Dusp9 Cas9-CKO Strategy

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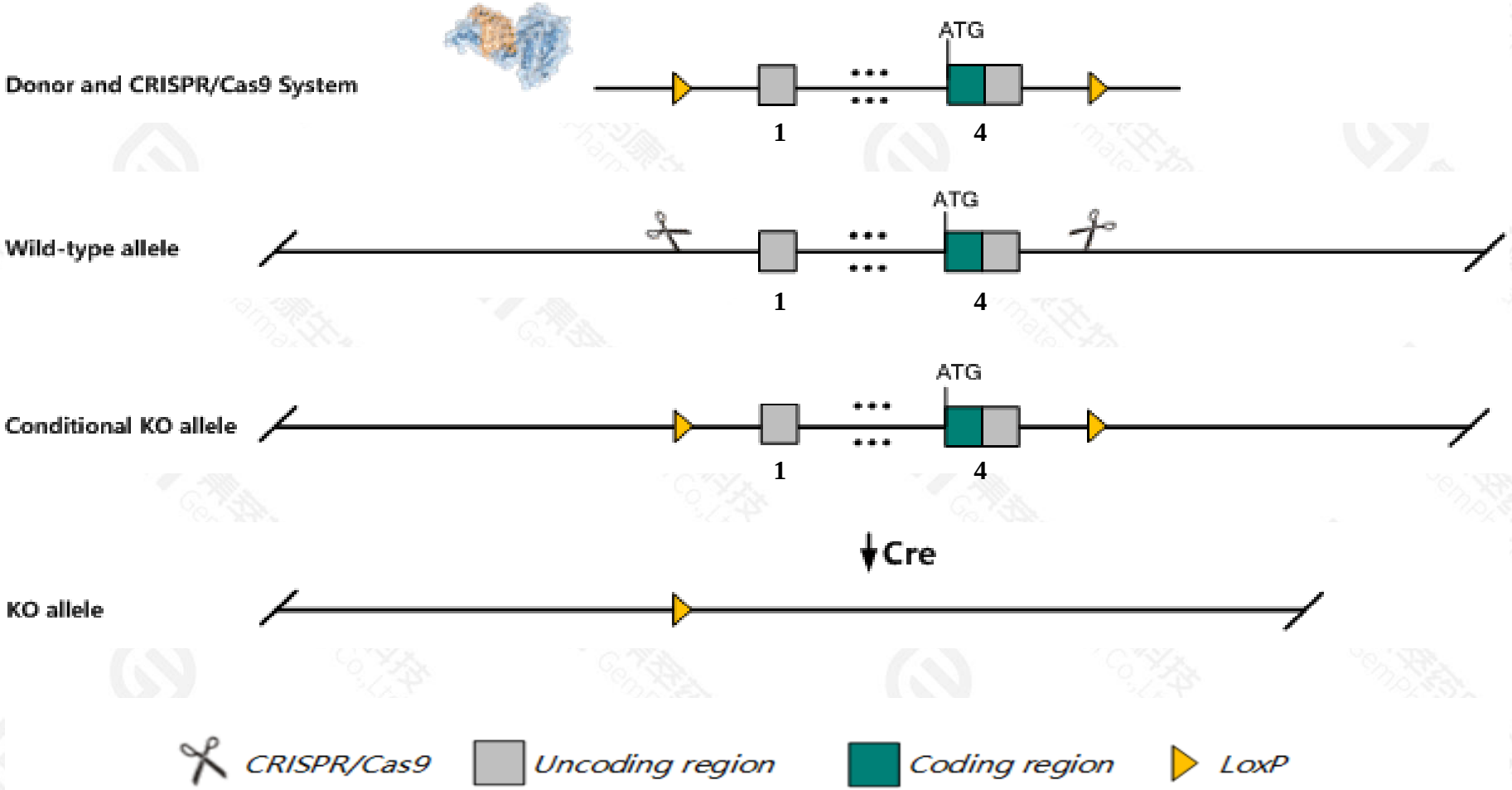
Project Overview

Project Name	***Dusp9***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dusp9* gene. The schematic diagram is as follows:



Technical routes

➢ The *Dusp9* gene has 1 transcript. According to the structure of *Dusp9* gene, exon1-exon4 of *Dusp9-201*(ENSMUST00000019701.9) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Dusp9* gene. The brief process is as follows: CRISPR/Cas9 system 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 will be 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,hemizygous null male and heterozygous null female mice display embryonic lethality during organogenesis with abnormal placental labyrinth morphology when the allele is maternally inherited. Tetraploid rescue produces viable heterozygous and hemizygous mice.

➢ The *Dusp9* gene is located on the ChrX. 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

Dusp9 dual specificity phosphatase 9 [Mus musculus (house mouse)]

Gene ID: 75590, updated on 2-Mar-2021

Summary

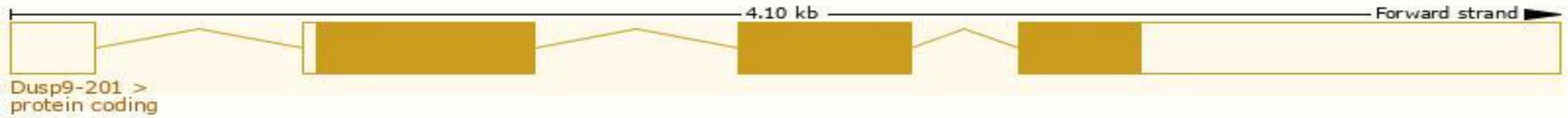
Official Symbol	Dusp9 provided by MGI
Official Full Name	dual specificity phosphatase 9 provided byMGI
Primary source	MGI:MGI:2387107
See related	Ensembl:ENSMUSG00000031383
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Dusp4, Mpk, Mpk4, Pys, Pyst3
Expression	Biased expression in placenta adult (RPKM 192.2), liver E14.5 (RPKM 17.2) and 1 other tissueSee more
Orthologs	human all

Transcript information（Ensembl）

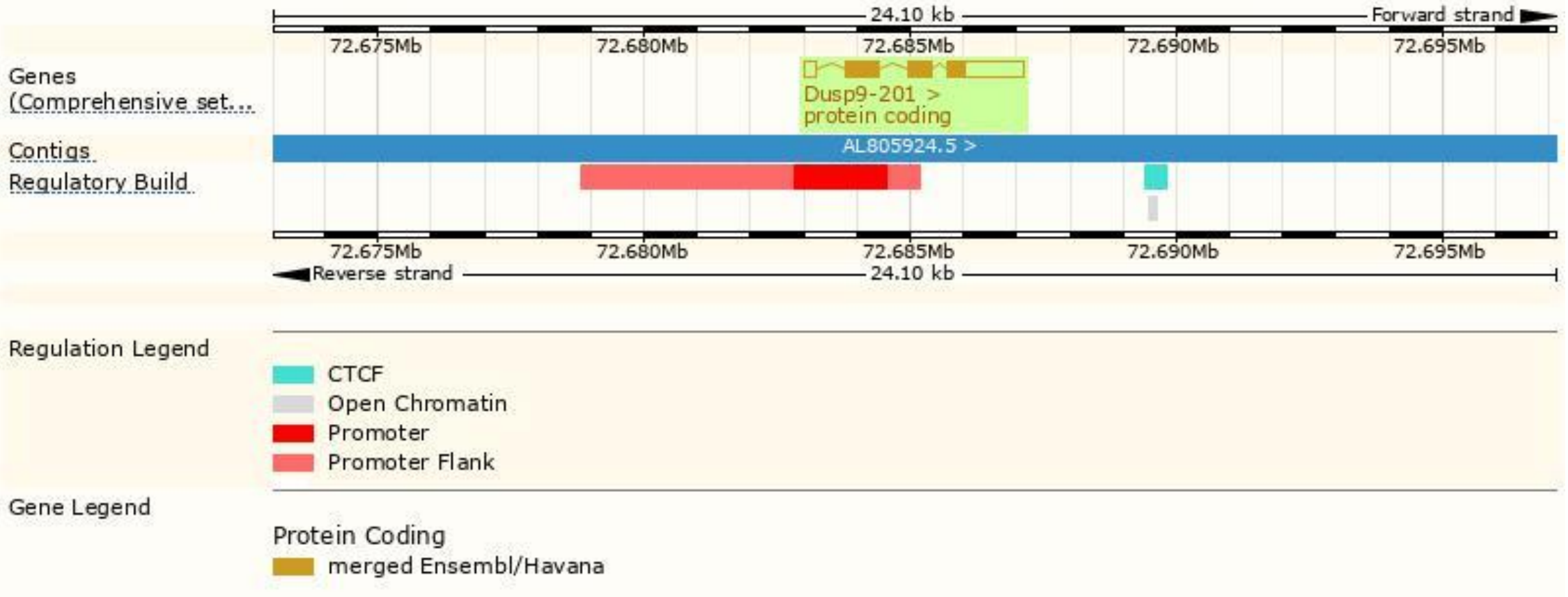
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dusp9-201	ENSMUST00000019701.9	2722	452aa	Protein coding	CCDS30206		TSL:1 , GENCODE basic , APPRIS P1 ,

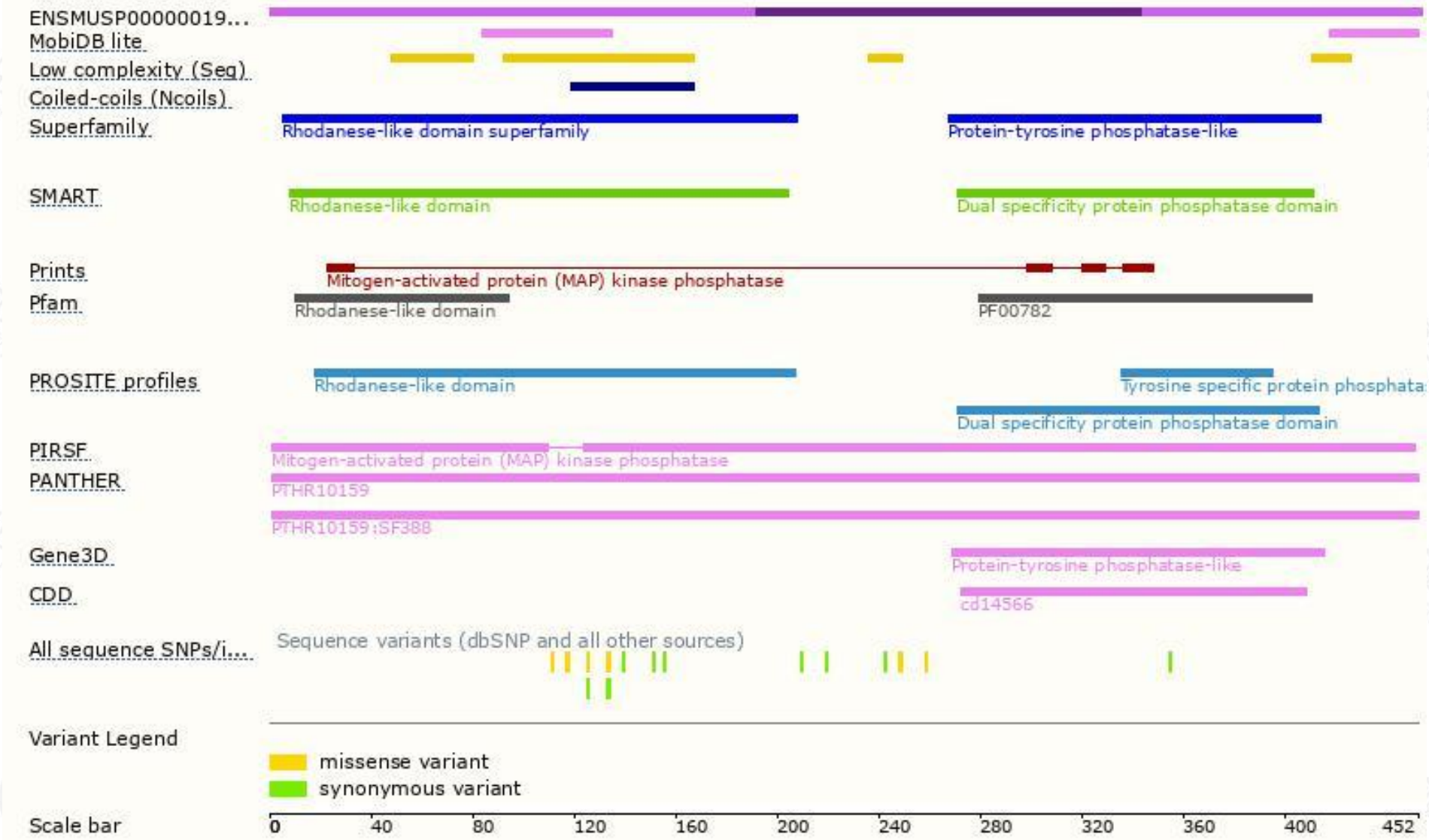
The strategy is based on the design of *Dusp9-201* transcript,the transcription is shown below:



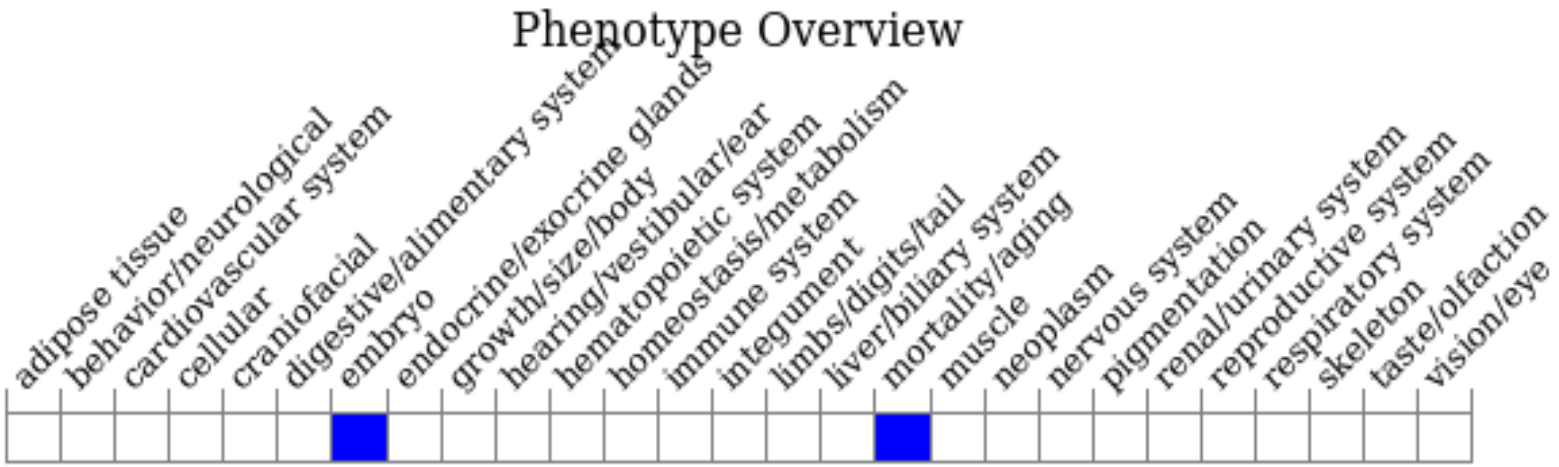
Genomic location distribution



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,hemizygous null male and heterozygous null female mice display embryonic lethality during organogenesis with abnormal placental labyrinth morphology when the allele is maternally inherited. Tetraploid rescue produces viable heterozygous and hemizygous mice.

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

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