Emc7 Cas9-CKO Strategy

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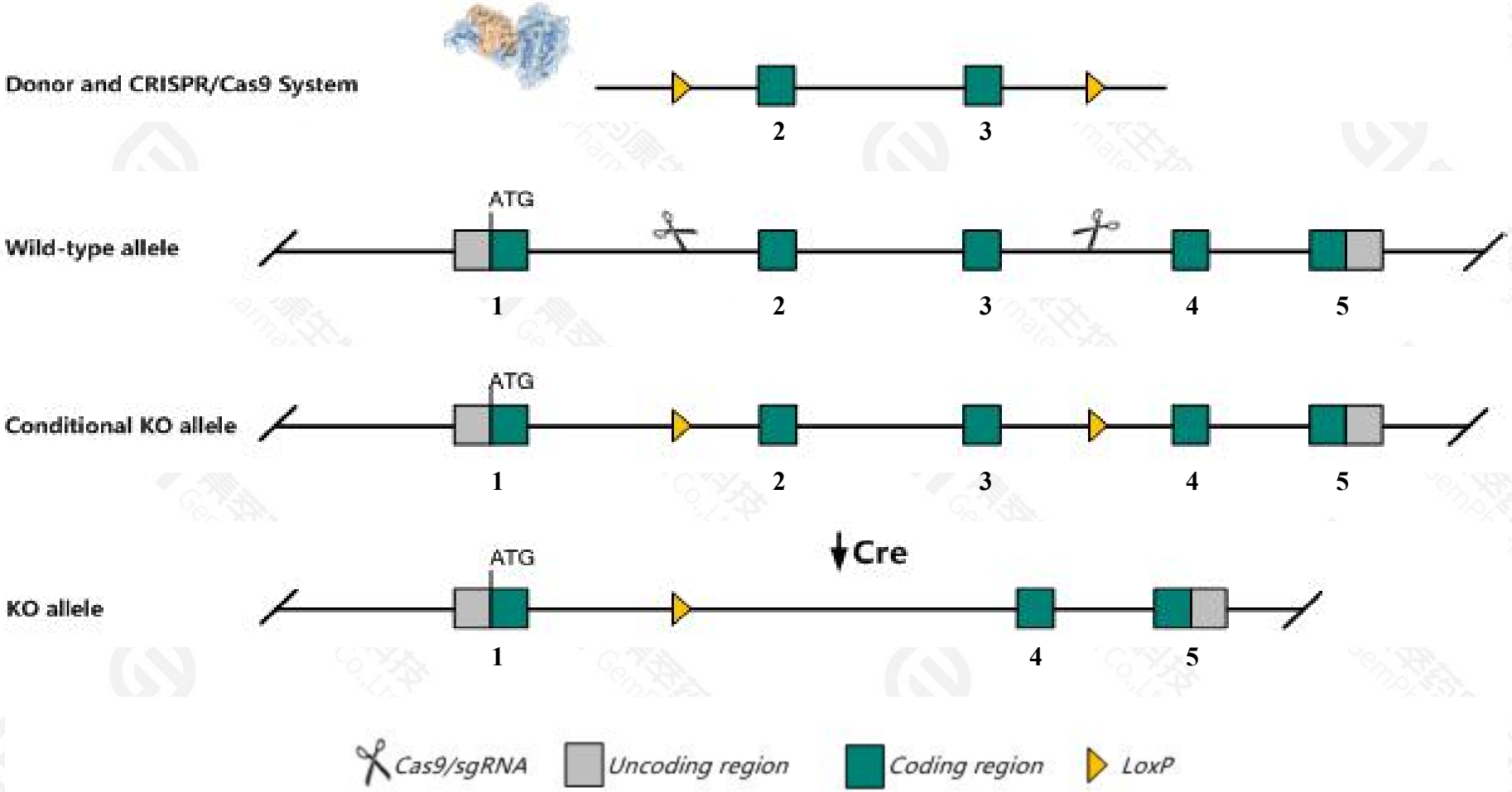
Project Overview

Project Name	***Emc7***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Emc7* gene. The schematic diagram is as follows:



Technical routes

➢ The *Emc7* gene has 1 transcript. According to the structure of *Emc7* gene, exon2-exon3 of *Emc7-201*(ENSMUST00000069747.6) transcript is recommended as the knockout region.The region contains 259bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Emc7* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor was constructed.Cas9, sgRNA and Donor 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 flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

➢ According to the existing MGI data,homozygous mice are not viable. Male heterozygous mice exhibited an increased anxiety-like response during stress-induced hyperthermia testing.

➢ The *Emc7* gene is located on the Chr2. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information（NCBI）

集萃药康 GemPharmatech

Emc7 ER membrane protein complex subunit 7 [Mus musculus (house mouse)]

Gene ID: 73024, updated on 13-Dec-2020

Summary

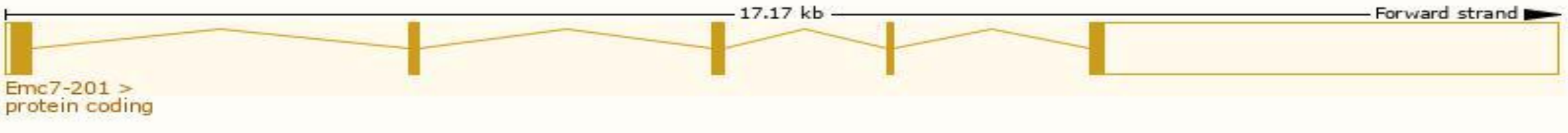
Official Symbol	Emc7 provided by MGI
Official Full Name	ER membrane protein complex subunit 7 provided by MGI
Primary source	MGI:MGI:1920274
See related	Ensembl:ENSMUSG00000055943
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2900064A13Rik, AI451465, ORF3, c11orf3
Expression	Ubiquitous expression in cerebellum adult (RPKM 15.8), placenta adult (RPKM 15.4) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

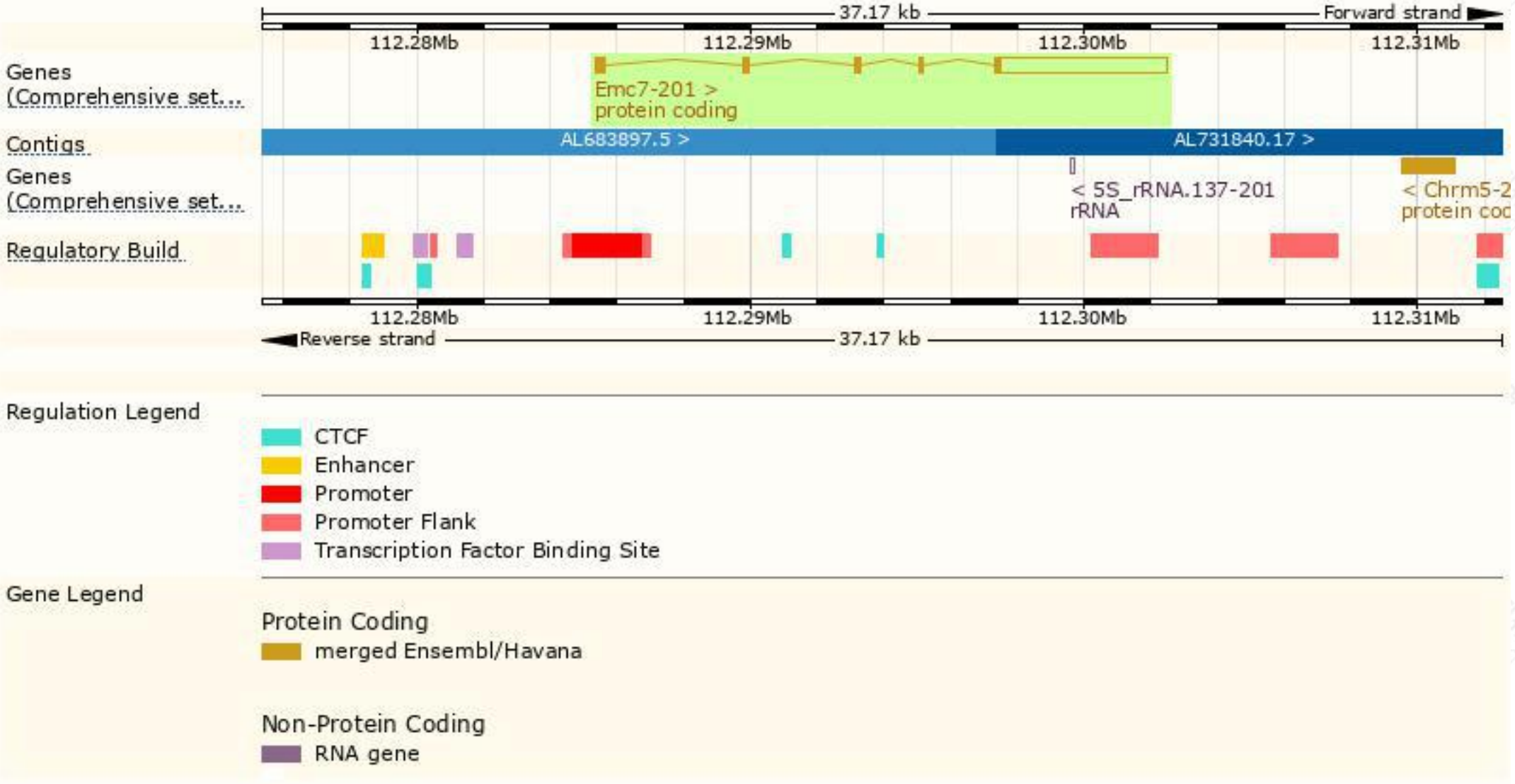
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Emc7-201	ENSMUST00000069747.6	5826	241aa	Protein coding	CCDS16555		TSL:1 , GENCODE basic , APPRIS P1 ,

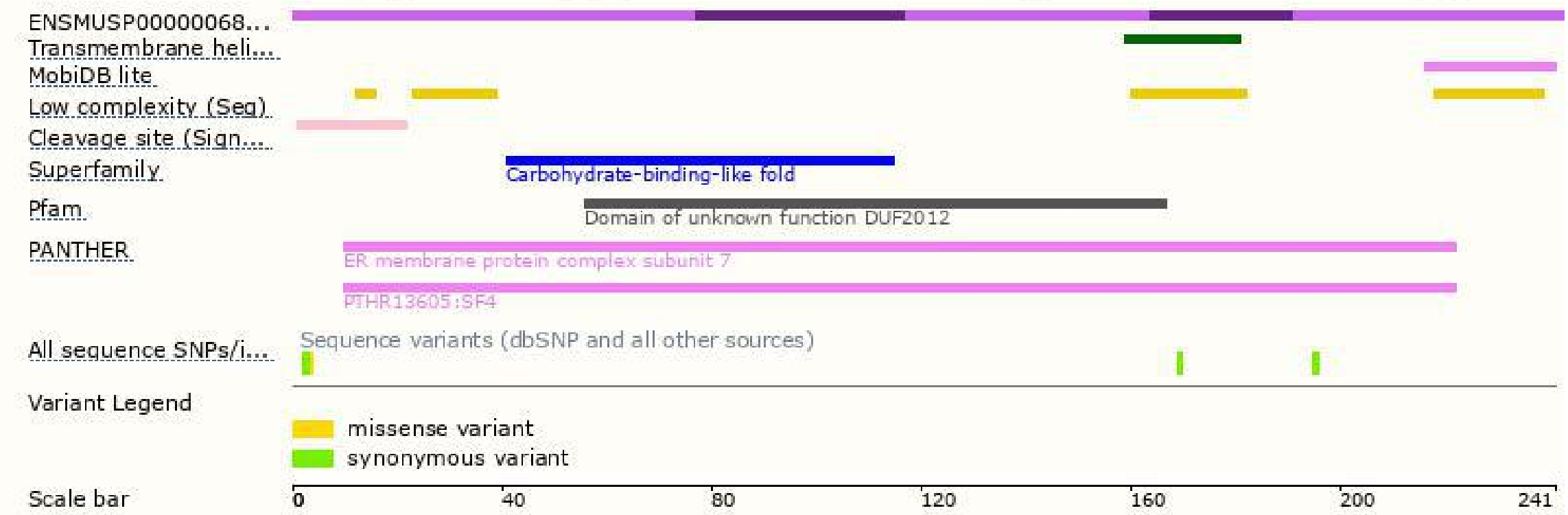
The strategy is based on the design of *Emc7-201* transcript,the transcription is shown below:



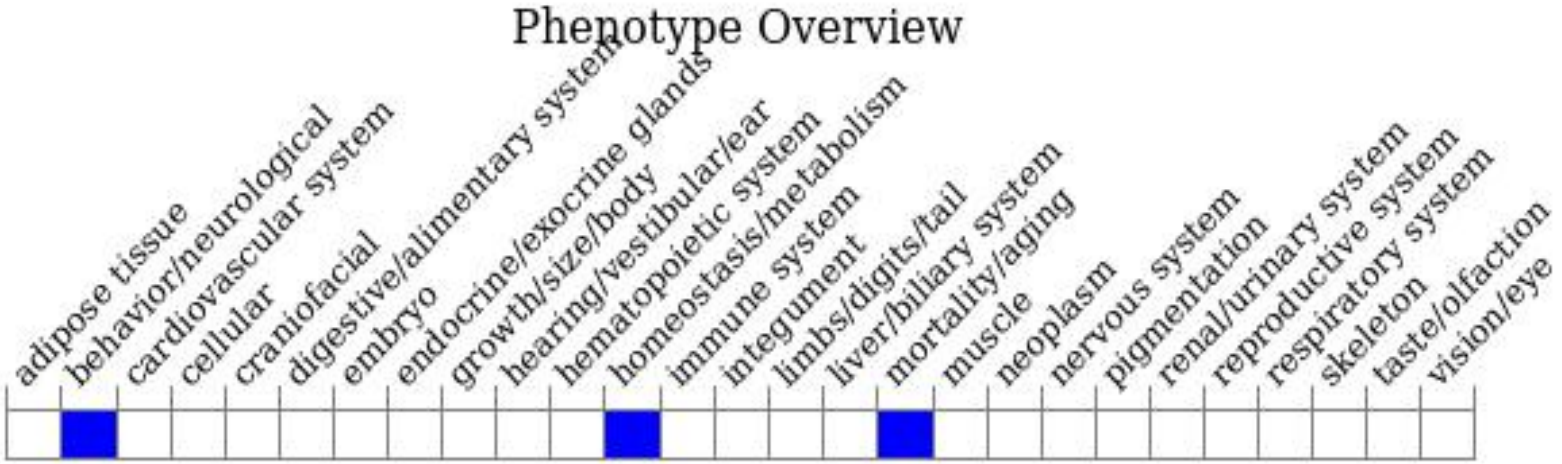
Genomic location distribution



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,homozygous mice are not viable. Male heterozygous mice exhibited an increased anxiety-like response during stress-induced hyperthermia testing.

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

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