Synm Cas9-KO Strategy

Designer: Daohua Xu

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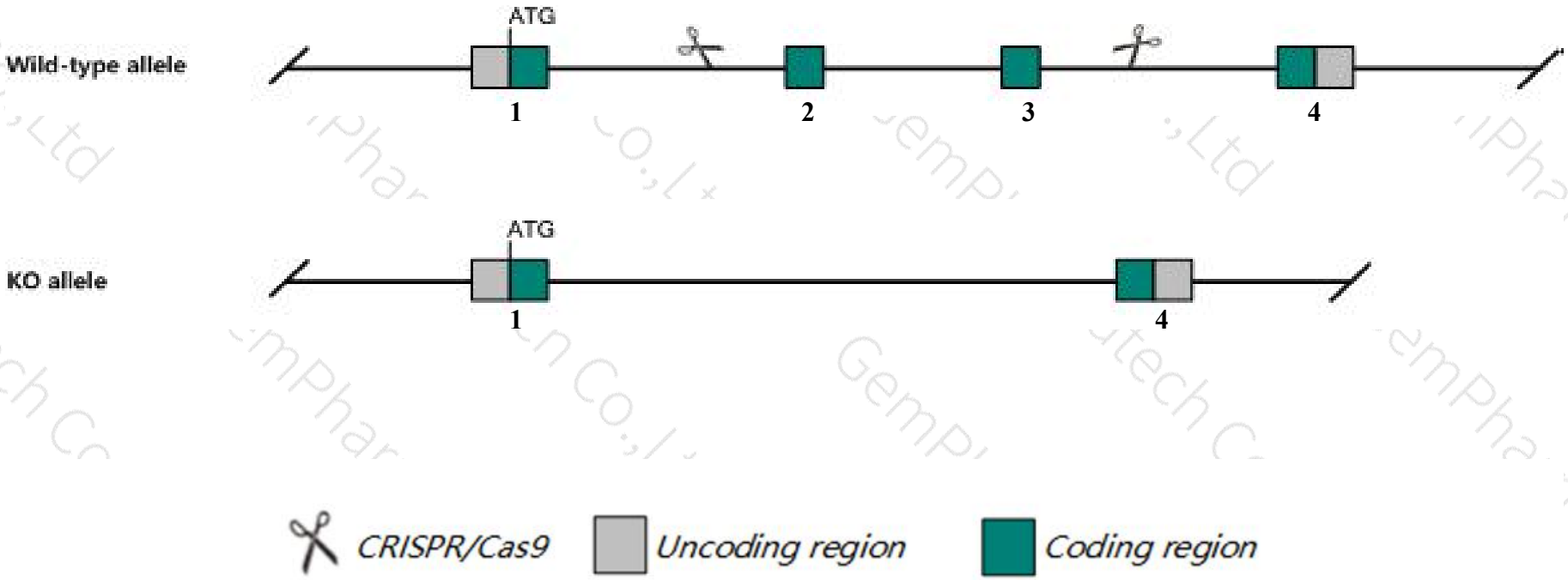
Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Synm* gene has 5 transcripts. According to the structure of *Synm* gene, exon2-exon3 of *Synm-202* (ENSMUST00000074233.11) transcript is recommended as the knockout region.The region contains 196bp coding sequence. Knock out the region will result in disruption of protein function.

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

Notice

➢ According to the existing MGI data,Mice homozygous for a knock-out allele exhibit a mild skeletal muscle phenotype characterized by abnormal muscle fiber morphology and increased sarcolemmal deformability and susceptibility to injury.

➢ The *Synm* 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）

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Synm synemin, intermediate filament protein [Mus musculus (house mouse)]

Gene ID: 233335, updated on 31-Jan-2019

Summary

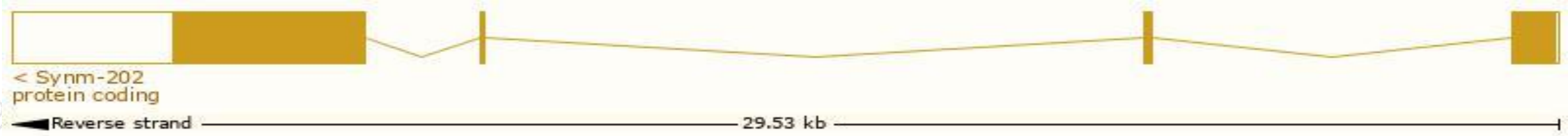
Official Symbol	Synm provided by MGI
Official Full Name	synemin, intermediate filament protein provided by MGI
Primary source	MGI:MGI:2661187
See related	Ensembl:ENSMUSG00000030554
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930412K21Rik, AI852401, Dmn, E130104F11, Syn, Synemin
Expression	Biased expression in bladder adult (RPKM 111.2), colon adult (RPKM 14.6) and 4 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

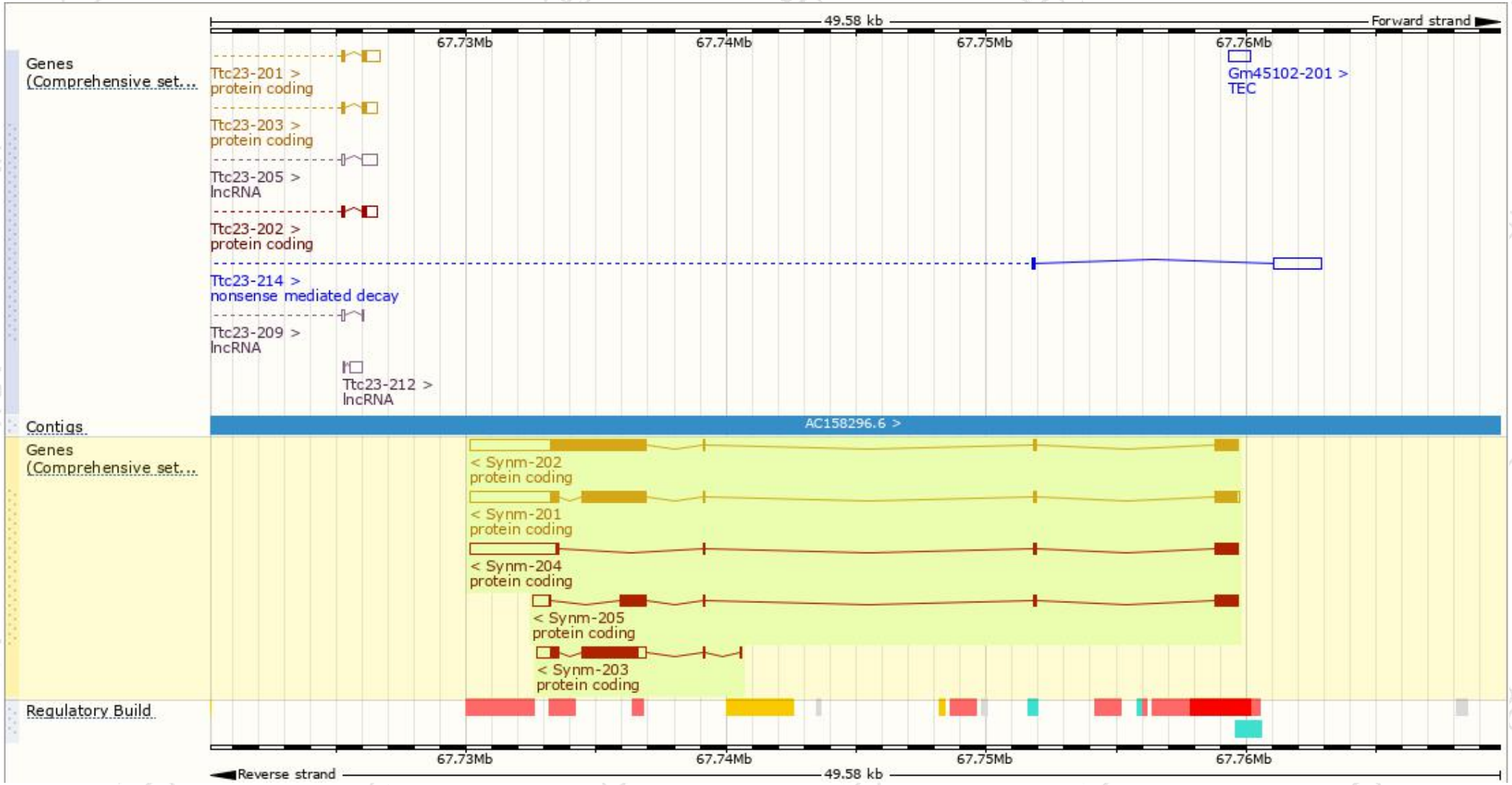
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Synm-202	ENSMUST00000074233.11	7818	1561aa	Protein coding	CCDS39982	Q70IV5	TSL:1 GENCODE basic APPRIS P4
Synm-201	ENSMUST00000051389.9	6953	1259aa	Protein coding	CCDS39983	Q70IV5	TSL:1 GENCODE basic APPRIS ALT2
Synm-204	ENSMUST00000208231.1	4457	371aa	Protein coding	CCDS85316	A0A140LJ61	TSL:1 GENCODE basic APPRIS ALT2
Synm-203	ENSMUST00000207102.1	3388	817aa	Protein coding	-	A0A140LHQ9	TSL:1 GENCODE basic
Synm-205	ENSMUST00000208815.1	2697	674aa	Protein coding	-	A0A140LJ79	TSL:5 GENCODE basic APPRIS ALT2

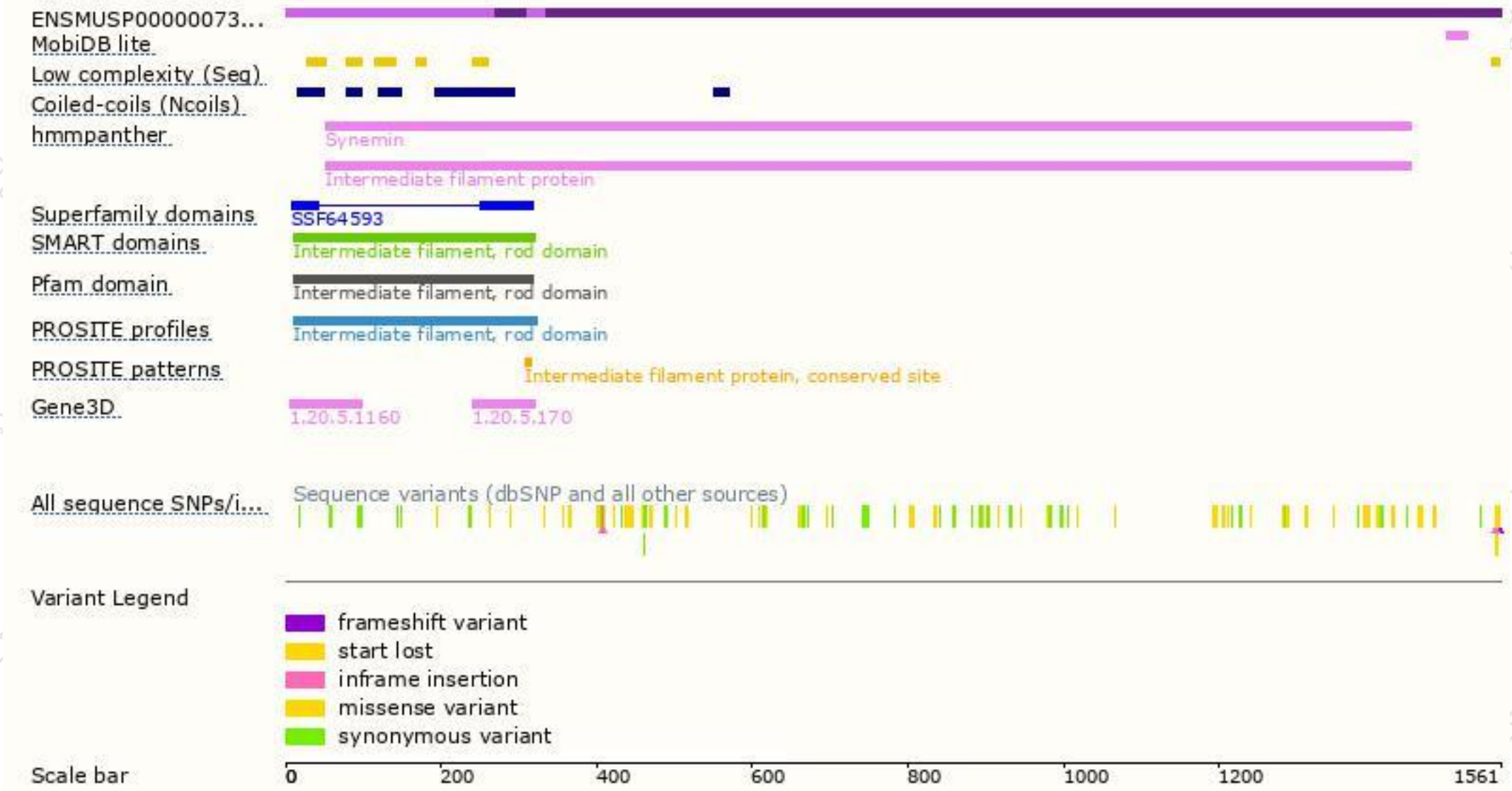
The strategy is based on the design of *Synm-202* transcript,The transcription is shown below



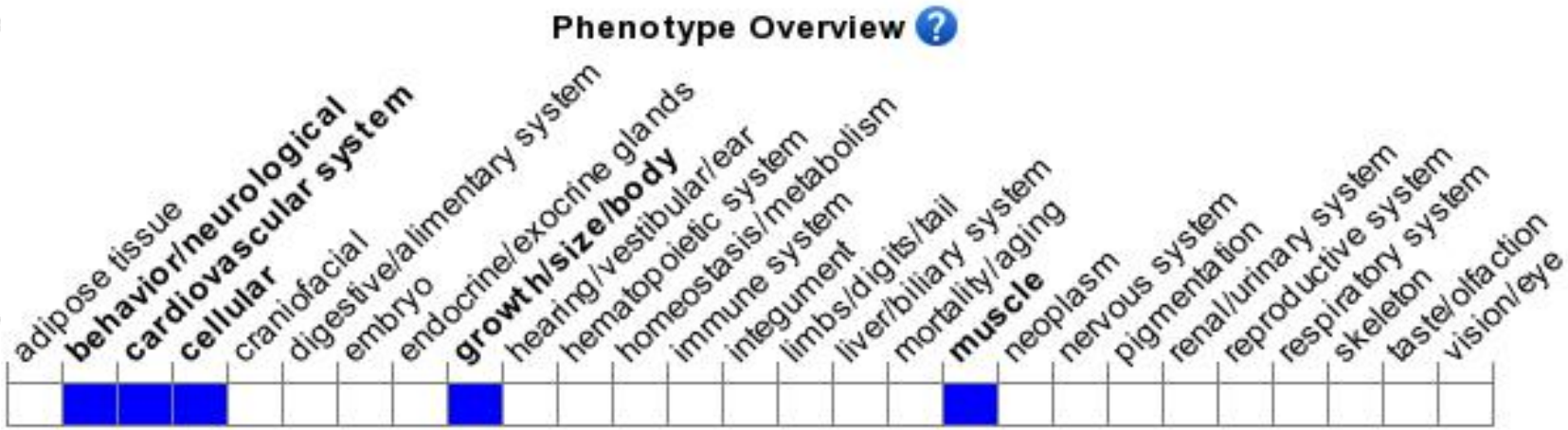
Genomic location distribution



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 knock-out allele exhibit a mild skeletal muscle phenotype characterized by abnormal muscle fiber morphology and increased sarcolemmal deformability and susceptibility to injury.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd