

Zfp451 Cas9-CKO Strategy

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Project Overview

Project Name

Zfp451

Project type

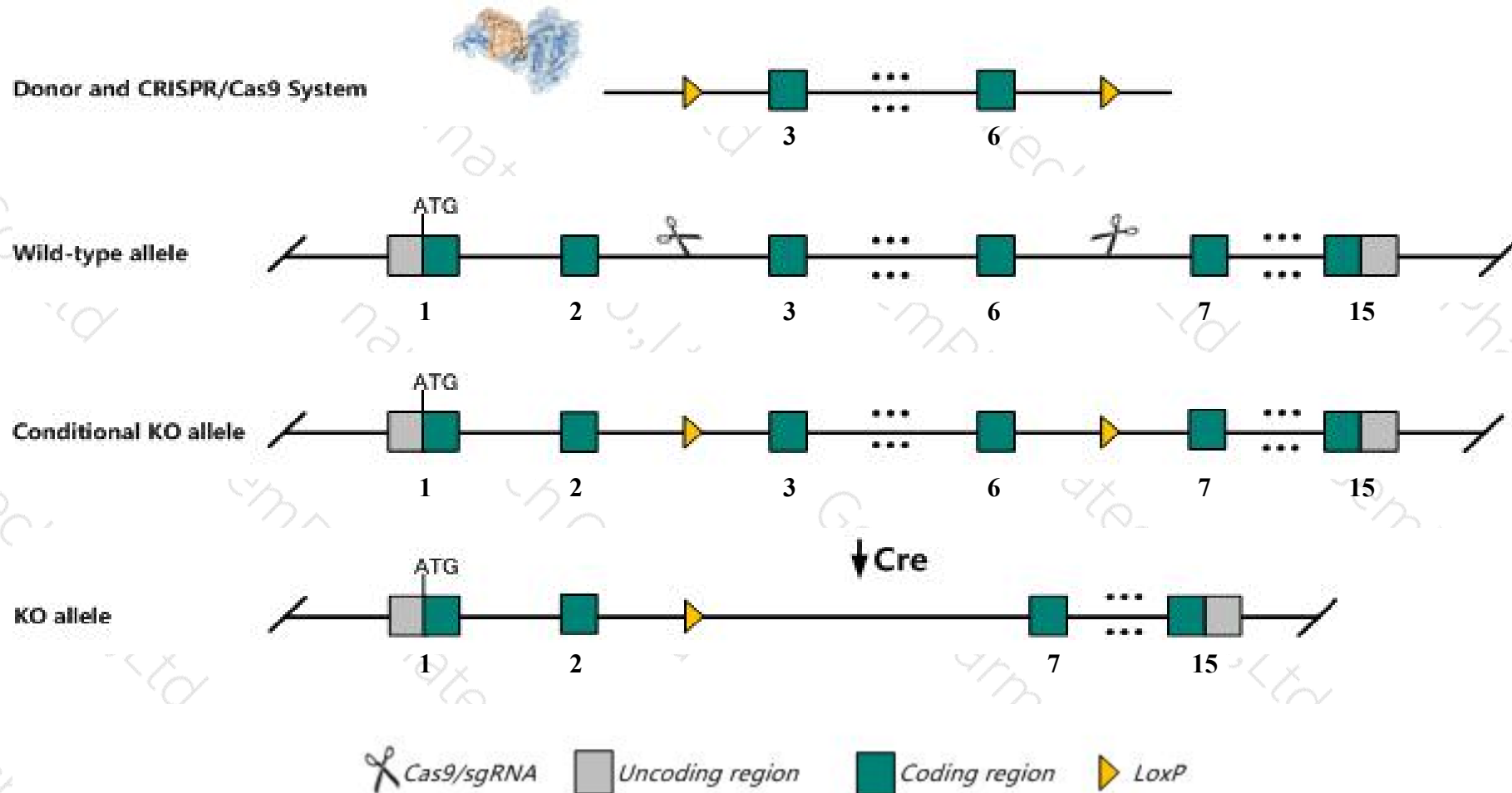
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zfp451* gene. The schematic diagram is as follows:



Technical routes

- The *Zfp451* gene has 9 transcripts. According to the structure of *Zfp451* gene, exon3-exon6 of *Zfp451-201*(ENSMUST00000019861.12) transcript is recommended as the knockout region. The region contains 470bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Zfp451* 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.

- The *Zfp451* 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)

Zfp451 zinc finger protein 451 [Mus musculus (house mouse)]

Gene ID: 98403, updated on 13-Mar-2020

Summary



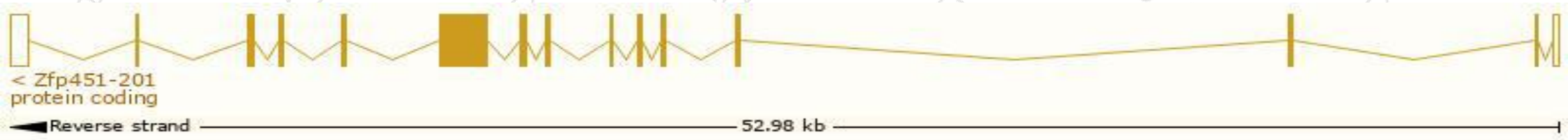
Official Symbol	Zfp451 provided by MGI
Official Full Name	zinc finger protein 451 provided by MGI
Primary source	MGI:MGI:2137896
See related	Ensembl:ENSMUSG00000042197
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930515K21Rik, 4933435G09Rik, AI596398, COASTER, Kiaa0576-hp, Znf451, mKIAA1702
Expression	Biased expression in testis adult (RPKM 22.2), CNS E11.5 (RPKM 5.4) and 12 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

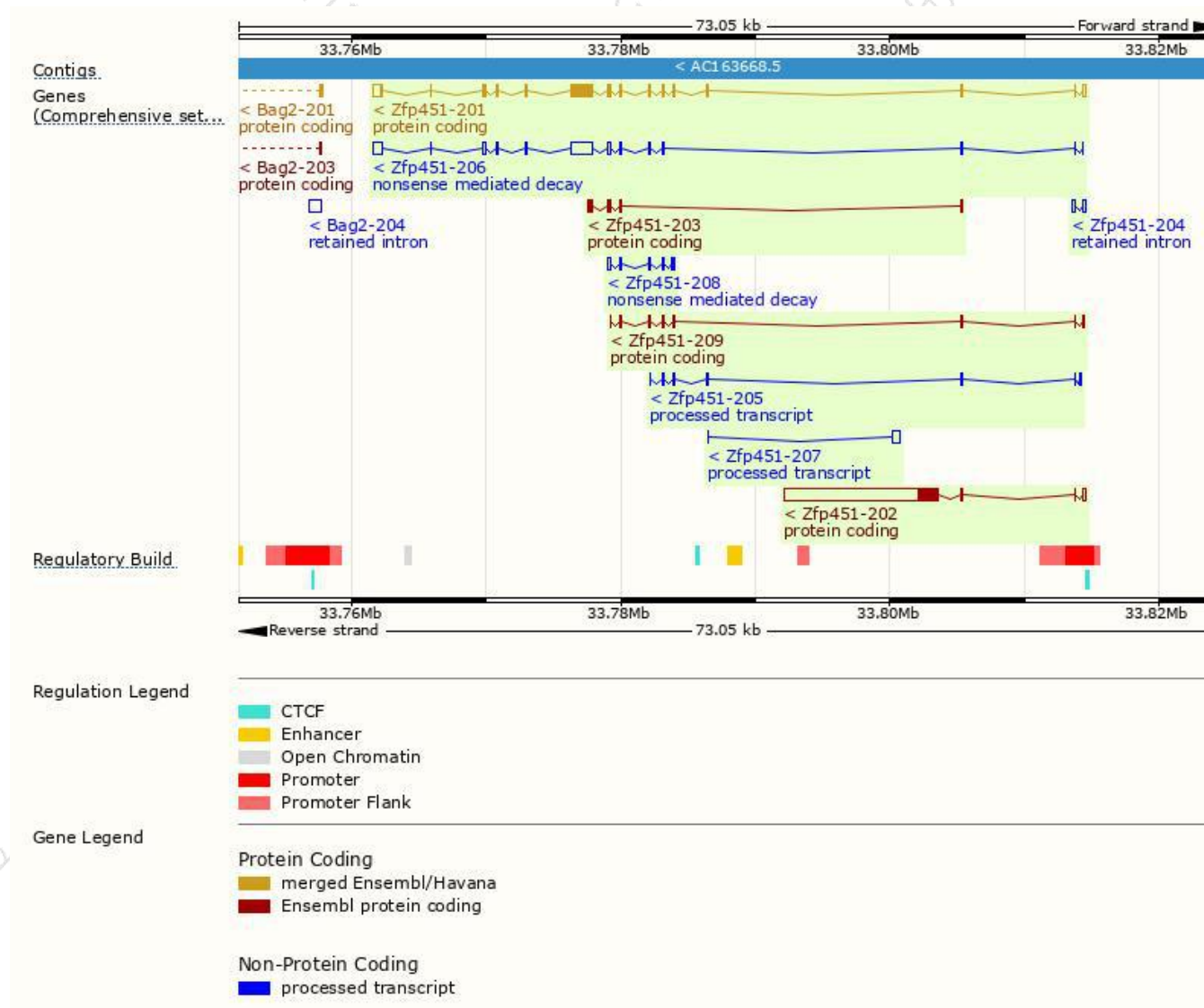
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zfp451-202	ENSMUST00000044455.7	11876	559aa	Protein coding	CCDS69873	Q8VCL4	TSL:1 GENCODE basic APPRIS P1
Zfp451-201	ENSMUST00000019861.12	3958	1056aa	Protein coding	CCDS14865	Q8C0P7	TSL:1 GENCODE basic
Zfp451-209	ENSMUST00000194656.5	801	244aa	Protein coding	-	A0A0A6YX30	CDS 3' incomplete TSL:5
Zfp451-203	ENSMUST00000115167.7	674	224aa	Protein coding	-	E9Q9H6	CDS 5' and 3' incomplete TSL:3
Zfp451-206	ENSMUST00000139143.7	3578	93aa	Nonsense mediated decay	-	M0QWT6	TSL:1
Zfp451-208	ENSMUST00000151055.7	704	31aa	Nonsense mediated decay	-	A0A0A6YWV3	CDS 5' incomplete TSL:3
Zfp451-207	ENSMUST00000140163.1	712	No protein	Processed transcript	-	-	TSL:3
Zfp451-205	ENSMUST00000130376.2	655	No protein	Processed transcript	-	-	TSL:5
Zfp451-204	ENSMUST00000125723.3	542	No protein	Retained intron	-	-	TSL:2

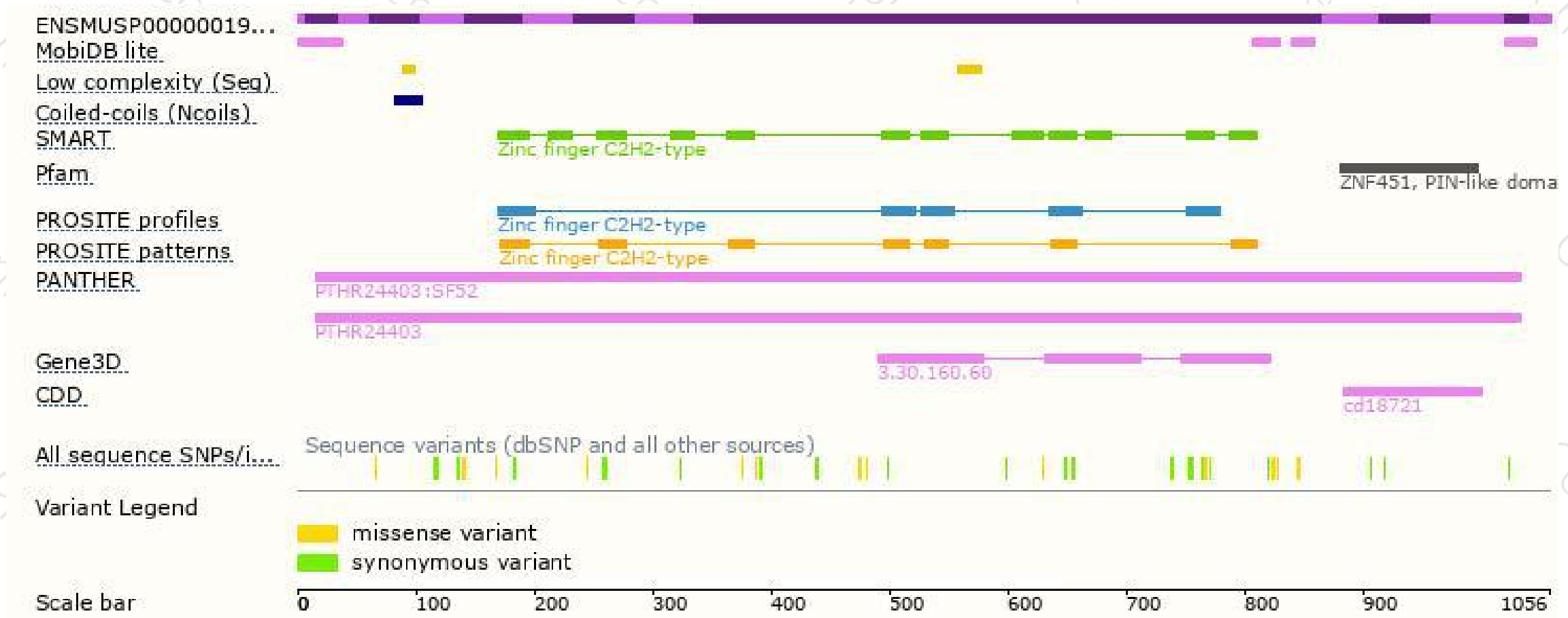
The strategy is based on the design of *Zfp451-201* transcript,the transcription is shown below:



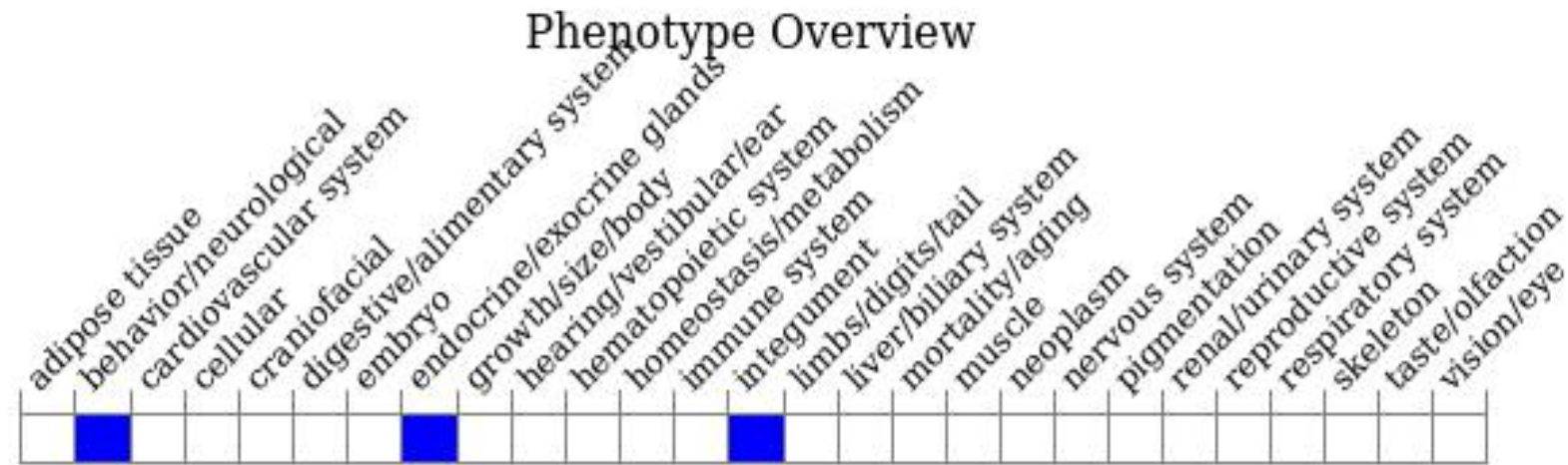
Genomic location distribution



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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