

Znrf3 Cas9-CKO Strategy

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Project Overview

Project Name

Znrf3

Project type

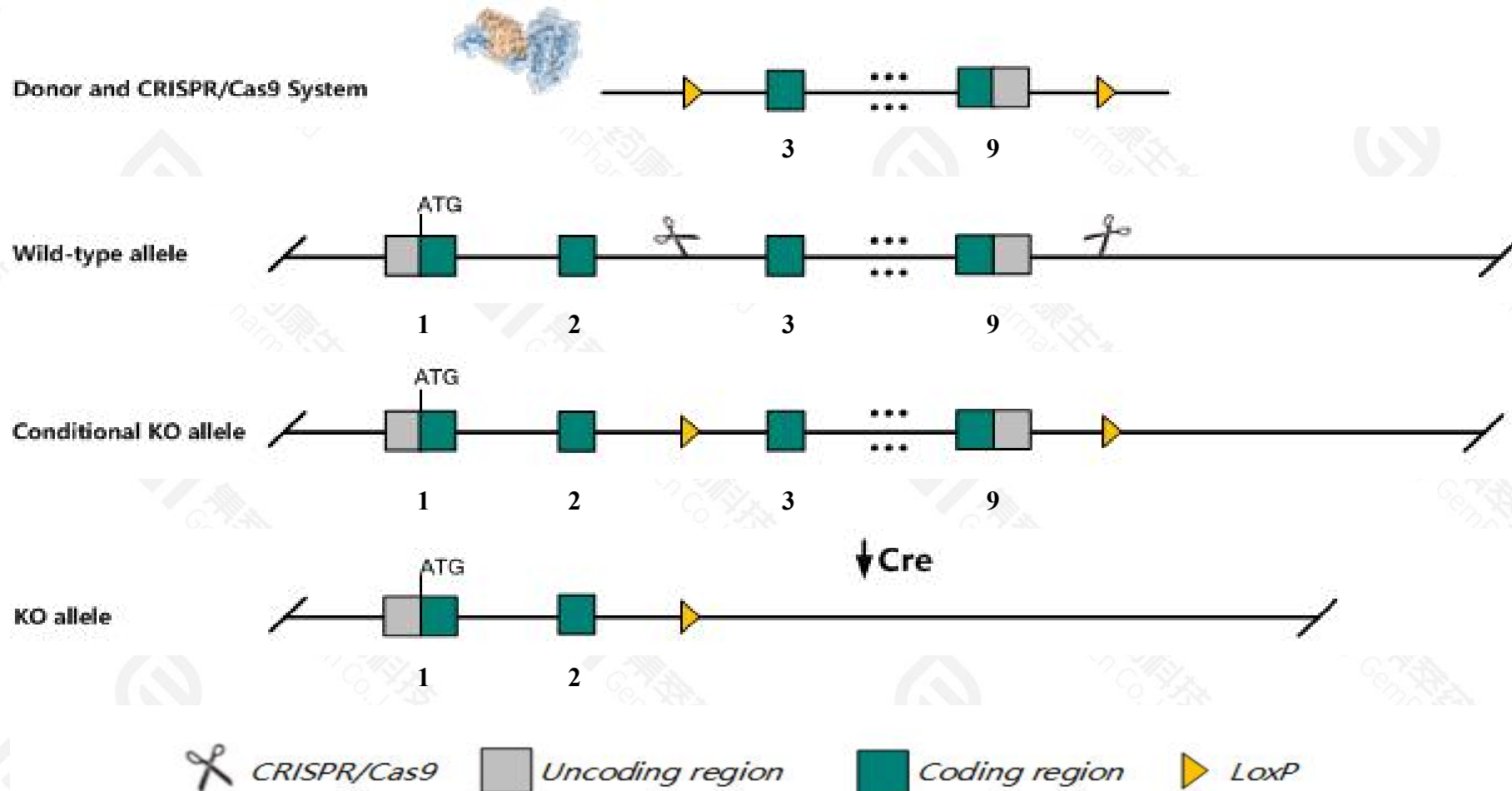
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Znrf3* gene. The schematic diagram is as follows:



- The *Znrf3* gene has 3 transcripts. According to the structure of *Znrf3* gene, exon3-exon9 of *Znrf3*-201(ENSMUST00000109867.8) transcript is recommended as the knockout region. The region contains most 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 *Znrf3* 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.

- According to the existing MGI data, mice homozygous for a targeted allele exhibit complete lethality around birth, aphakia, abnormal lens development and defective neural tube closure in some mice.
- The *Znrf3* gene is located on the Chr11. 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)

Znrf3 zinc and ring finger 3 [Mus musculus (house mouse)]

Gene ID: 407821, updated on 25-Sep-2020

Summary



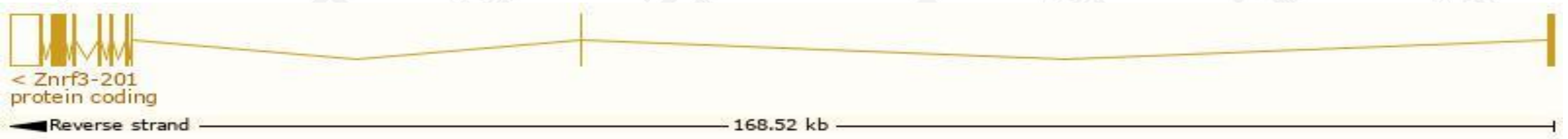
Official Symbol	Znrf3 provided by MGI
Official Full Name	zinc and ring finger 3 provided by MGI
Primary source	MGI:MGI:3039616
See related	Ensembl:ENSMUSG00000041961
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm1167
Expression	Ubiquitous expression in adrenal adult (RPKM 4.8), thymus adult (RPKM 4.5) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

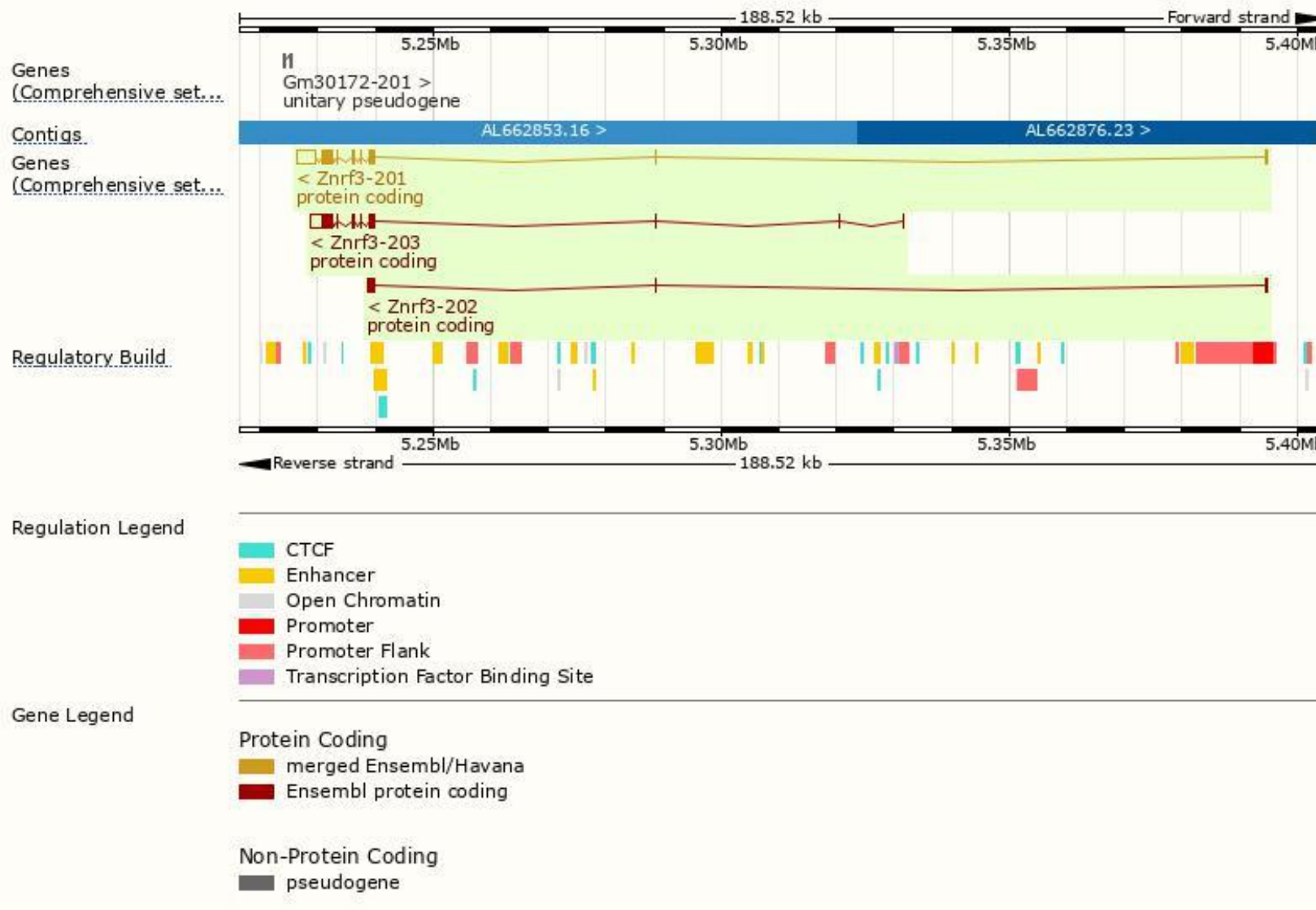
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Znrf3-201	ENSMUST00000109867.8	6311	913aa	Protein coding	CCDS36102		TSL:5 , GENCODE basic , APPRIS P1 ,
Znrf3-203	ENSMUST00000172492.8	4926	809aa	Protein coding	CCDS70134		TSL:1 , GENCODE basic ,
Znrf3-202	ENSMUST00000143746.3	1022	239aa	Protein coding	-		TSL:1 , GENCODE basic ,

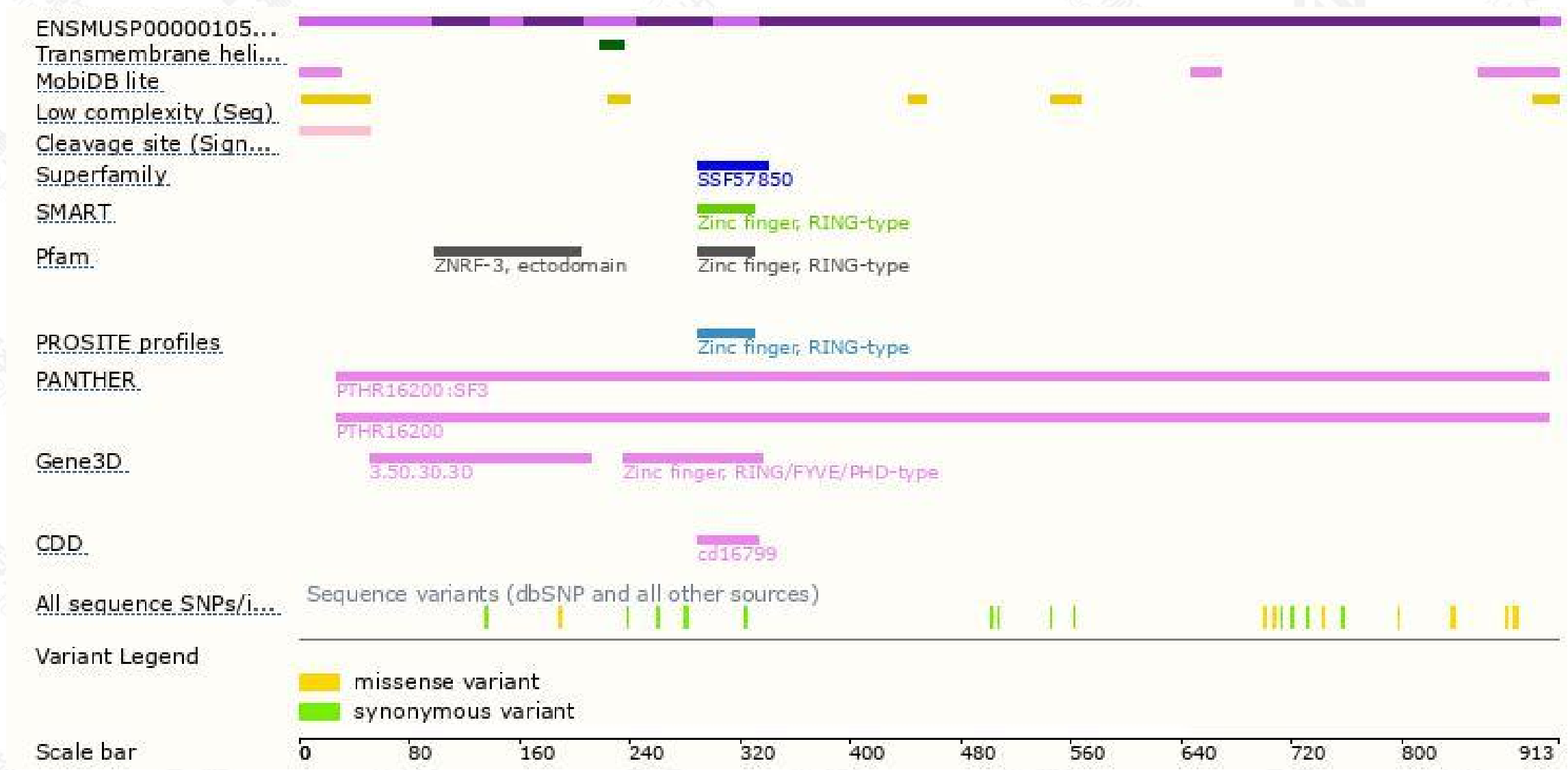
The strategy is based on the design of *Znrf3-201* transcript,the transcription is shown below:



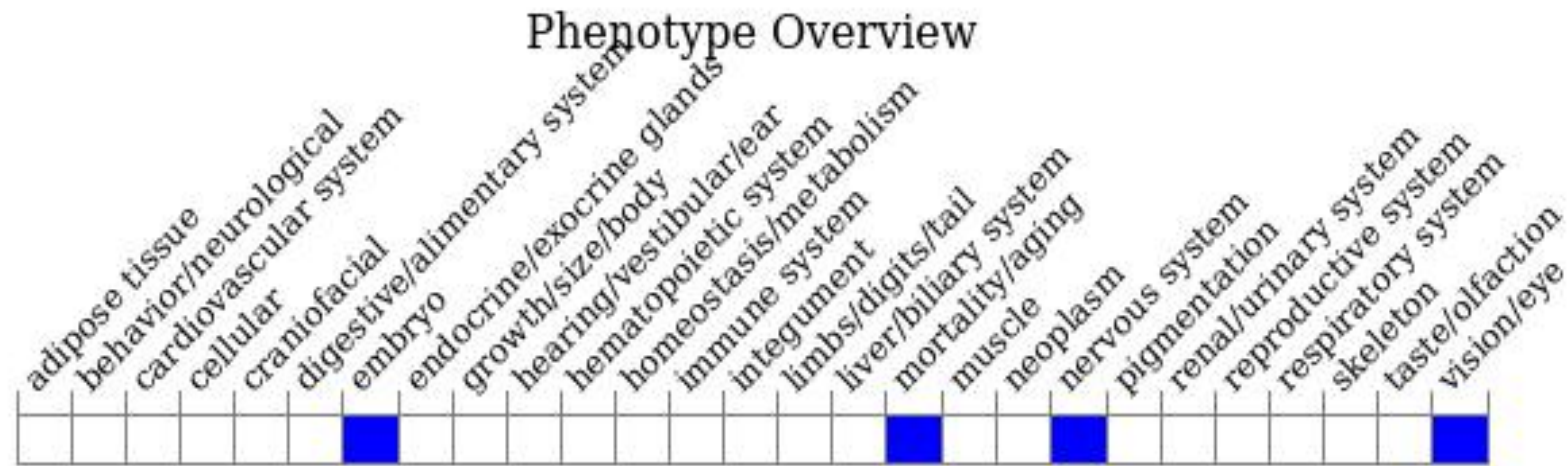
Genomic location distribution



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 targeted allele exhibit complete lethality around birth, aphakia, abnormal lens development and defective enural tube closure in some mice.

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