

Ppp1r42 Cas9-CKO Strategy

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Project Overview

Project Name

Ppp1r42

Project type

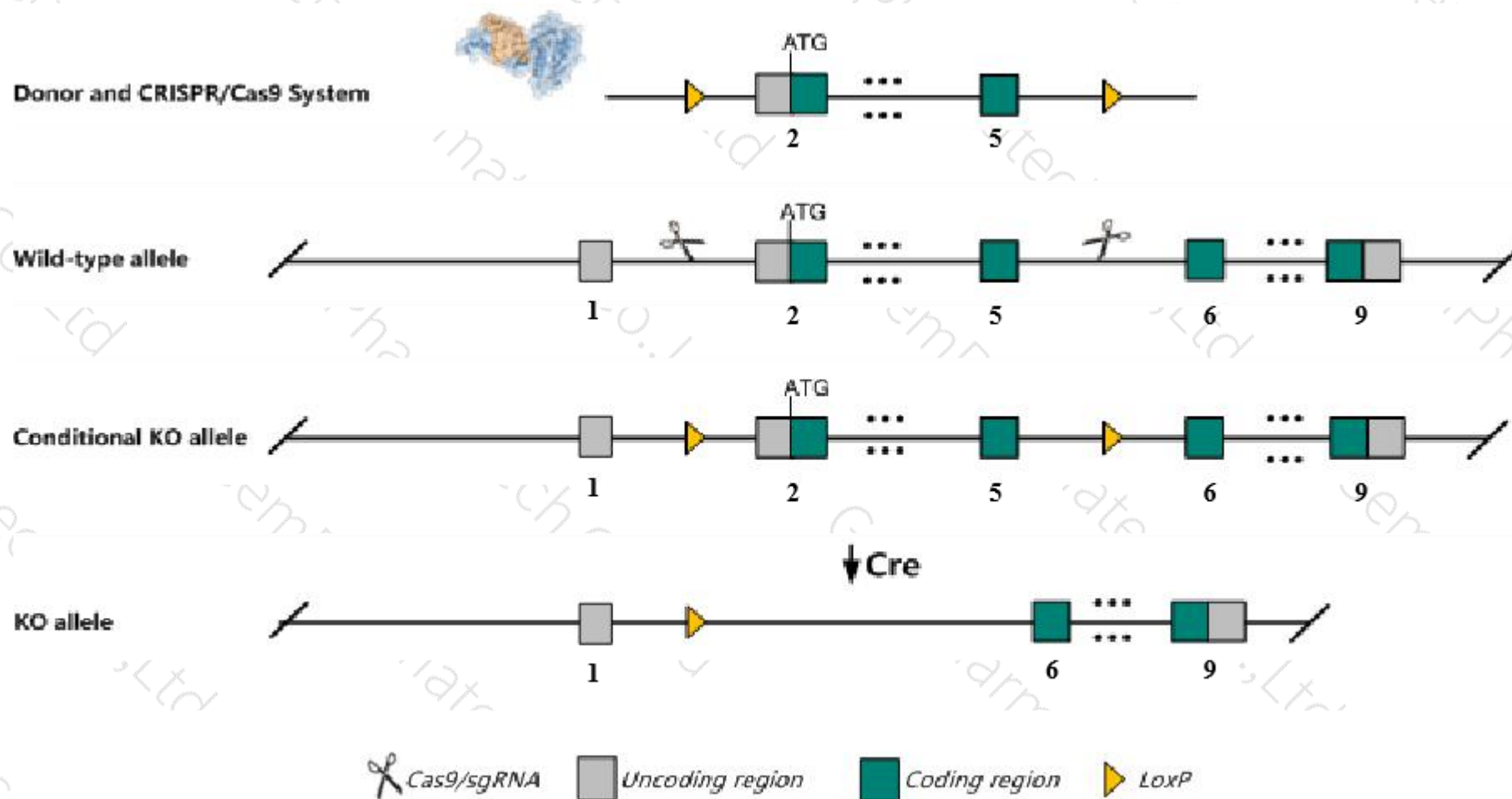
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ppp1r42* gene. The schematic diagram is as follows:



- The *Ppp1r42* gene has 6 transcripts. According to the structure of *Ppp1r42* gene, exon2-exon5 of *Ppp1r42*-201(ENSMUST00000027049.9) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ppp1r42* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector 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.

- Transcript *Ppp1r42*-204 may not be affected.
- The *Ppp1r42* gene is located on the Chr1. 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)

Ppp1r42 protein phosphatase 1, regulatory subunit 42 [*Mus musculus* (house mouse)]

Gene ID: 69312, updated on 25-Sep-2020

Summary

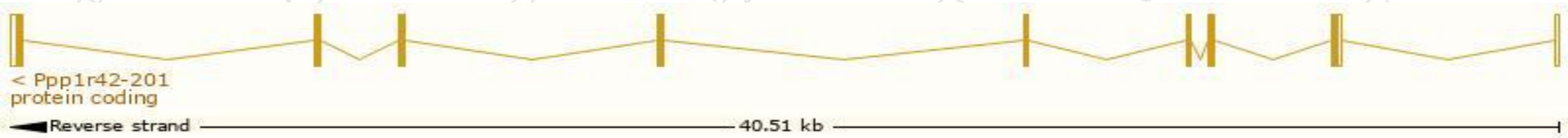
Official Symbol	Ppp1r42 provided by MGI
Official Full Name	protein phosphatase 1, regulatory subunit 42 provided by MGI
Primary source	MGI:MGI:1921138
See related	Ensembl:ENSMUSG00000025916
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Lrr; TLRR; Lrrc67; 1700011J18Rik; 4930418G15Rik
Expression	Biased expression in testis adult (RPKM 1.4), liver E18 (RPKM 0.1) and 1 other tissue See more
Orthologs	human all

Transcript information (Ensembl)

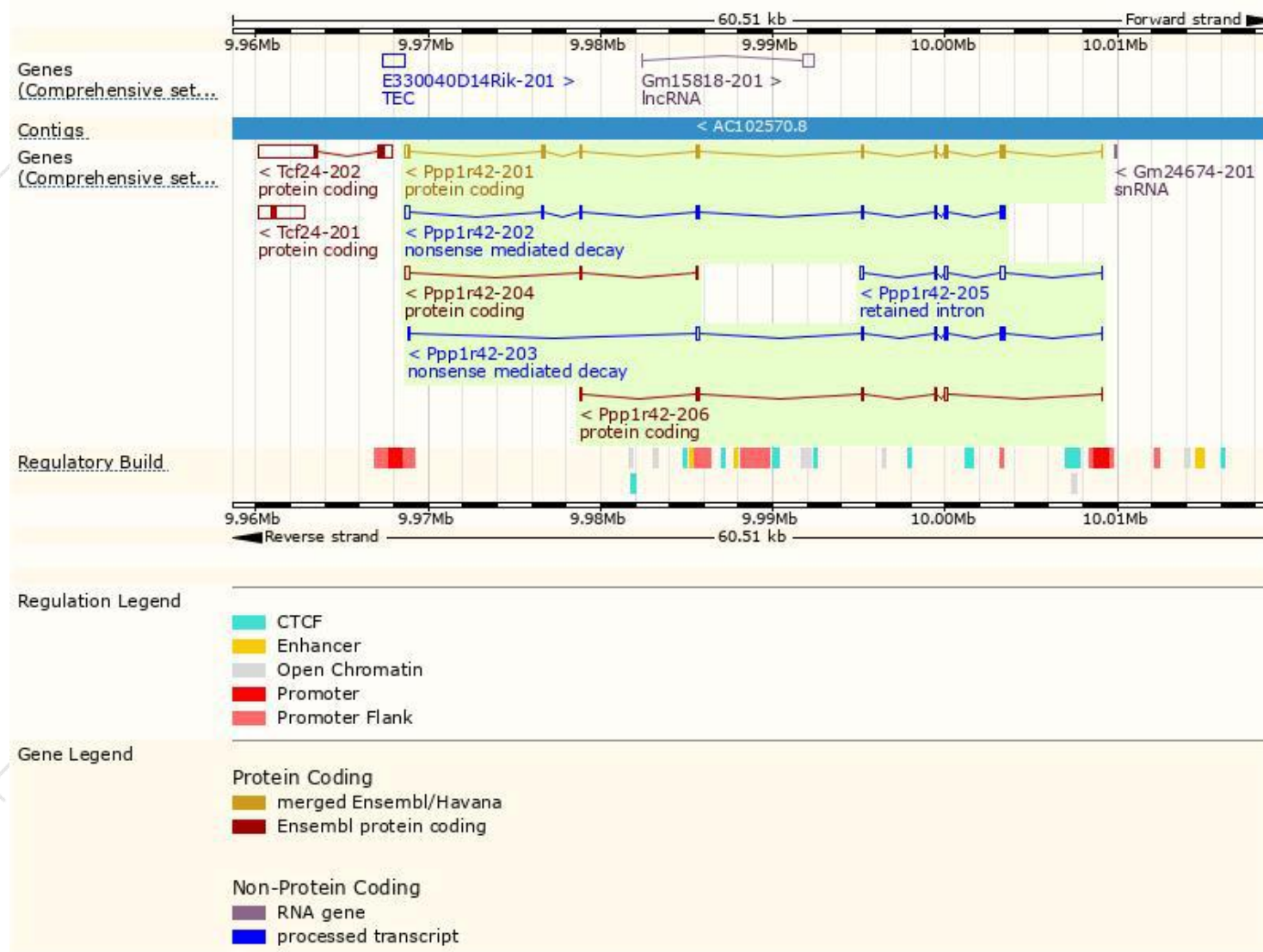
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ppp1r42-201	ENSMUST00000027049.9	1425	357aa	Protein coding	CCDS14817	Q8R1Z4	TSL:1 GENCODE basic APPRIS P1
Ppp1r42-206	ENSMUST00000176398.7	732	87aa	Protein coding	-	H3BK71	CDS 3' incomplete TSL:5
Ppp1r42-204	ENSMUST00000147000.8	541	82aa	Protein coding	-	H3BKX2	CDS 5' incomplete TSL:2
Ppp1r42-202	ENSMUST00000124874.7	1313	269aa	Nonsense mediated decay	-	E9PUJ7	TSL:5
Ppp1r42-203	ENSMUST00000130102.7	941	145aa	Nonsense mediated decay	-	Q8R1Z4	TSL:1
Ppp1r42-205	ENSMUST00000155163.1	784	No protein	Retained intron	-	-	TSL:1

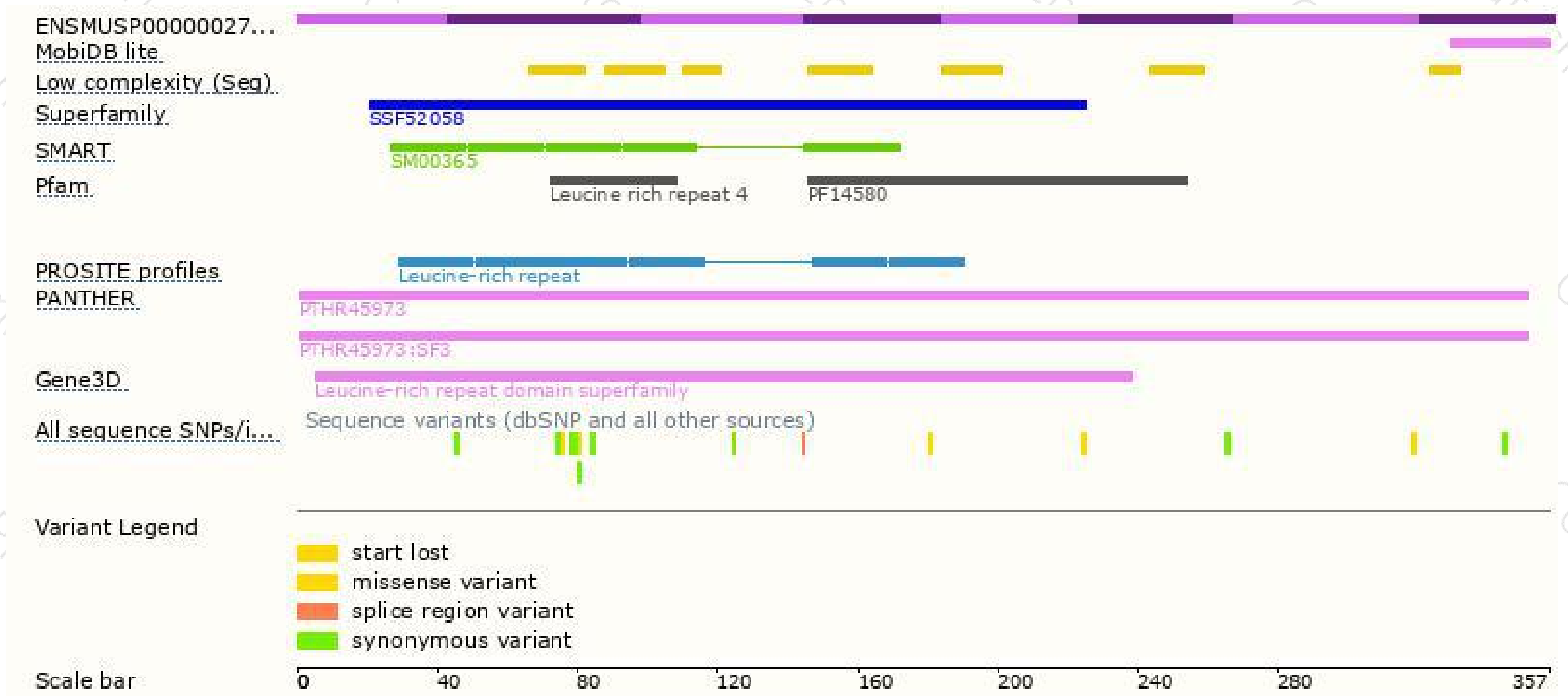
The strategy is based on the design of *Ppp1r42-201* transcript,the transcription is shown below:



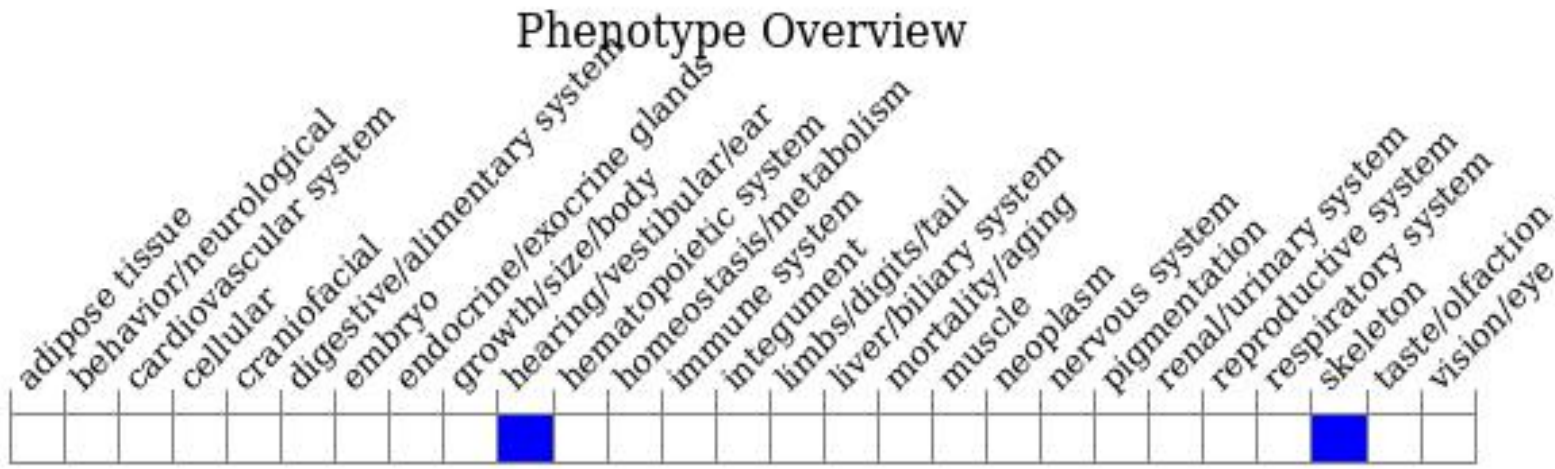
Genomic location distribution



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/>).

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

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