Dpp9 Cas9-CKO Strategy

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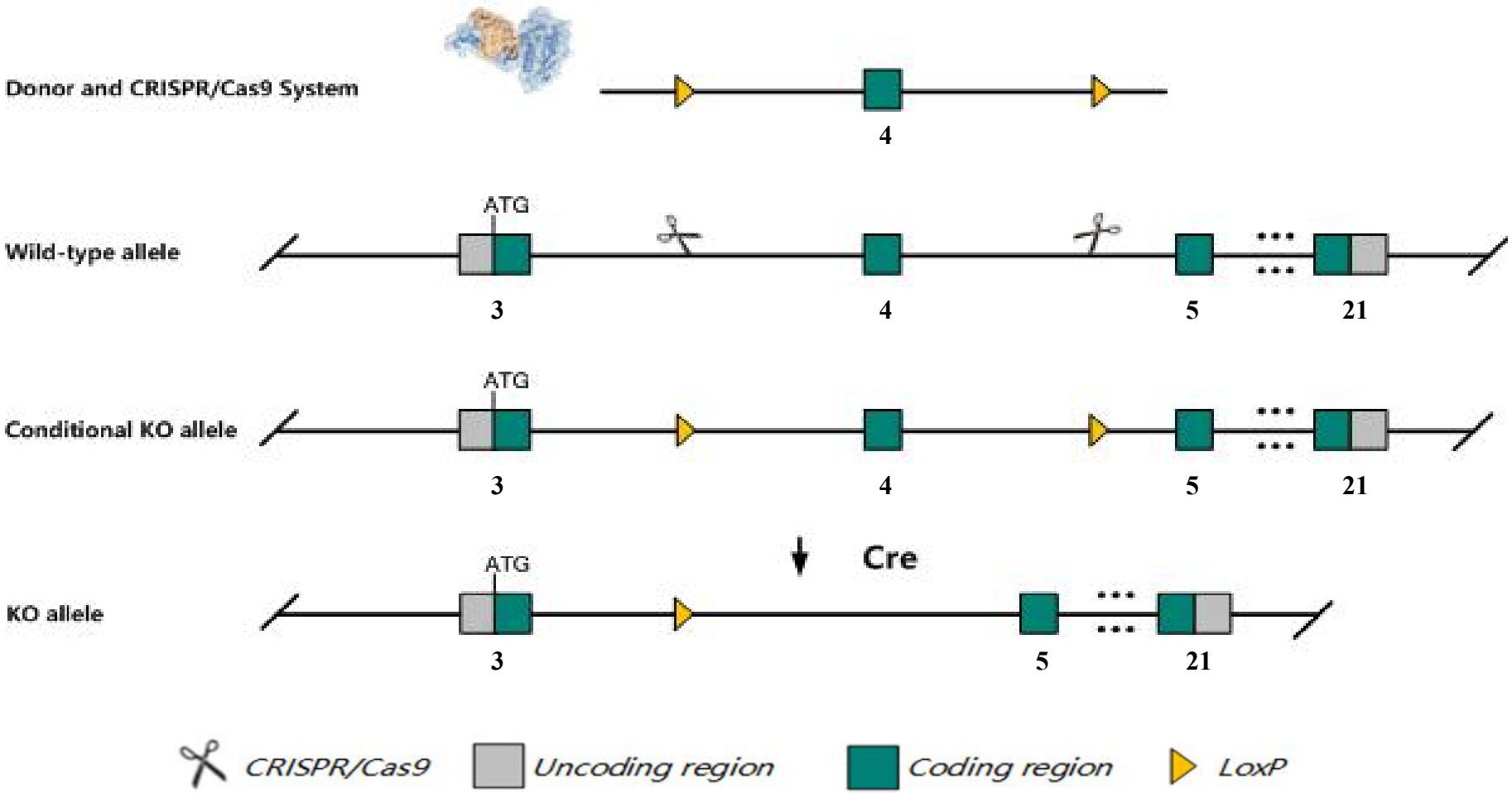
Project Overview

Project Name	***Dpp9***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dpp9* gene. The schematic diagram is as follows:



Technical routes

The *Dpp9* gene has 3 transcripts. According to the structure of *Dpp9* gene, exon4 of *Dpp9-201*(ENSMUST00000038794.5) transcript is recommended as the knockout region.The region contains 113bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Dpp9* 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,homozygous mutants display partial neonatal lethality and complete lethality at preweaning stages with defects suckling due to undeveveloped tongue muscle.

The *Dpp9* gene is located on the Chr17. 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

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Dpp9 dipeptidylpeptidase 9 [Mus musculus (house mouse)]

Gene ID: 224897, updated on 13-Mar-2020

Summary

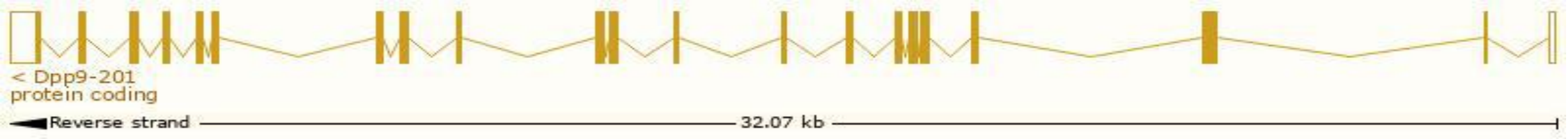
Official Symbol	Dpp9 provided by MGI
Official Full Name	dipeptidylpeptidase 9 provided byMGI
Primary source	MGI:MGI:2443967
See related	Ensembl:ENSMUSG00000001229
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	6430584G11Rik, A330078I11, DPP IX, DPRP2
Expression	Ubiquitous expression in lung adult (RPKM 24.7), thymus adult (RPKM 22.1) and 28 other tissuesSee more
Orthologs	human all

Transcript information Ensembl

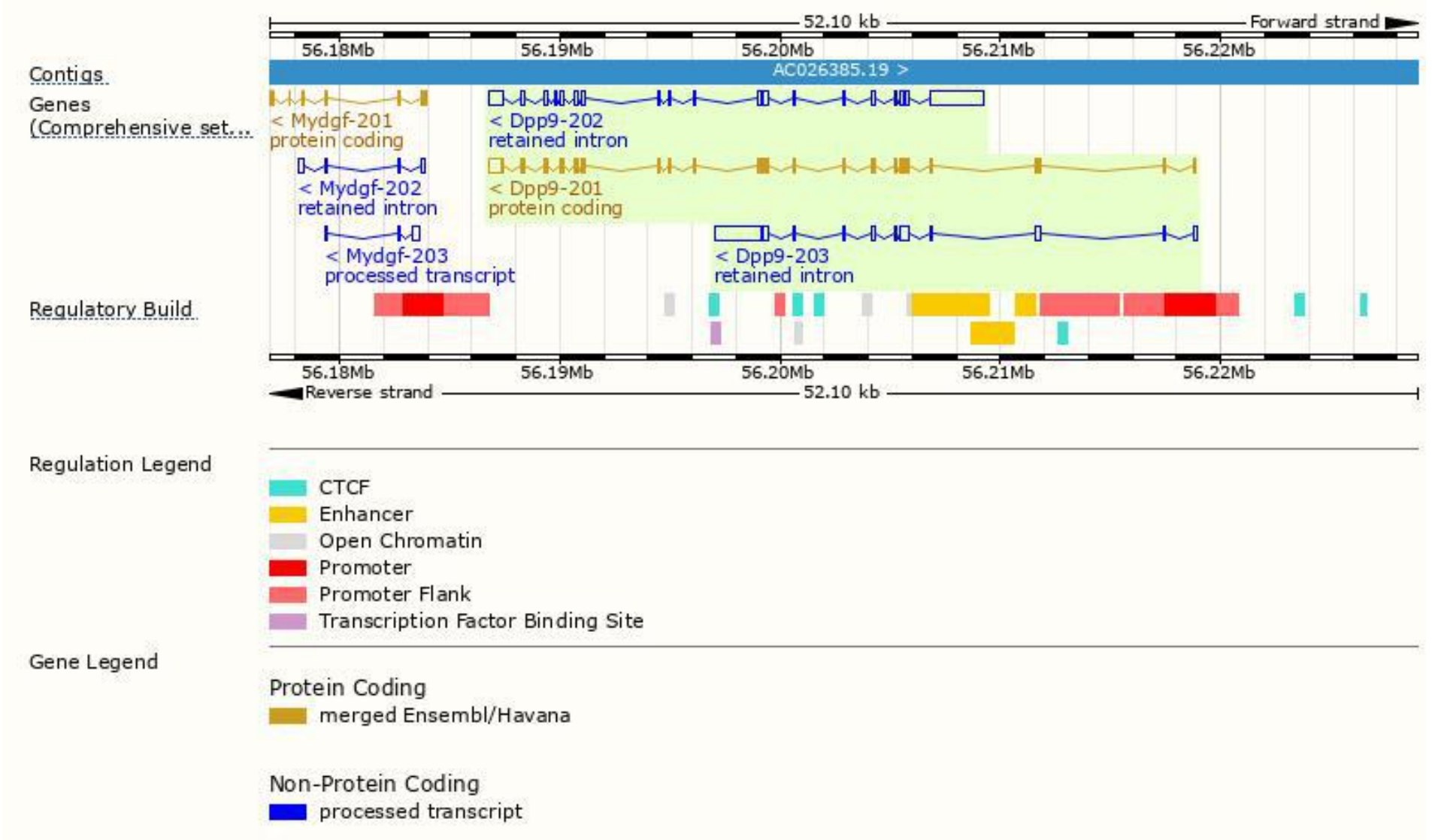
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dpp9-201	ENSMUST00000038794.5	3374	862aa	Protein coding	CCDS37663	Q8BVG4	TSL:1 GENCODE basic APPRIS P1
Dpp9-202	ENSMUST00000223616.1	5366	No protein	Retained intron	-	-	
Dpp9-203	ENSMUST00000233586.1	3720	No protein	Retained intron	-	-	

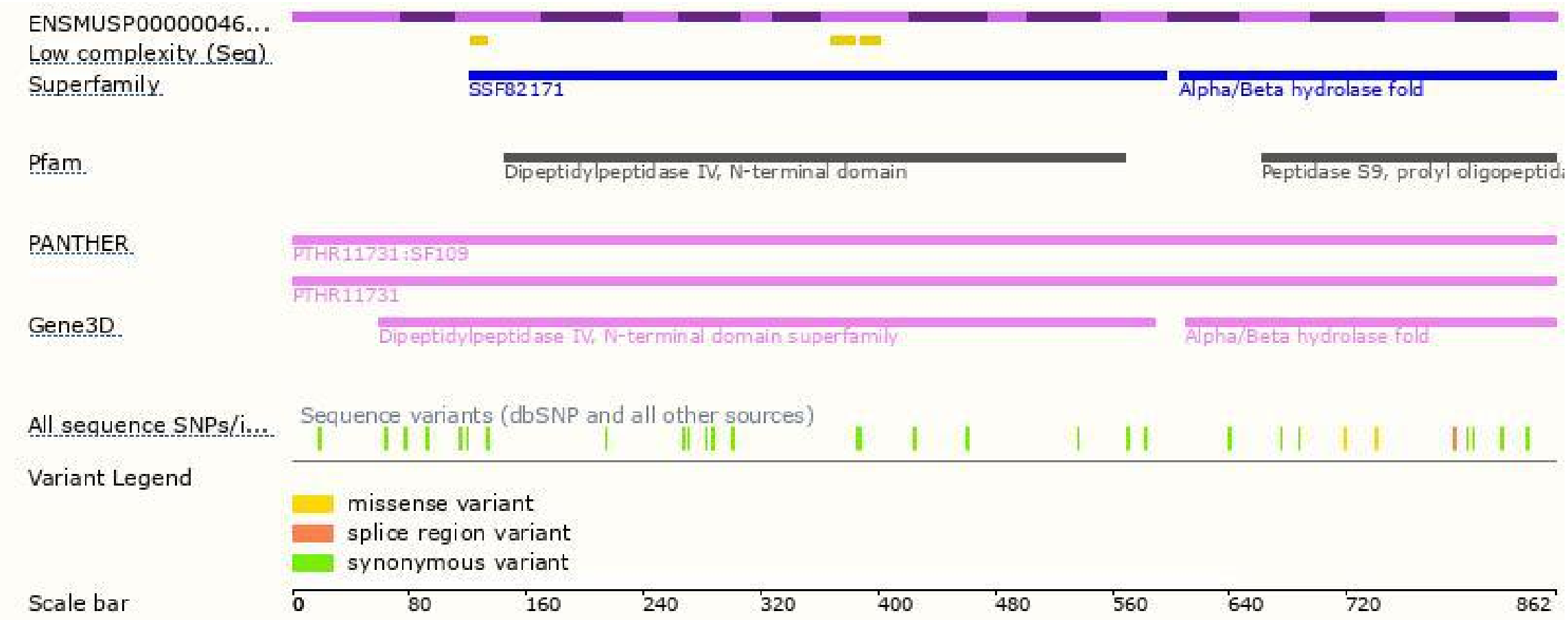
The strategy is based on the design of *Dpp9-201* transcript,the transcription is shown below:



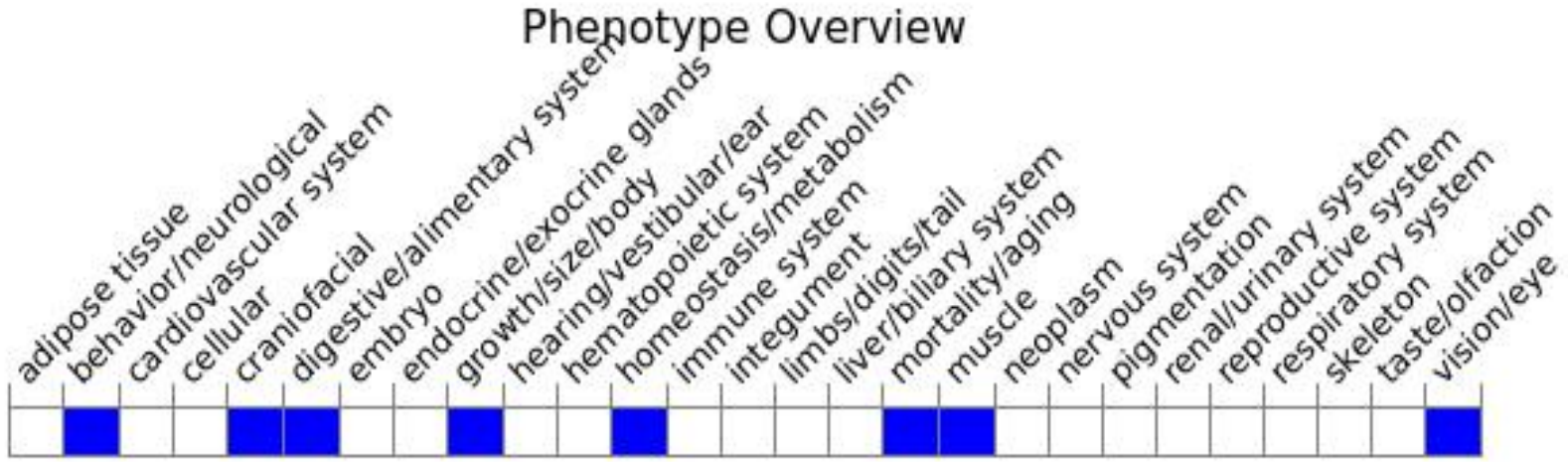
Genomic location distribution



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 mutants display partial neonatal lethality and complete lethality at preweaning stages with defects suckling due to undeveveloped tongue muscle.

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