

Cadm4 Cas9-CKO Strategy

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Project Overview

Project Name

Cadm4

Project type

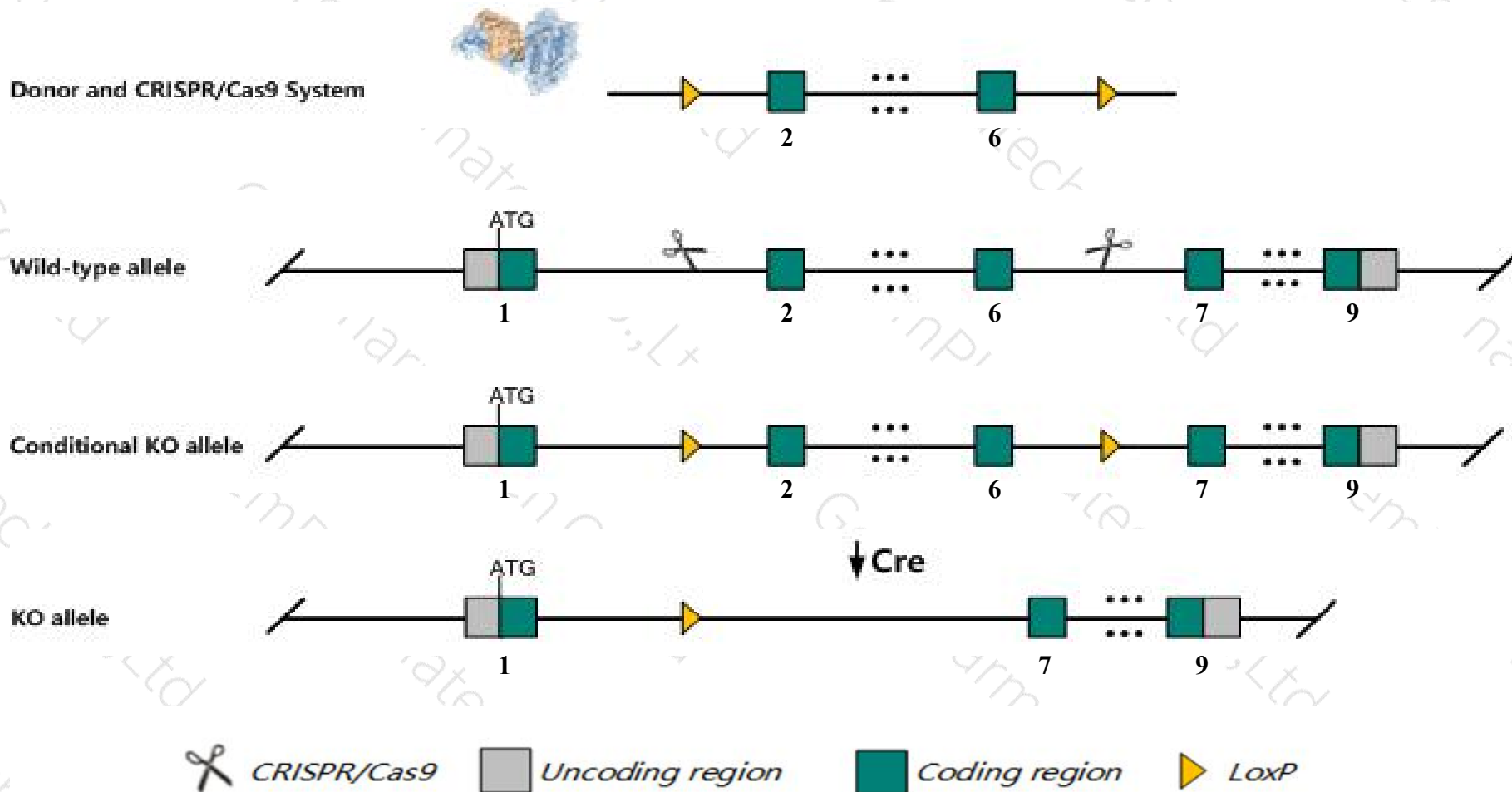
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cadm4* gene. The schematic diagram is as follows:



Technical routes

- The *Cadm4* gene has 2 transcripts. According to the structure of *Cadm4* gene, exon2-exon6 of *Cadm4-201* (ENSMUST00000068023.7) transcript is recommended as the knockout region. The region contains 691bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cadm4* 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 one null allele do not display myelination abnormalities. Mice with ubiquitous conditional deletion of the gene show myelination abnormalities, decreased nerve conduction velocity, hindlimb rigidity, limb grasping, and impaired coordination.
- The floxed region is near to the N-terminal of *Zfp428* gene, this strategy may influence the regulatory function of the N-terminal of *Zfp428* gene.
- The *Cadm4* 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)

Cadm4 cell adhesion molecule 4 [*Mus musculus* (house mouse)]

Gene ID: 260299, updated on 21-Aug-2019

Summary

Official Symbol	Cadm4 provided by MGI
Official Full Name	cell adhesion molecule 4 provided by MGI
Primary source	MGI:MGI:2449088
See related	Ensembl:ENSMUSG00000054793
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Tsl2; Igdf4c; lgsf4c
Expression	Biased expression in CNS E18 (RPKM 63.0), cerebellum adult (RPKM 62.2) and 14 other tissues See more
Orthologs	human all

Genomic context

Location: 7; 7 A3

See Cadm4 in [Genome Data Viewer](#)

Exon count: 9

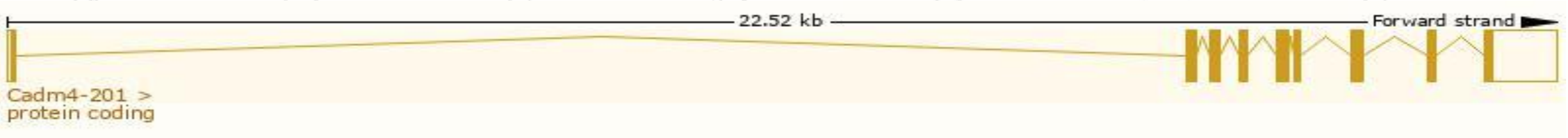
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	7	NC_000073.6 (24482023..24504533)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	7	NC_000073.5 (25267042..25289552)

Transcript information (Ensembl)

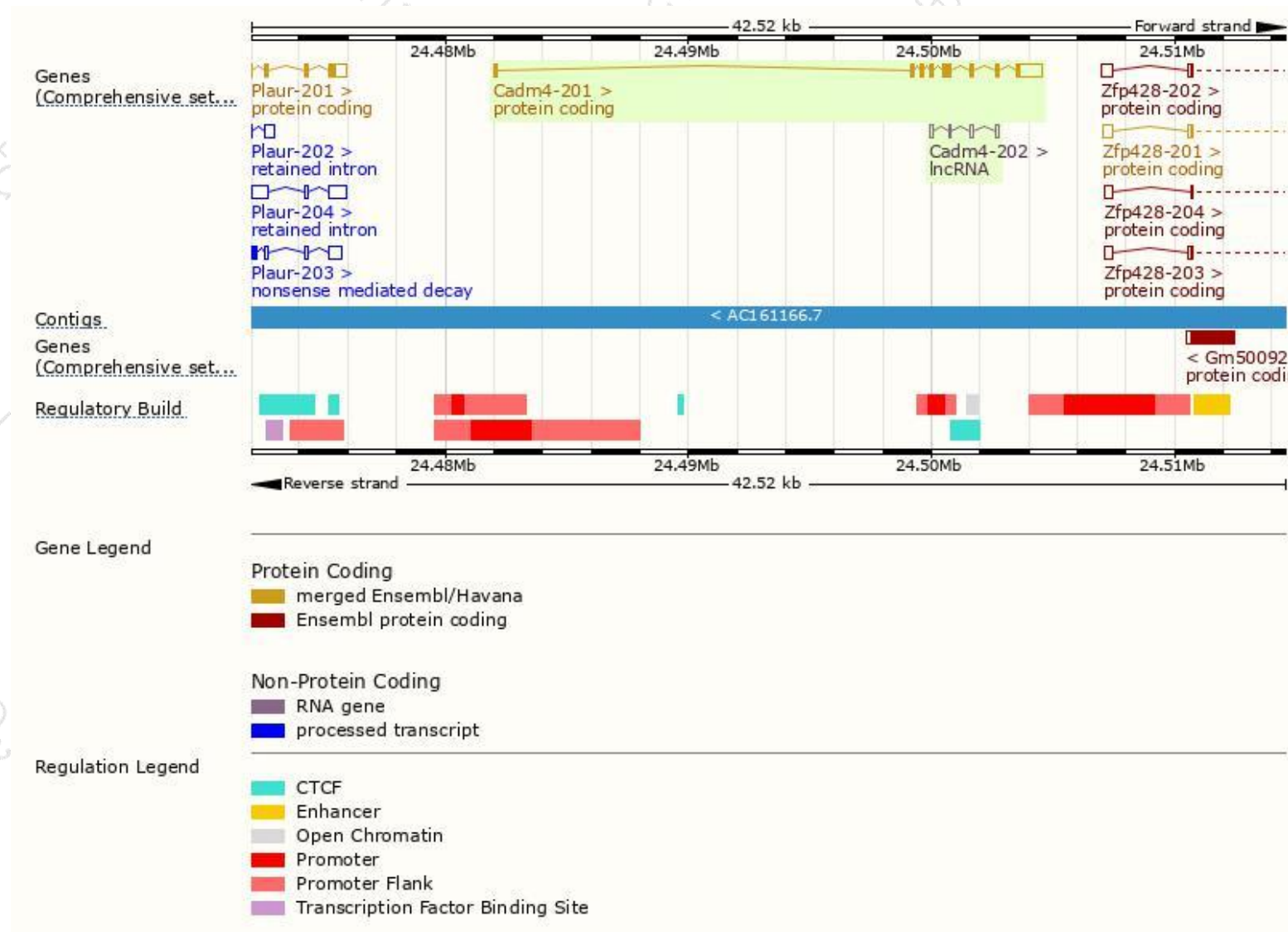
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cadm4-201	ENSMUST00000068023.7	2161	388aa	Protein coding	CCDS20951	Q8R464	TSL:1 GENCODE basic APPRIS P1
Cadm4-202	ENSMUST00000205820.1	491	No protein	lncRNA	-	-	TSL:3

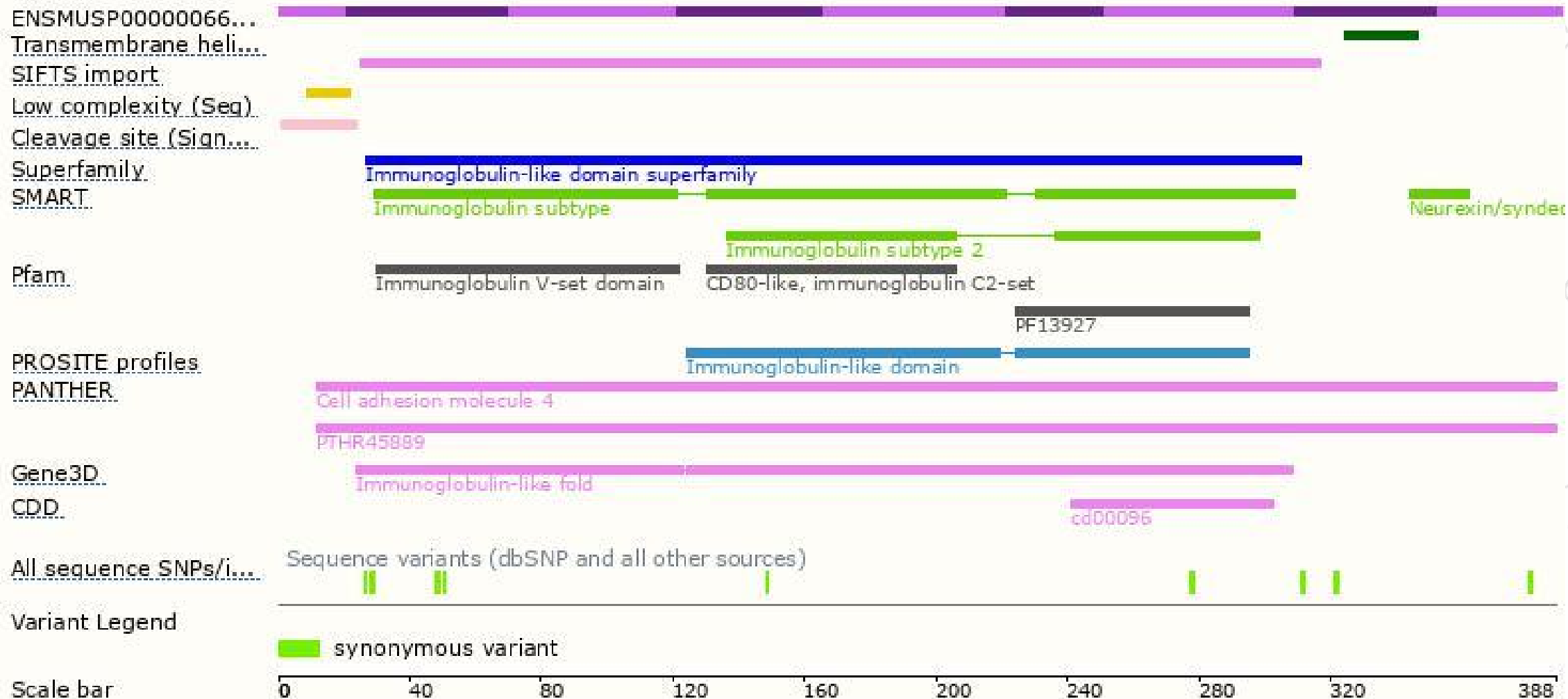
The strategy is based on the design of *Cadm4-201* transcript,The transcription is shown below



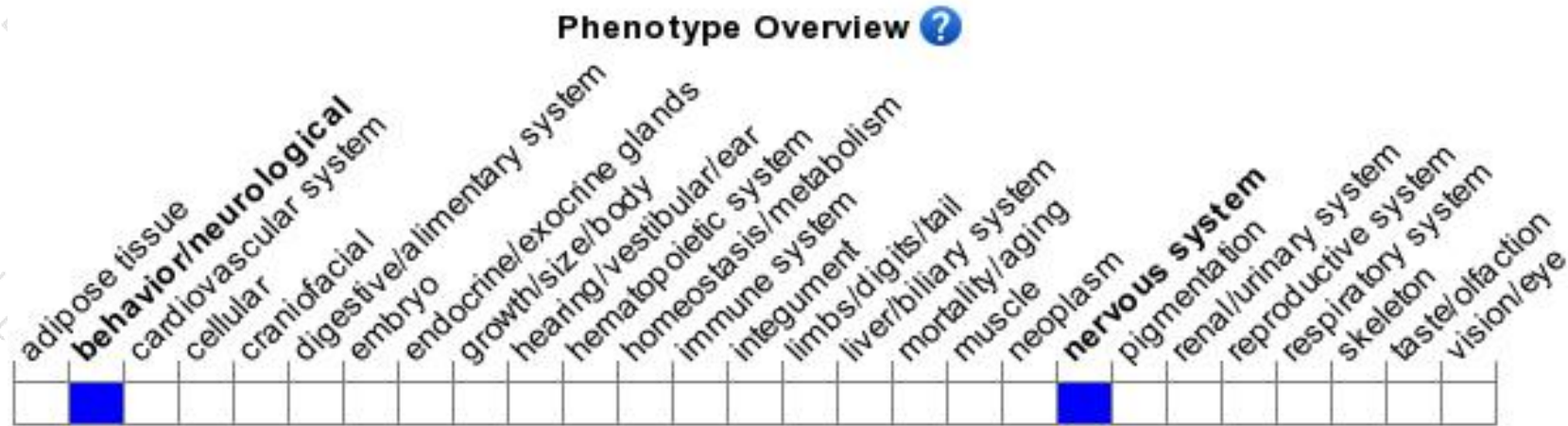
Genomic location distribution



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 one null allele do not display myelination abnormalities. Mice with ubiquitous conditional deletion of the gene show myelination abnormalities, decreased nerve conduction velocity, hindlimb rigidity, limb grasping, and impaired coordination.

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

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