Mypn Cas9-KO Strategy

Designer: Yun Li

Reviewer: Shuang Zhang

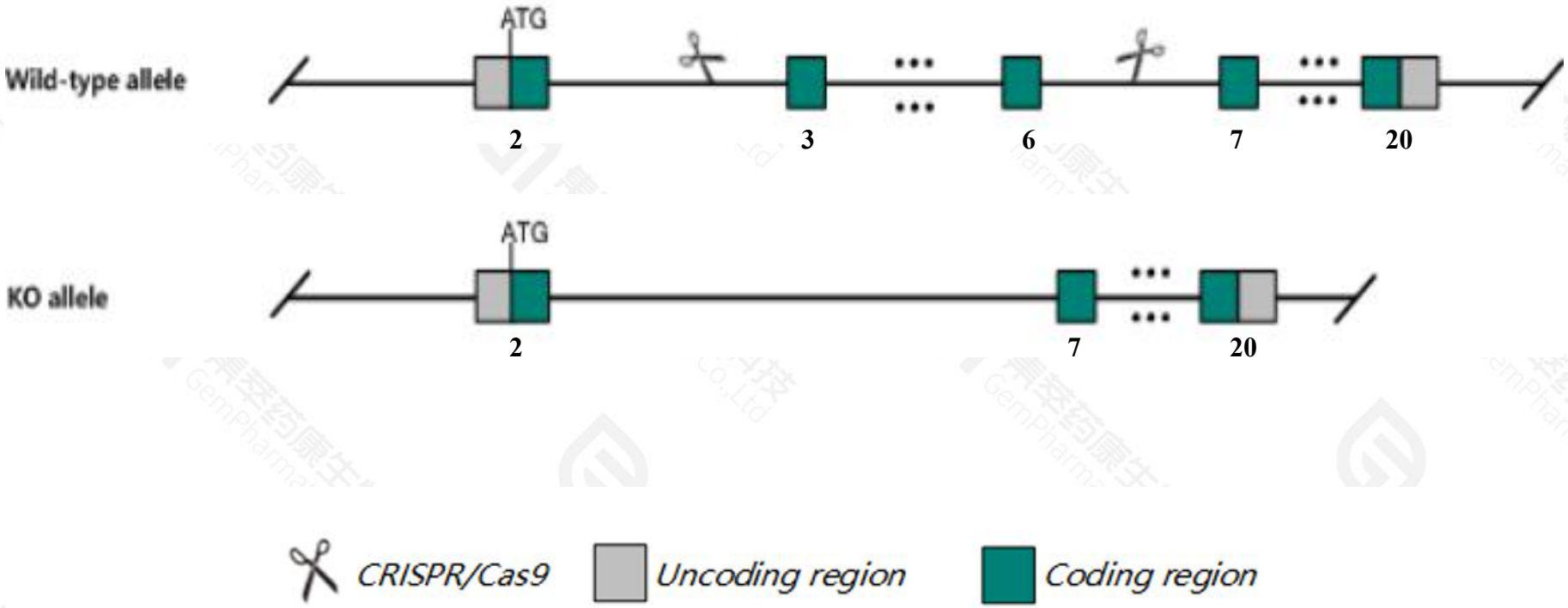
Design Date: 2021-3-24

Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Mypn* gene has 2 transcripts. According to the structure of *Mypn* gene, exon3-exon6 of *Mypn-201*(ENSMUST00000095580.3) transcript is recommended as the knockout region.The region contains 412bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Mypn* 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 a nonsense mutation exhibit Z-streaming and nemaline-like bodies in skeletal muscle, suggesting the presence of mild nemaline-like myopathy.

➢ The *Mypn* gene is located on the Chr10. 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.

➢The knocked out region had no effect on transcript 202.

Gene information （NCBI）

集萃药康 GemPharmatech

Mypn myopalladin [Mus musculus (house mouse)]

Gene ID: 68802, updated on 25-Sep-2020

Summary

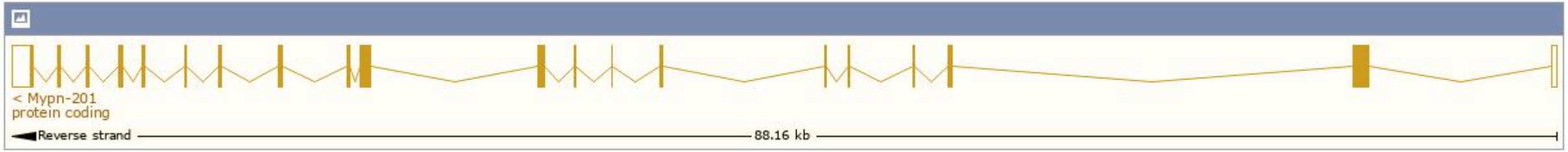
Official Symbol	Mypn provided by MGI
Official Full Name	myopalladin provided byMGI
Primary source	MGI:MGI:1916052
See related	Ensembl:ENSMUSG00000020067
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110056A04Rik, 9830112J03, AI853556, mKIAA4170
Expression	Biased expression in heart adult (RPKM 12.4), mammary gland adult (RPKM 2.4) and 4 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

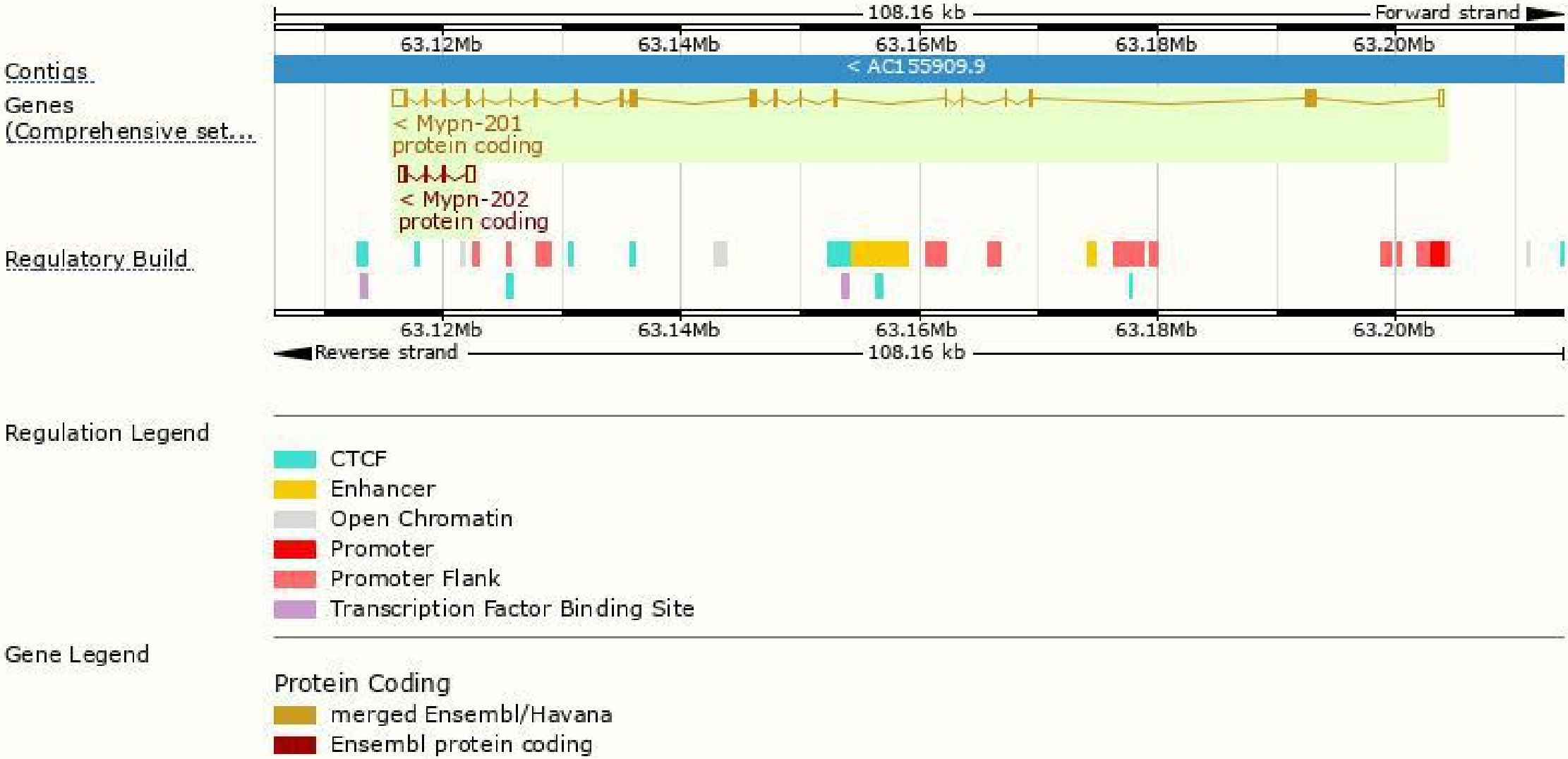
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mypn-201	ENSMUST00000095580.3	5246	1315aa	Protein coding	CCDS48584		TSL:1 , GENCODE basic , APPRIS P1 ,
Mypn-202	ENSMUST00000218978.2	1833	200aa	Protein coding	-		TSL:1 , GENCODE basic ,

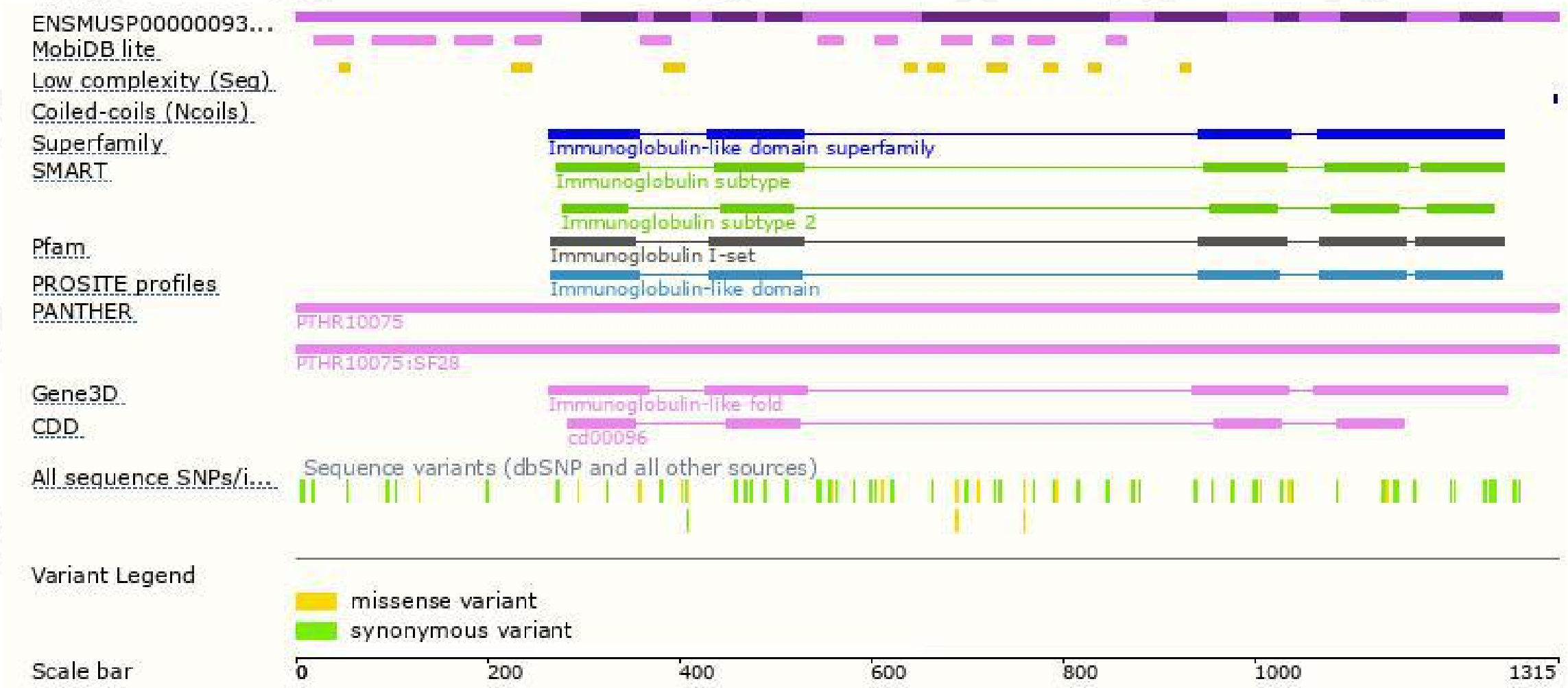
The strategy is based on the design of *Mypn-201* transcript,the transcription is shown below:



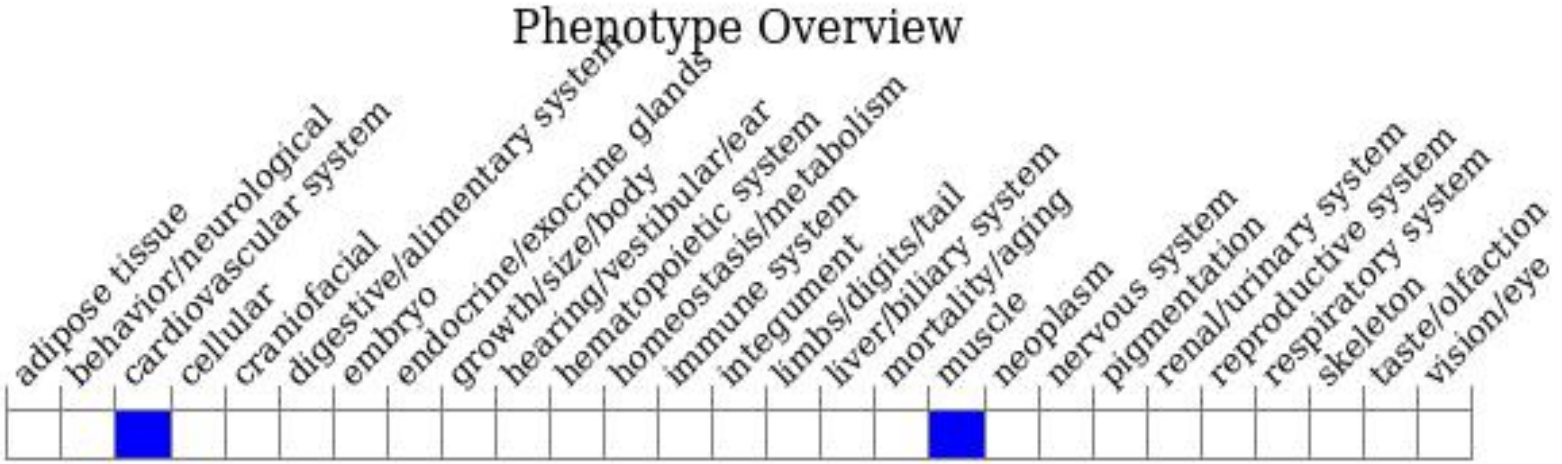
Genomic location distribution



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,mice homozygous for a nonsense mutation exhibit Z-streaming and nemaline-like bodies in skeletal muscle, suggesting the presence of mild nemaline-like myopathy.

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If you have any questions, you are welcome to inquire.
Tel: 400-9660890

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