

Fermt2 Cas9-CKO Strategy

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Project Overview

Project Name

Fermt2

Project type

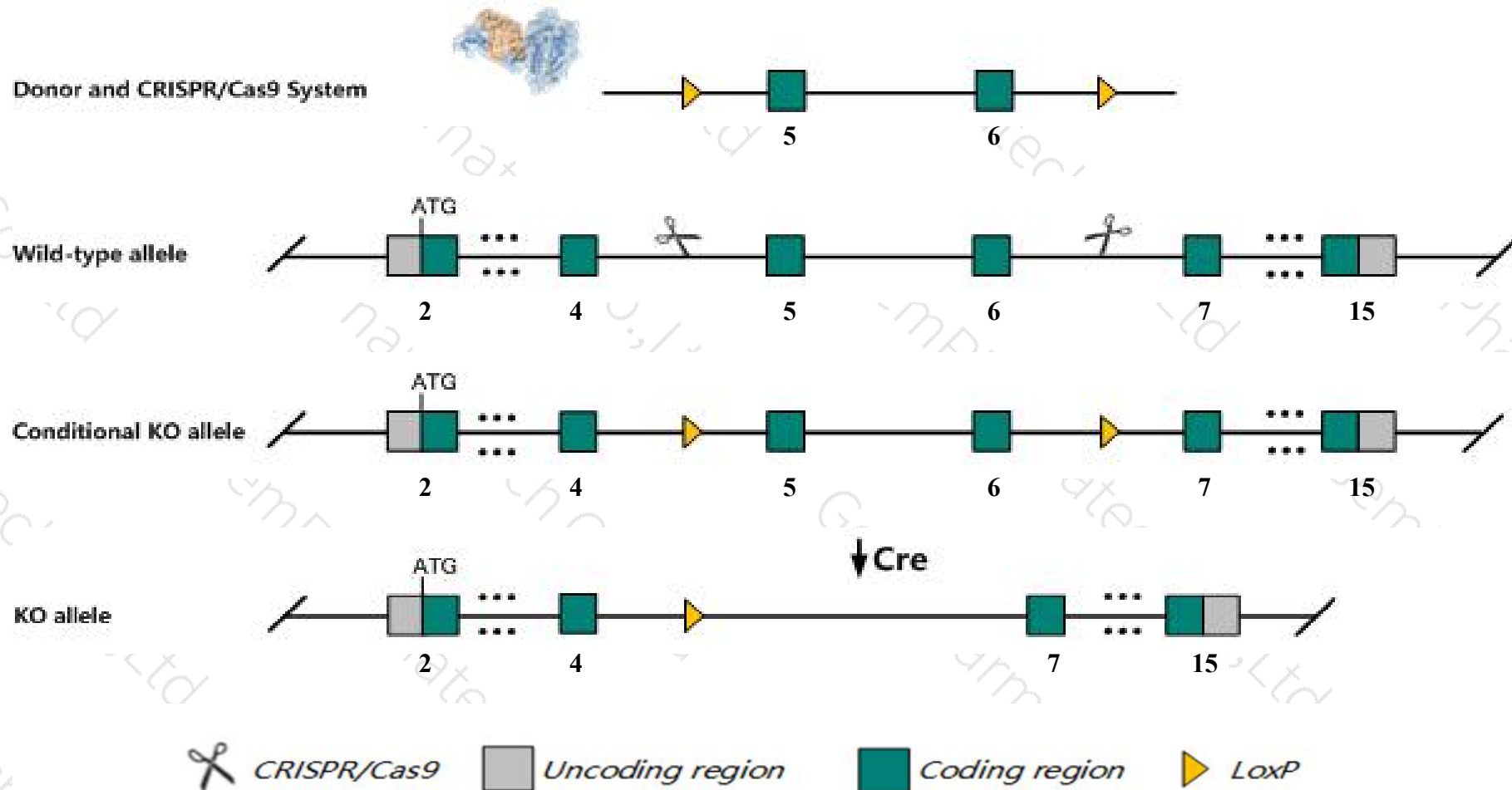
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fermt2* gene. The schematic diagram is as follows:



Technical routes

- The *Fermt2* gene has 6 transcripts. According to the structure of *Fermt2* gene, exon5-exon6 of *Fermt2*-201 (ENSMUST00000045905.13) transcript is recommended as the knockout region. The region contains 329bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fermt2* 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 mice are embryonic lethal at or before e7.5.
- The *Fermt2* gene is located on the Chr14. 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)

Fermt2 fermitin family member 2 [Mus musculus (house mouse)]

Gene ID: 218952, updated on 13-Mar-2020

Summary



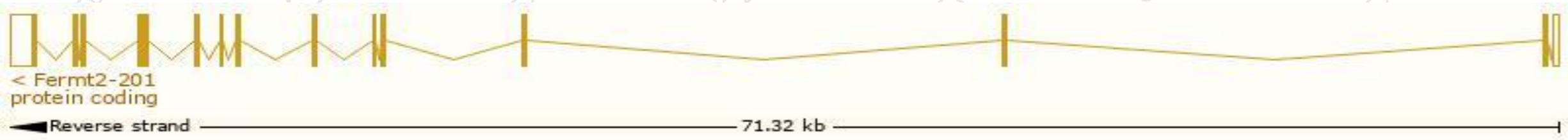
Official Symbol	Fermt2 provided by MGI
Official Full Name	fermitin family member 2 provided by MGI
Primary source	MGI:MGI:2385001
See related	Ensembl:ENSMUSG00000037712
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA960555, Kindlin-2, Mig2, Plekhc1
Expression	Broad expression in bladder adult (RPKM 89.4), placenta adult (RPKM 48.8) and 21 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

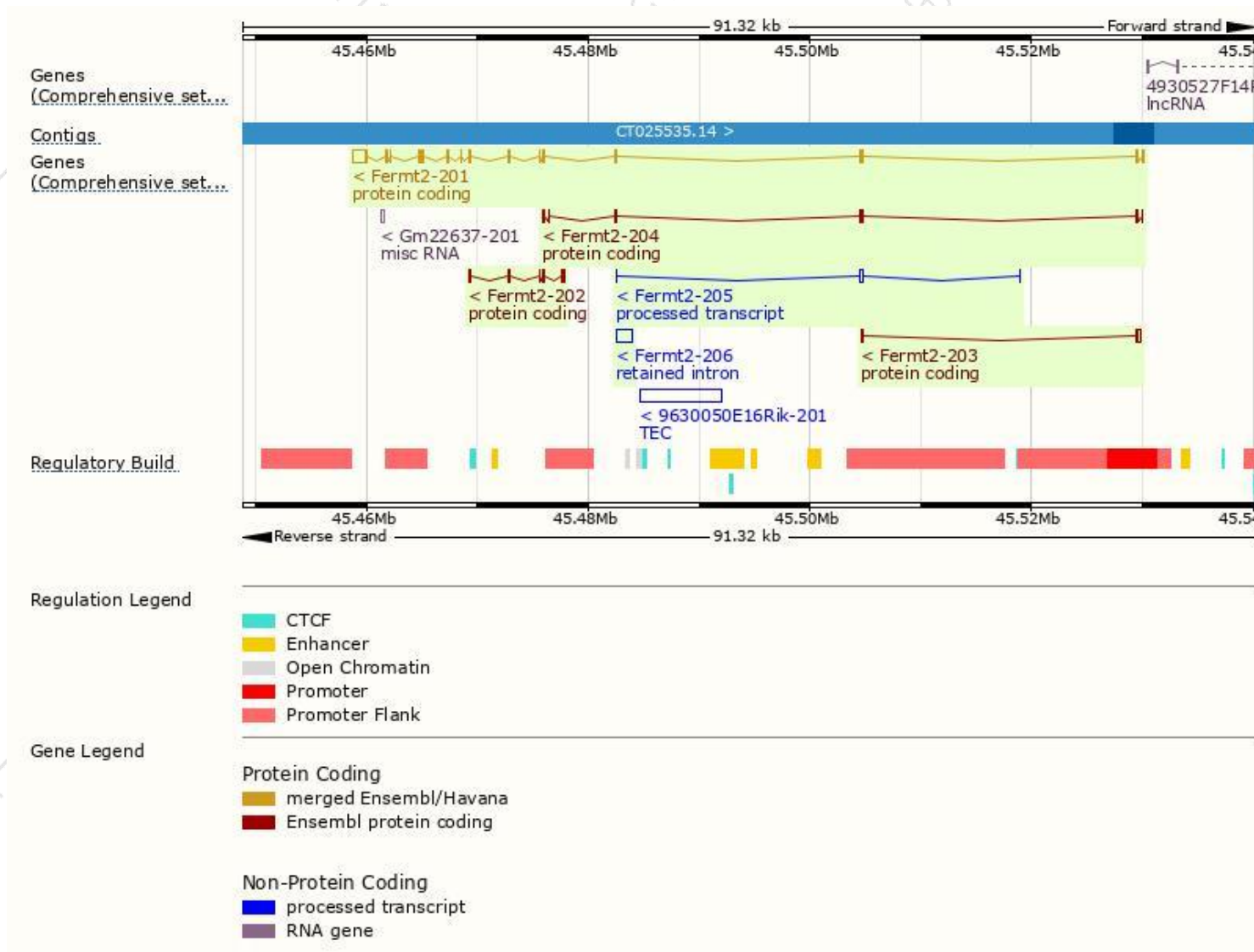
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fermt2-201	ENSMUST00000045905.13	3293	680aa	Protein coding	CCDS26977	Q3TLE2 Q8CIB5	TSL:1 GENCODE basic APPRIS P1
Fermt2-204	ENSMUST00000150660.1	816	258aa	Protein coding	-	A6X940	CDS 3' incomplete TSL:5
Fermt2-202	ENSMUST00000141424.1	720	180aa	Protein coding	-	A6X941	CDS 3' incomplete TSL:3
Fermt2-203	ENSMUST00000149723.1	421	72aa	Protein coding	-	A0A2I3BPQ7	CDS 3' incomplete TSL:2
Fermt2-205	ENSMUST00000228208.1	331	No protein	Processed transcript	-	-	
Fermt2-206	ENSMUST00000228769.1	1453	No protein	Retained intron	-	-	

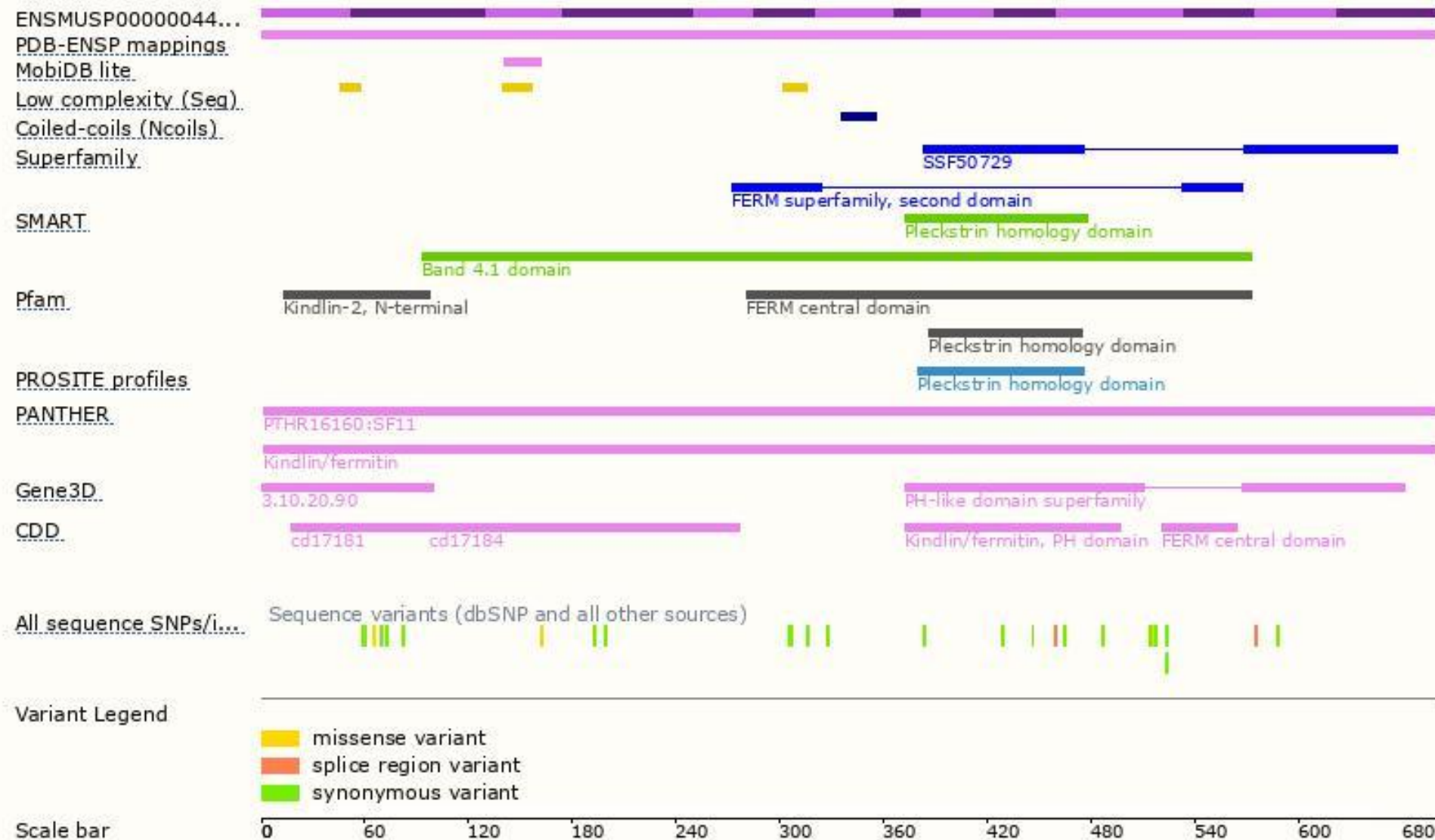
The strategy is based on the design of *Fermt2-201* transcript,the transcription is shown below:



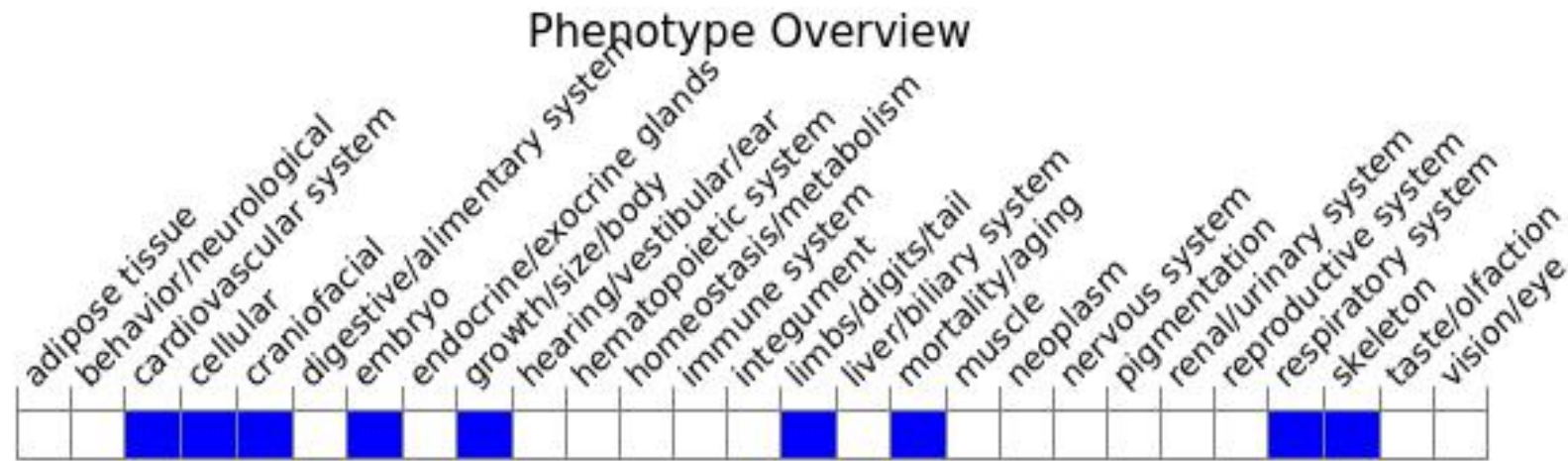
Genomic location distribution



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 embryonic lethal at or before E7.5.

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

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