

***Zranb1* Cas9-CKO Strategy**

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Reviewer:

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Project Overview

Project Name

Zranb1

Project type

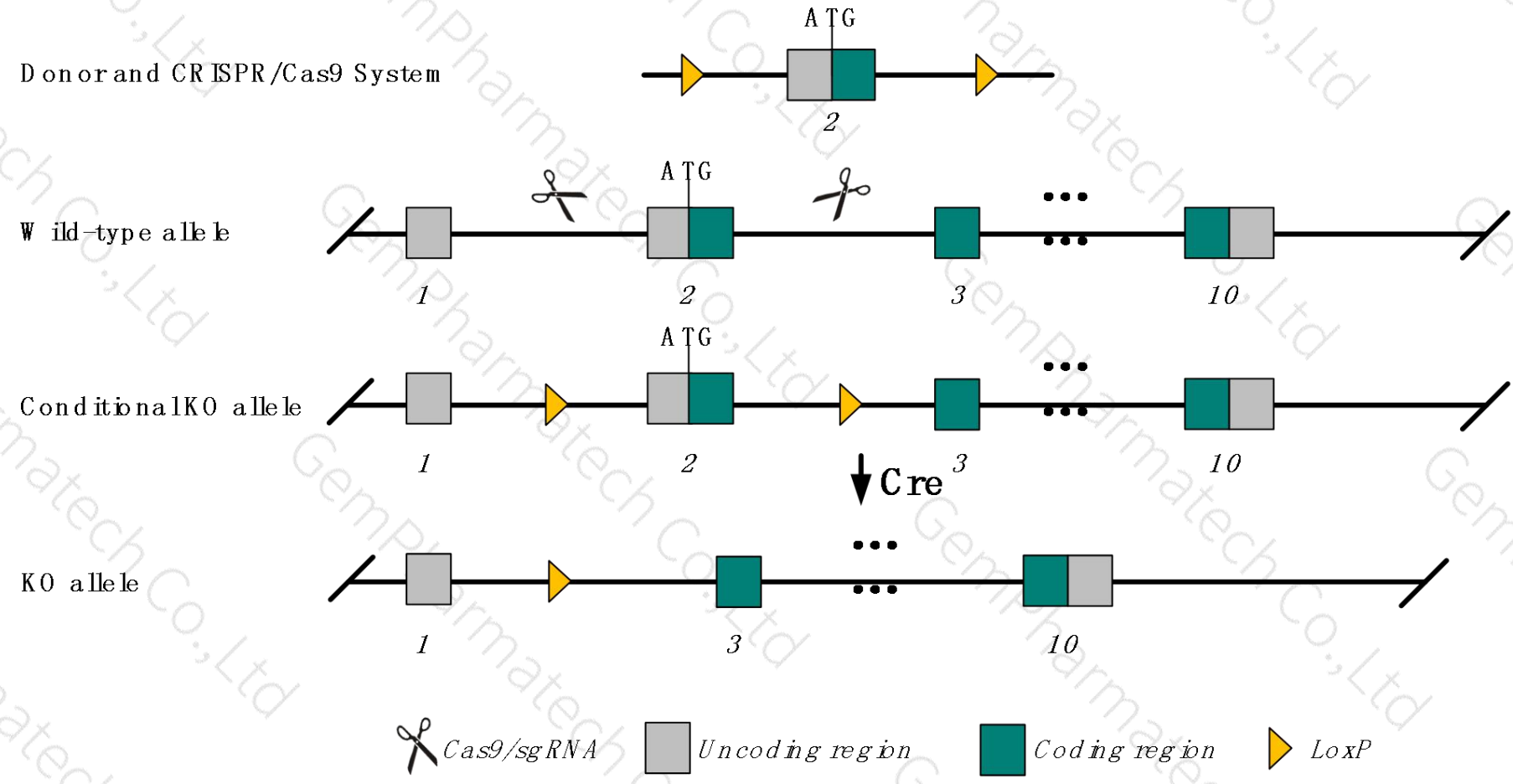
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zranb1* gene. The schematic diagram is as follows:



- The *Zranb1* gene has 5 transcripts. According to the structure of *Zranb1* gene, exon2 of *Zranb1*-202 (ENSMUST00000106157.7) 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 *Zranb1* 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 knock-out allele exhibit decreased CD4⁺ T cells and decreased susceptibility to experimental autoimmune encephalomyelitis.
- The *Zranb1* gene is located on the Chr7. 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)

Zranb1 zinc finger, RAN-binding domain containing 1 [Mus musculus (house mouse)]

Gene ID: 360216, updated on 19-Mar-2019

Summary



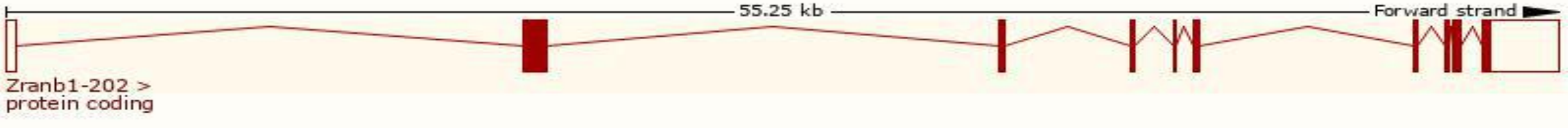
Official Symbol	Zranb1 provided by MGI
Official Full Name	zinc finger, RAN-binding domain containing 1 provided by MGI
Primary source	MGI:MGI:106441
See related	Ensembl:ENSMUSG00000030967
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9330160G10Rik, D7Wsu87e, Gm1956, Trabid
Expression	Ubiquitous expression in cerebellum adult (RPKM 10.0), testis adult (RPKM 9.1) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

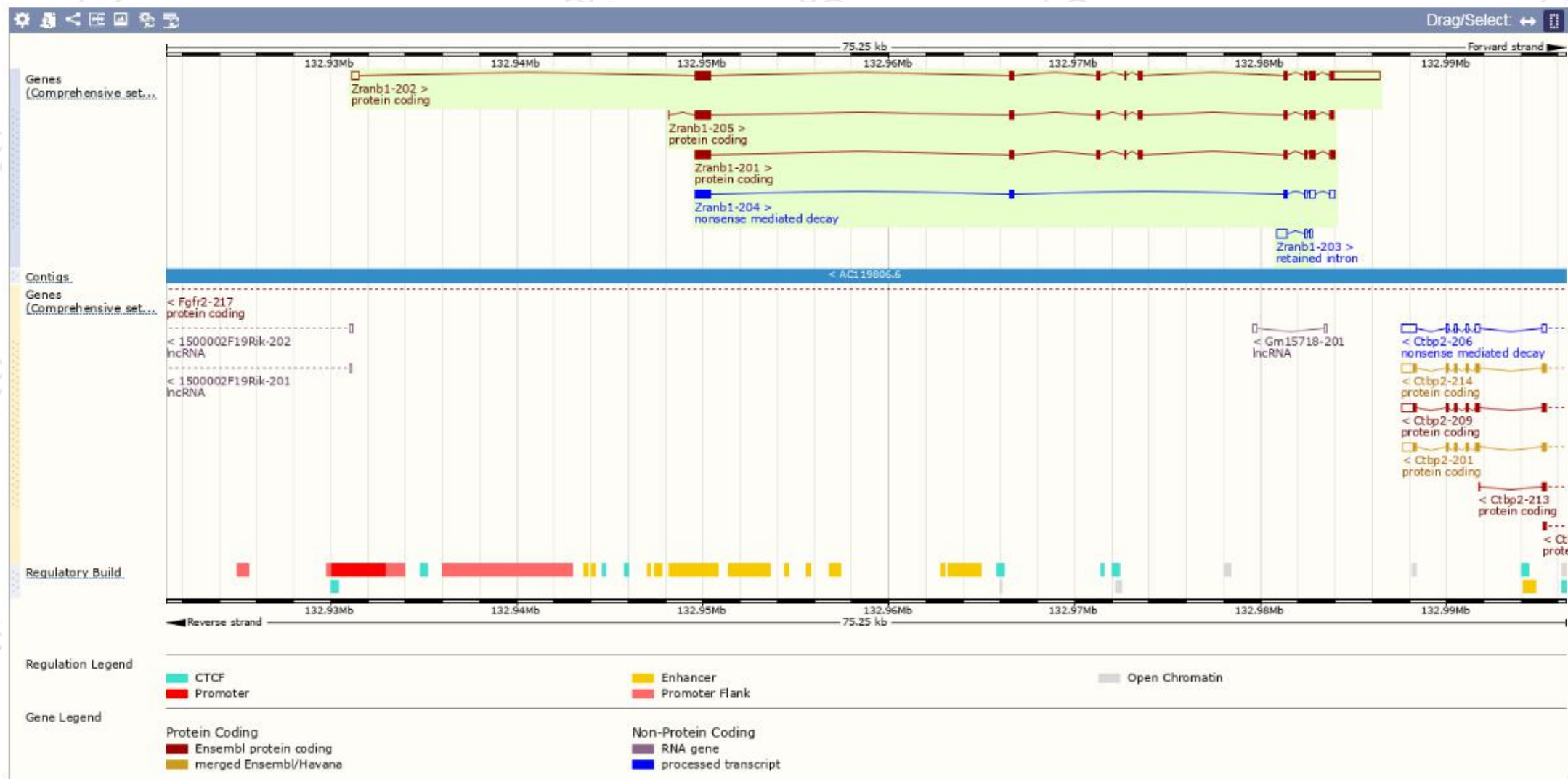
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zranb1-202	ENSMUST00000106157.7	5008	708aa	Protein coding	CCDS21929	Q7M760	TSL:5 GENCODE basic APPRIS P2
Zranb1-201	ENSMUST00000033265.4	2210	708aa	Protein coding	CCDS21929	Q7M760	TSL:2 GENCODE basic APPRIS P2
Zranb1-205	ENSMUST00000215716.1	2205	734aa	Protein coding	-	A0A1L1SQ24	TSL:5 GENCODE basic APPRIS ALT1
Zranb1-204	ENSMUST00000210507.1	1785	372aa	Nonsense mediated decay	-	A0A1B0GQZ6	TSL:1
Zranb1-203	ENSMUST00000153335.1	757	No protein	Retained intron	-	-	TSL:2

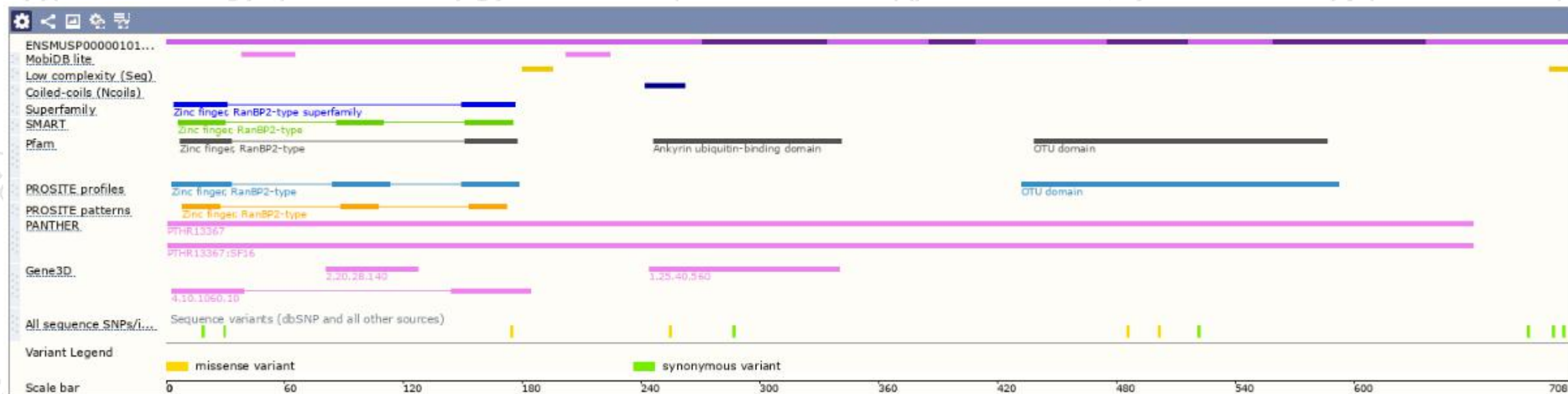
The strategy is based on the design of *Zranb1-202* transcript,The transcription is shown below



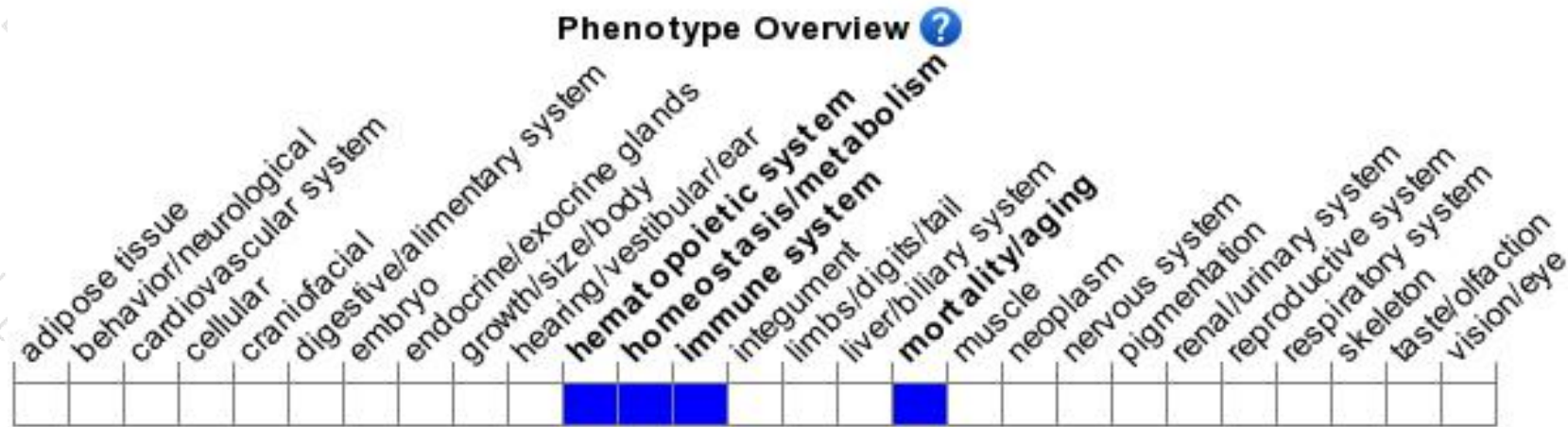
Genomic location distribution



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 knock-out allele exhibit decreased CD4⁺ T cells and decreased susceptibility to experimental autoimmune encephalomyelitis.

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

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