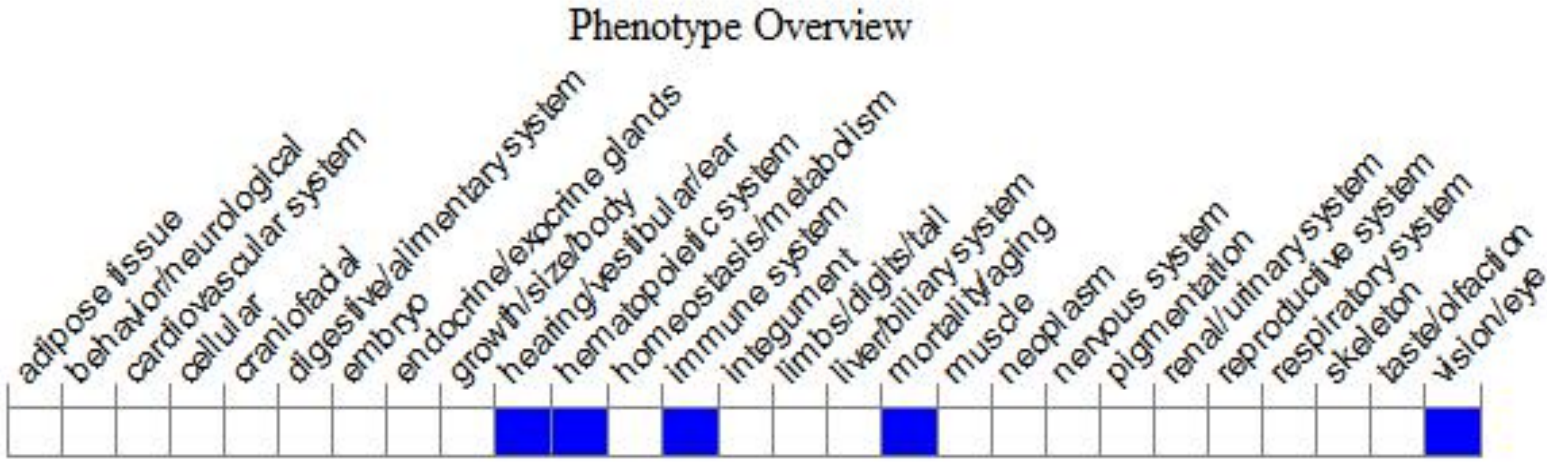
Genomic location distribution



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/>).

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

Tel: 400-9660890

