Pafah1b1 Cas9-KO Strategy

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Reviewer: Xueting Zhang

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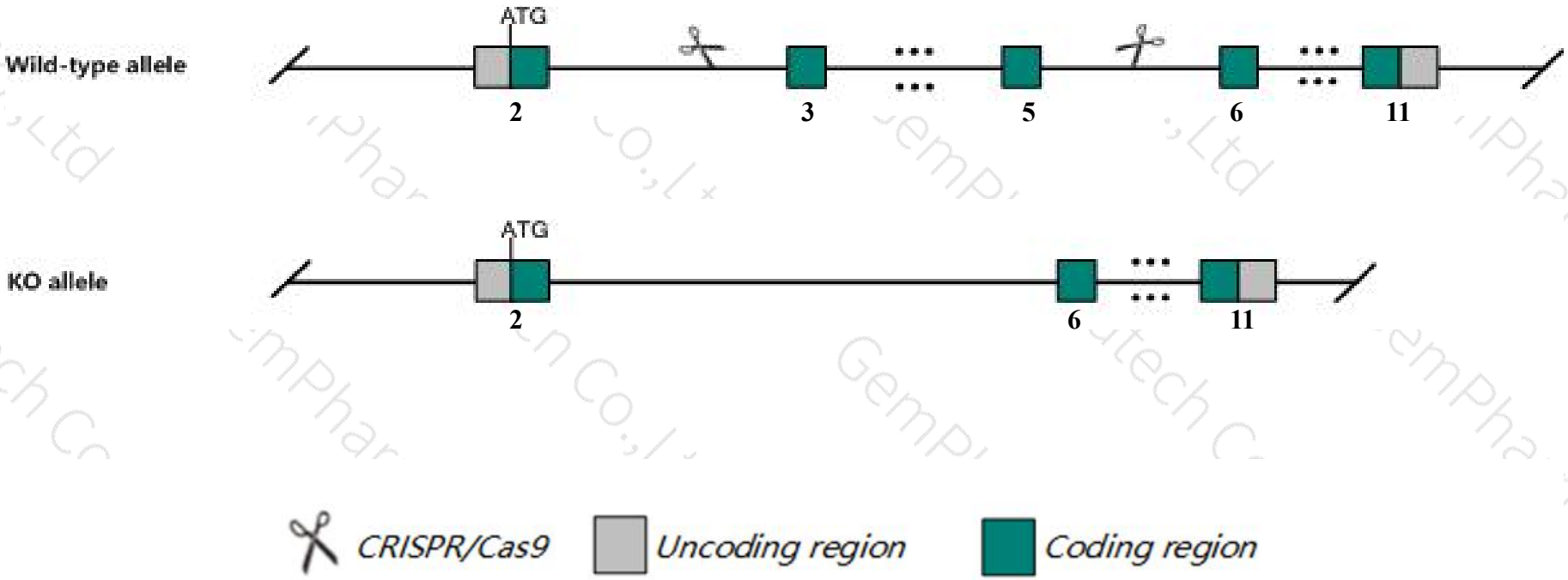
Project Overview

Project Name	***Pafah1b1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pafah1b1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Pafah1b1* gene has 5 transcripts. According to the structure of *Pafah1b1* gene, exon3-exon5 of *Pafah1b1-201* (ENSMUST00000021091.14) transcript is recommended as the knockout region.The region contains 367bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Pafah1b1* gene. The brief process is as follows: CRISPR/Cas9 syste

Notice

➢ According to the existing MGI data,Mutations at this locus result in neuronal migration defects. Homozygous null mutants die around implantation. Different allelic combinations show variable cortical, hippocampal and olfactory disorganization and impaired spatial learning and coordination.

➢ The *Pafah1b1* gene is located on the Chr11. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

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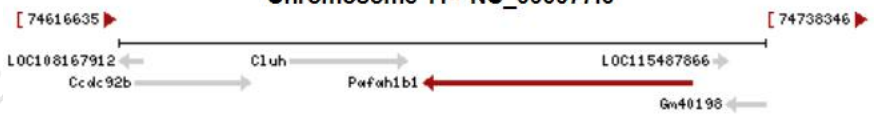
Pafah1b1 platelet-activating factor acetylhydrolase, isoform 1b, subunit 1 [*Mus musculus* (house mouse)]

Gene ID: 18472, updated on 22-Oct-2019

Summary

Official Symbol	Pafah1b1 provided by MGI
Official Full Name	platelet-activating factor acetylhydrolase, isoform 1b, subunit 1 provided by MGI
Primary source	MGI:MGI:109520
See related	Ensembl:ENSMUSG00000020745
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	Lis1; Mdsh; LIS-1; Ms10u; Pafaha; MMS10-U
Expression	Ubiquitous expression in CNS E18 (RPKM 47.2), cerebellum adult (RPKM 46.4) and 26 other tissues See more
Orthologs	human all

Chromosome 11 - NC_000077.6

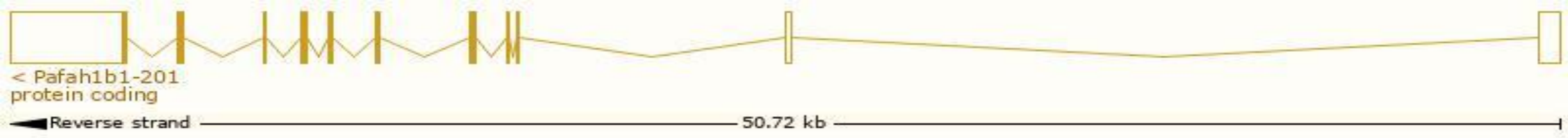


Transcript information（Ensembl）

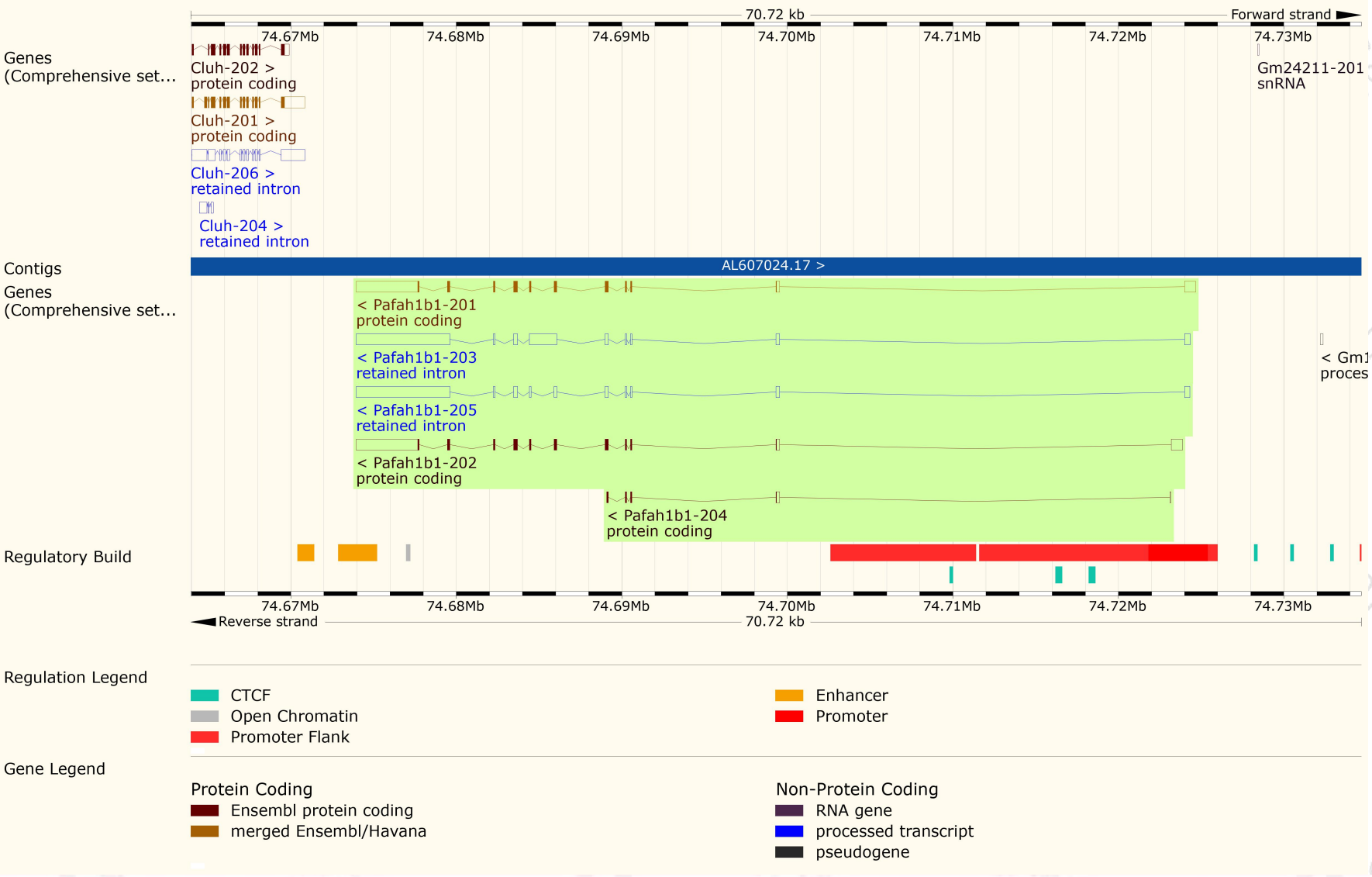
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Pafah1b1-201	ENSMUST00000021091.14	5803	410aa	ENSMUSP00000021091.8	Protein coding	CCDS25035	P63005 Q5SW18	TSL:1 GENCODE basic APPRIS P1
Pafah1b1-202	ENSMUST00000102520.8	5789	410aa	ENSMUSP00000099578.2	Protein coding	CCDS25035	P63005 Q5SW18	TSL:1 GENCODE basic APPRIS P1
Pafah1b1-204	ENSMUST00000155493.1	525	97aa	ENSMUSP00000118231.1	Protein coding	-	Q5SW16	CDS 3' incomplete TSL:2
Pafah1b1-203	ENSMUST00000126341.7	8570	No protein	-	Retained intron	-	-	TSL:2
Pafah1b1-205	ENSMUST00000156794.1	7165	No protein	-	Retained intron	-	-	TSL:2

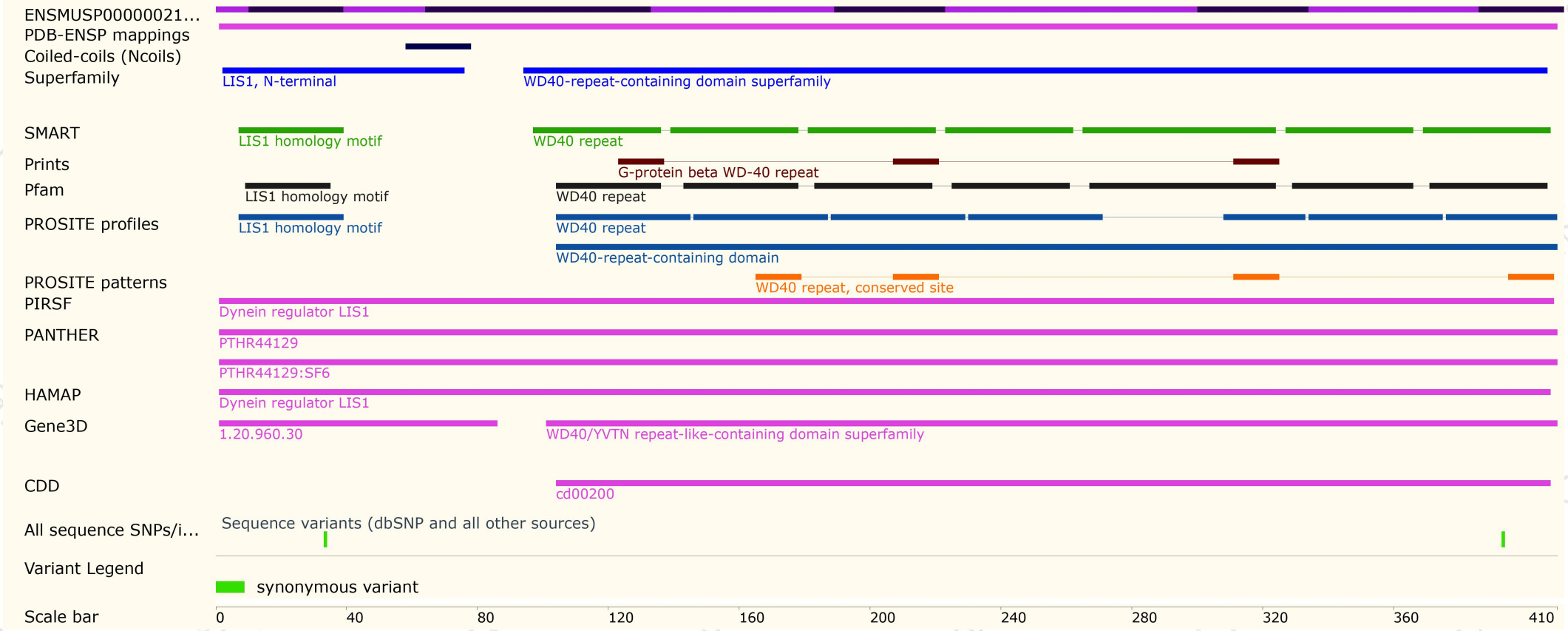
The strategy is based on the design of *Pafah1b1-201* transcript,The transcription is shown below



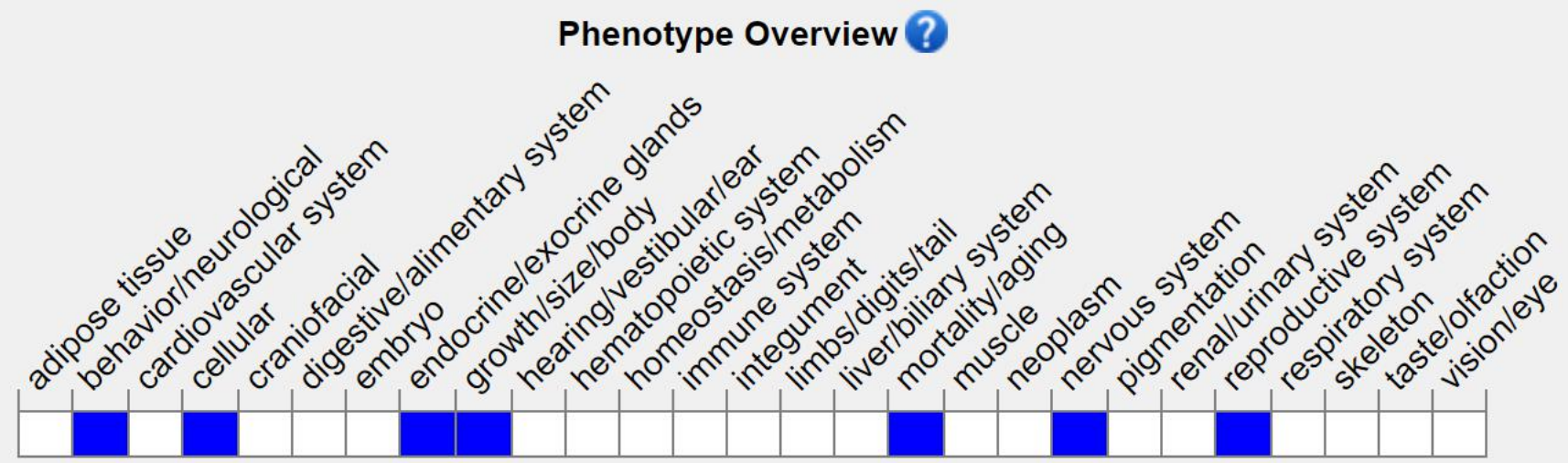
Genomic location distribution



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/).

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

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