Pcdh17 Cas9-CKO Strategy

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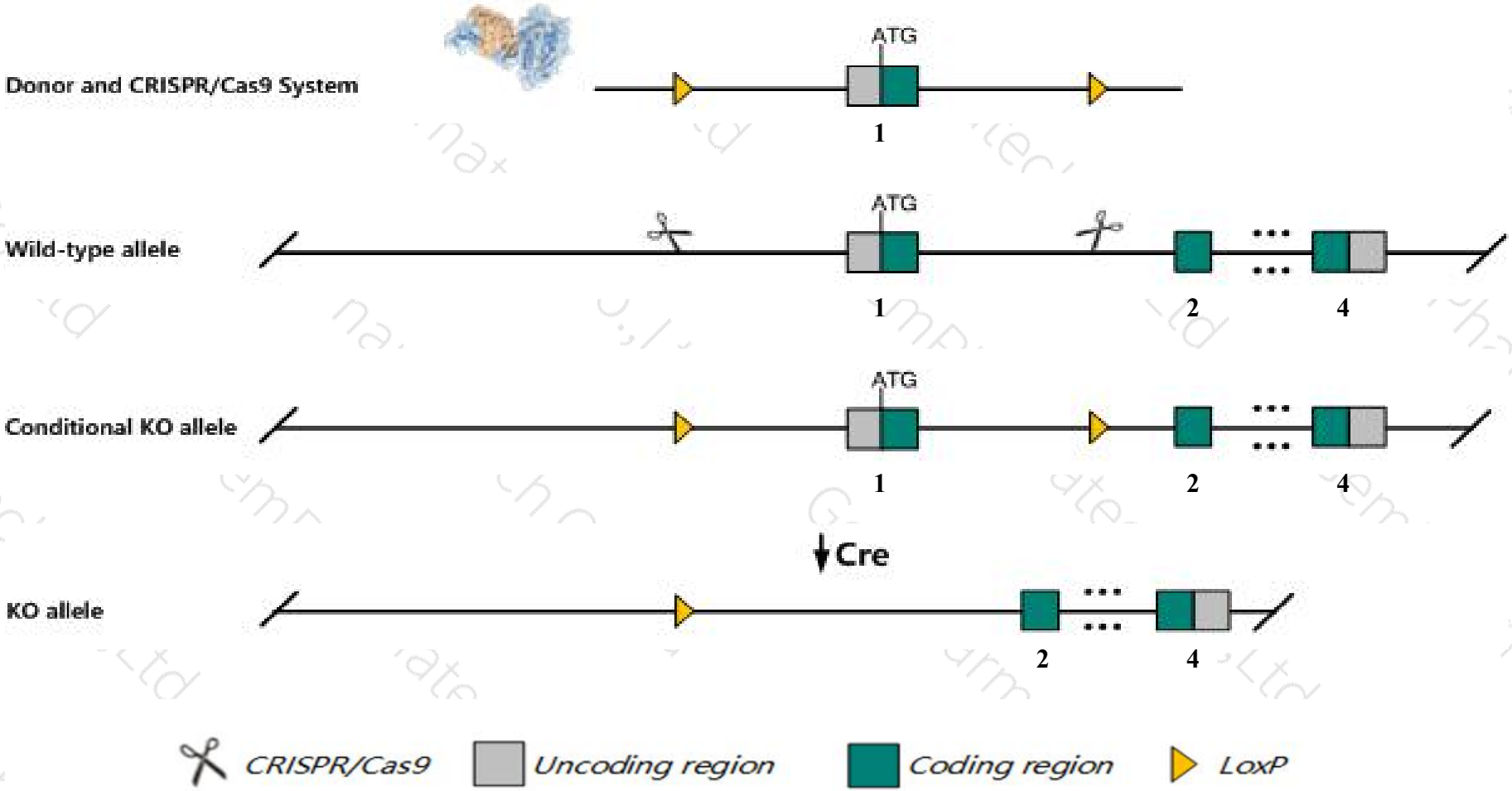
Project Overview

Project Name	***Pcdh17***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pcdh17* gene. The schematic diagram is as follows:



Technical routes

- The *Pcdh17* gene has 2 transcripts. According to the structure of *Pcdh17* gene, exon1 of *Pcdh17-201* (ENSMUST00000071370.6) 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 *Pcdh17* 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.

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit impaired synaptic transmission, increased synaptic vesicle number and decreased depression-related behavior.

- The *Pcdh17* gene is located on the Chr14. 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）

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Pcdh17 protocadherin 17 [Mus musculus (house mouse)]

Gene ID: 219228, updated on 31-Jan-2019

Summary

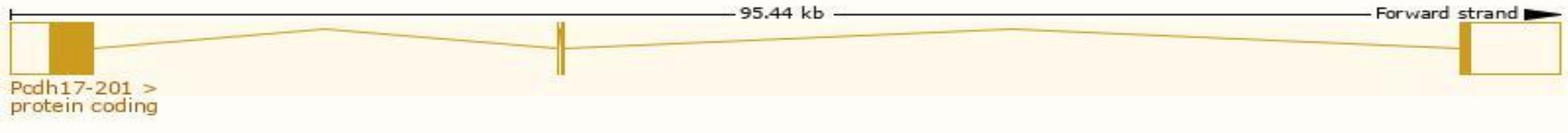
Official Symbol	Pcdh17 provided by MGI
Official Full Name	protocadherin 17 provided by MGI
Primary source	MGI:MGI:2684924
See related	Ensembl:ENSMUSG00000035566
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C030033F14Rik, Gm78
Summary	This gene belongs to the protocadherin gene family, a subfamily of the cadherin superfamily. The encoded protein contains six extracellular cadherin domains, a transmembrane domain, and a cytoplasmic tail differing from those of the classical cadherins. The encoded protein may play a role in the establishment and function of specific cell-cell connections in the brain. [provided by RefSeq, Sep 2009]
Expression	Broad expression in CNS E18 (RPKM 7.2), whole brain E14.5 (RPKM 5.3) and 18 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

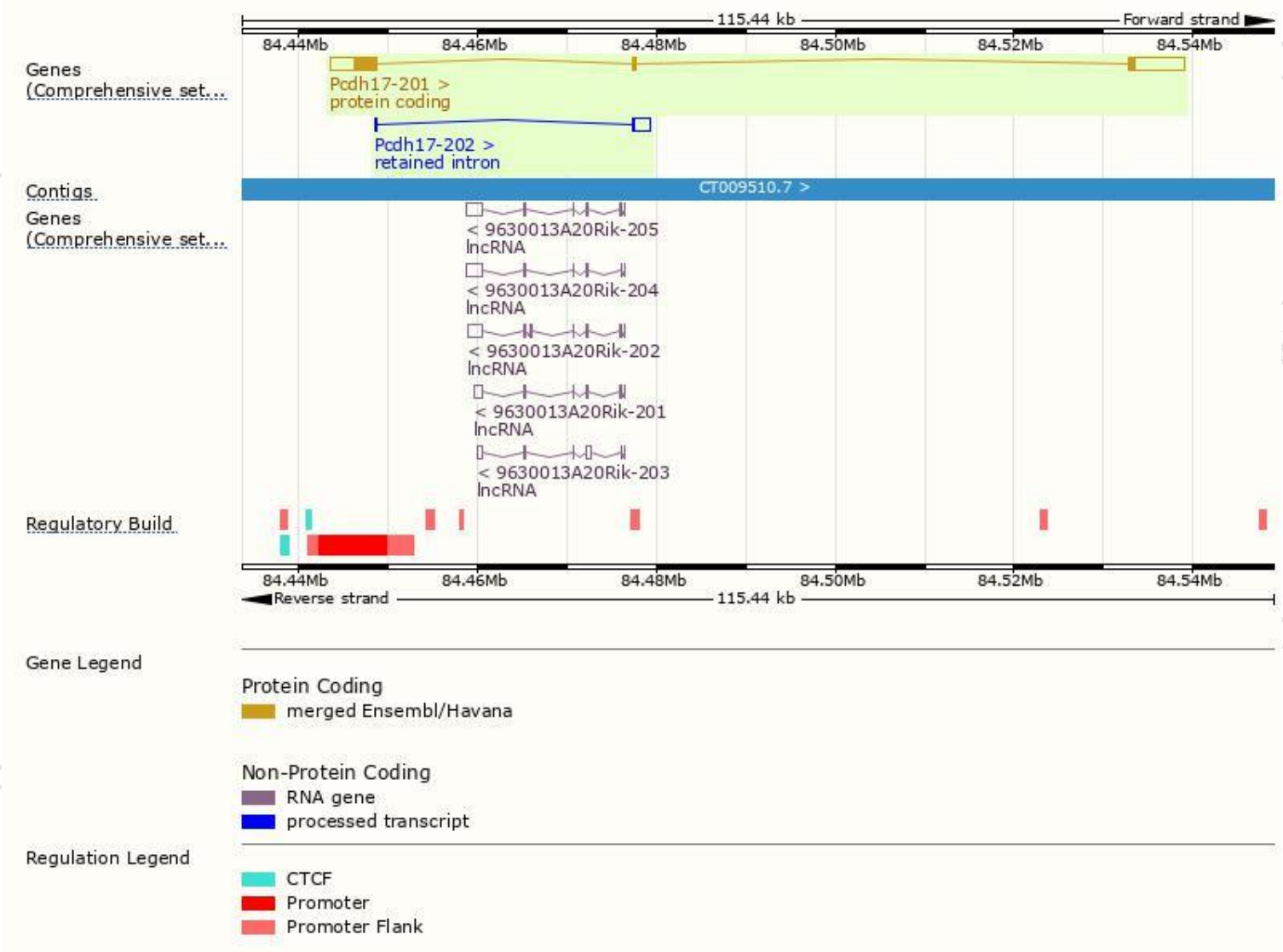
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pcdh17-201	ENSMUST00000071370.6	11451	1157aa	Protein coding	CCDS27304	E9PXF0	TSL:1 GENCODE basic APPRIS P1
Pcdh17-202	ENSMUST00000226362.1	1919	No protein	Retained intron	-	-	

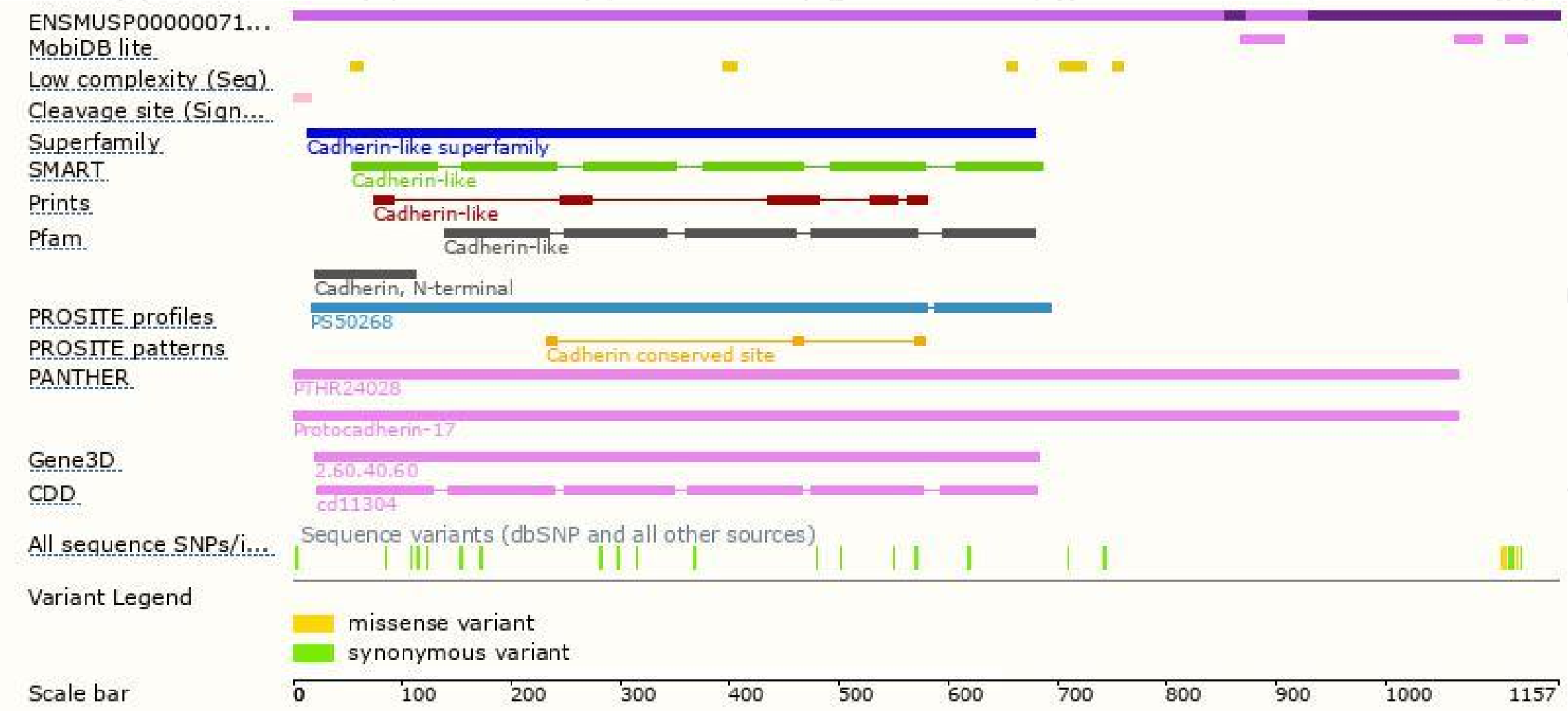
The strategy is based on the design of *Pcdh17-201* transcript,The transcription is shown below



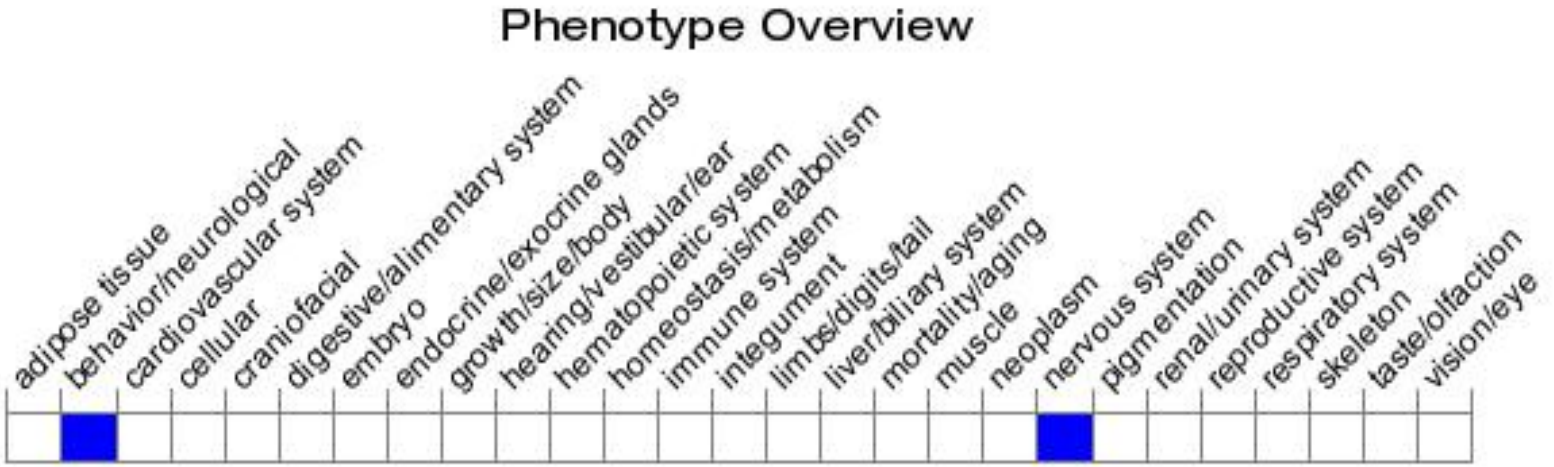
Genomic location distribution



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 knock-out allele exhibit impaired synaptic transmission, increased synaptic vesicle number and decreased depression-related behavior.

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

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