

Prpf3 Cas9-CKO Strategy

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Reviewer

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Design Date:

2019-8-15

Project Overview

Project Name

Prpf3

Project type

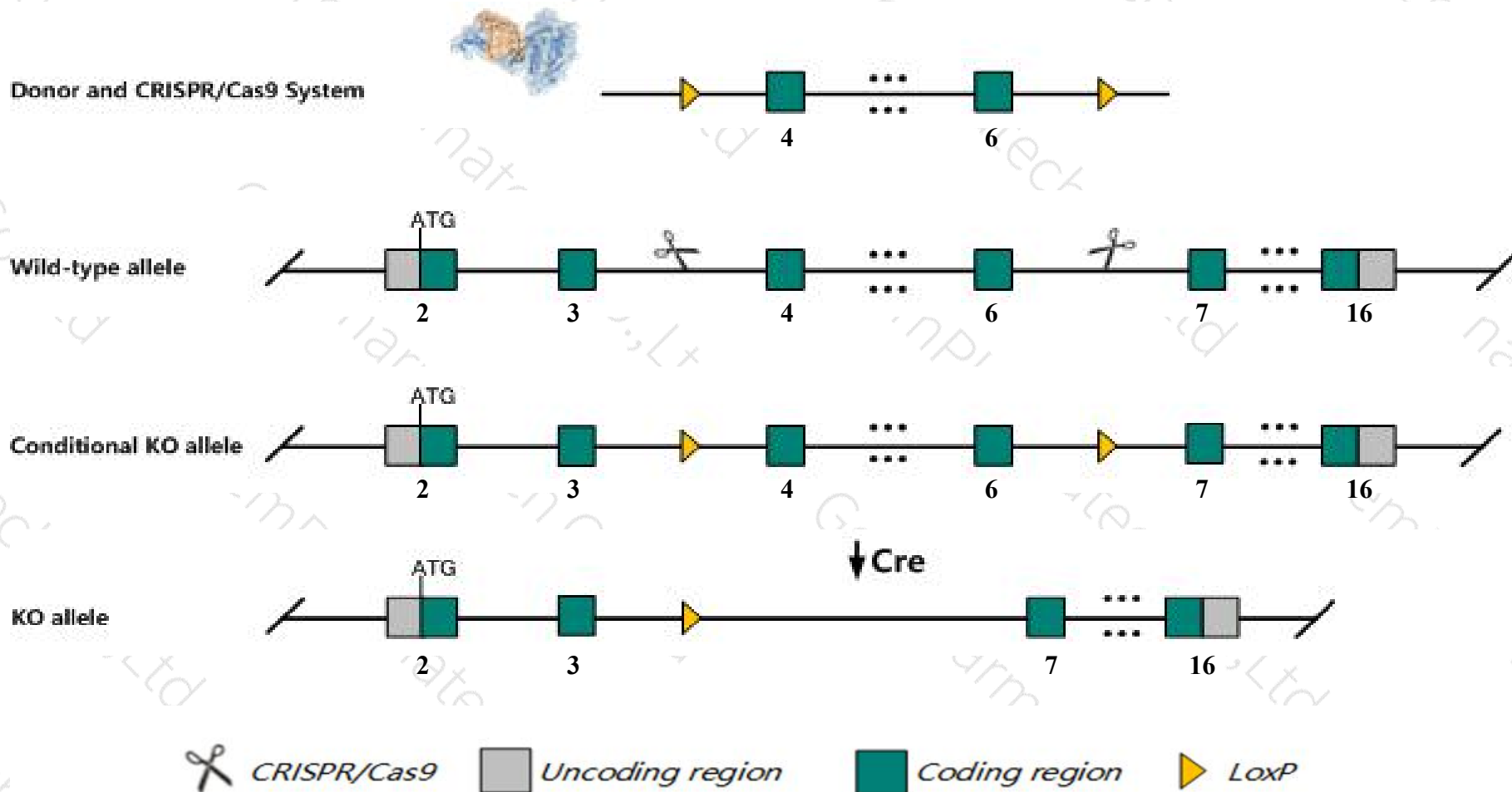
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prpf3* gene. The schematic diagram is as follows:



- The *Prpf3* gene has 9 transcripts. According to the structure of *Prpf3* gene, exon4-exon6 of *Prpf3-201* (ENSMUST00000015892.13) transcript is recommended as the knockout region. The region contains 452bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prpf3* 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 null mutation display embryonic lethality.
- The *Prpf3* gene is located on the Chr3. 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.
- Transcript *Prpf3* -202 may not be affected.
- 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)

Prpf3 pre-mRNA processing factor 3 [*Mus musculus* (house mouse)]

Gene ID: 70767, updated on 12-Aug-2019

Summary



Official Symbol Prpf3 provided by [MGI](#)

Official Full Name pre-mRNA processing factor 3 provided by [MGI](#)

Primary source [MGI:MGI:1918017](#)

See related [Ensembl:ENSMUSG00000015748](#)

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 3632413F13Rik

Expression Ubiquitous expression in CNS E11.5 (RPKM 11.3), liver E14 (RPKM 7.8) and 24 other tissues [See more](#)

Orthologs [human](#) [all](#)

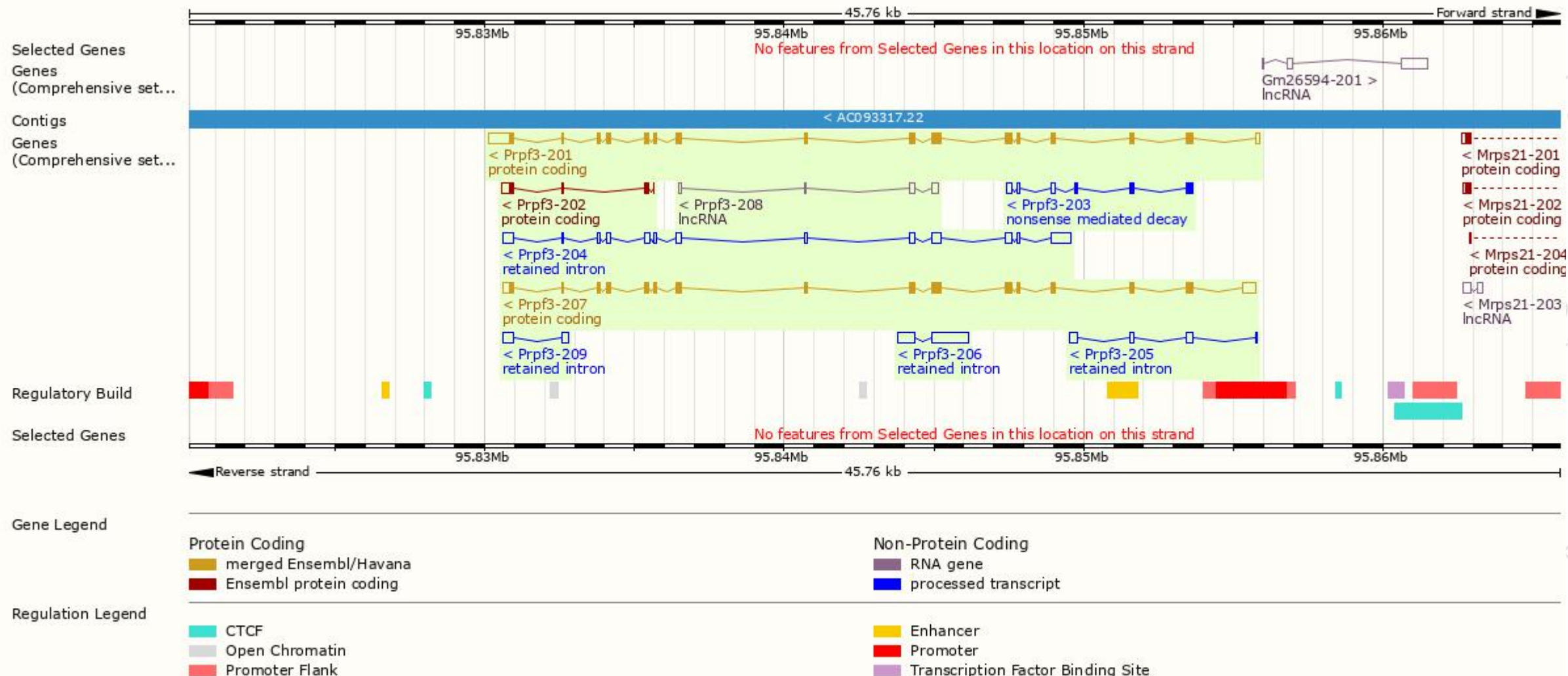
Transcript information (Ensembl)

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

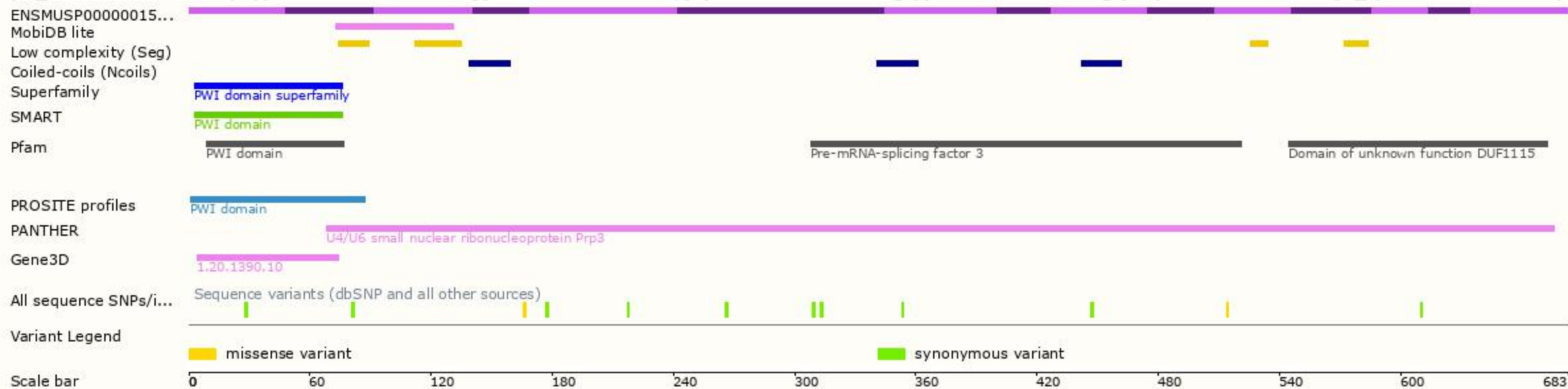
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prpf3-201	ENSMUST00000015892.13	2933	683aa	Protein coding	CCDS17621	Q922U1	TSL:1 GENCODE basic APPRIS P1
Prpf3-207	ENSMUST00000161476.7	2732	683aa	Protein coding	CCDS17621	Q922U1	TSL:1 GENCODE basic APPRIS P1
Prpf3-202	ENSMUST00000159901.7	575	114aa	Protein coding	-	F6T4V0	CDS 5' incomplete TSL:3
Prpf3-203	ENSMUST00000160109.1	800	101aa	Nonsense mediated decay	-	E0CYD0	TSL:3
Prpf3-208	ENSMUST00000161482.1	554	No protein	Processed transcript	-	-	TSL:3
Prpf3-204	ENSMUST00000160155.7	2548	No protein	Retained intron	-	-	TSL:1
Prpf3-206	ENSMUST00000161420.1	1800	No protein	Retained intron	-	-	TSL:1
Prpf3-205	ENSMUST00000161073.1	613	No protein	Retained intron	-	-	TSL:3
Prpf3-209	ENSMUST00000163059.1	592	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Prpf3-201* transcript,The transcription is shown below

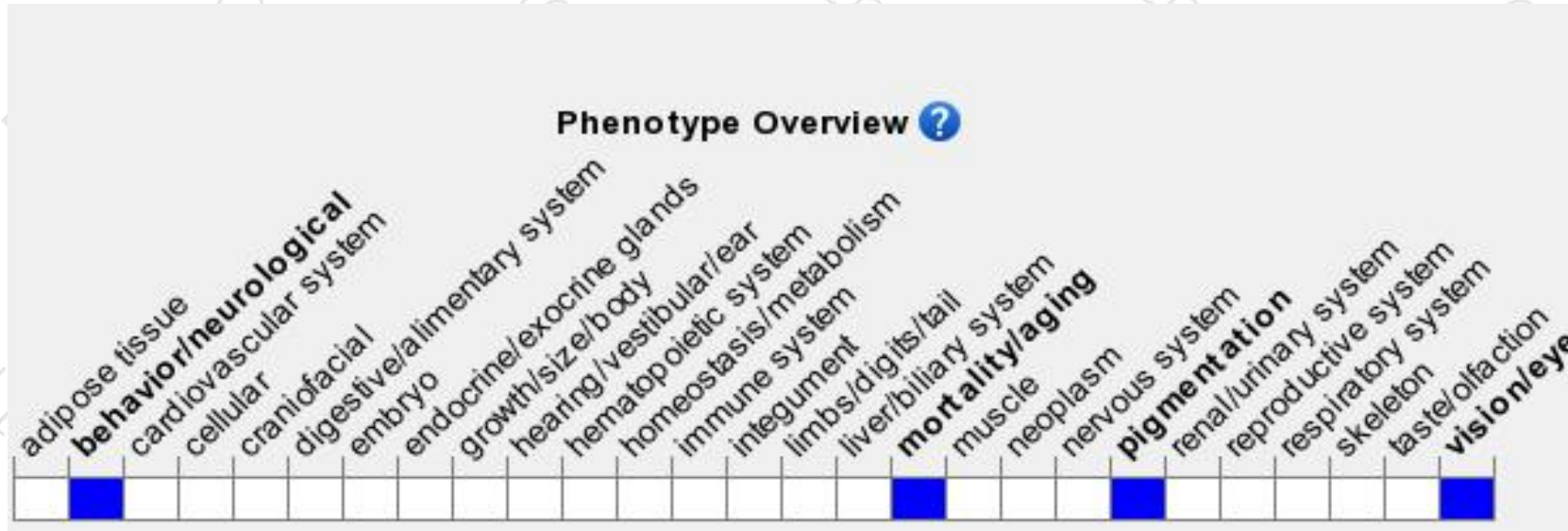
Genomic location distribution



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, Mice homozygous for a null mutation display embryonic lethality.

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

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