Ap3m2 Cas9-KO Strategy

Designer: Daohua Xu

Reviewer: Huimin Su

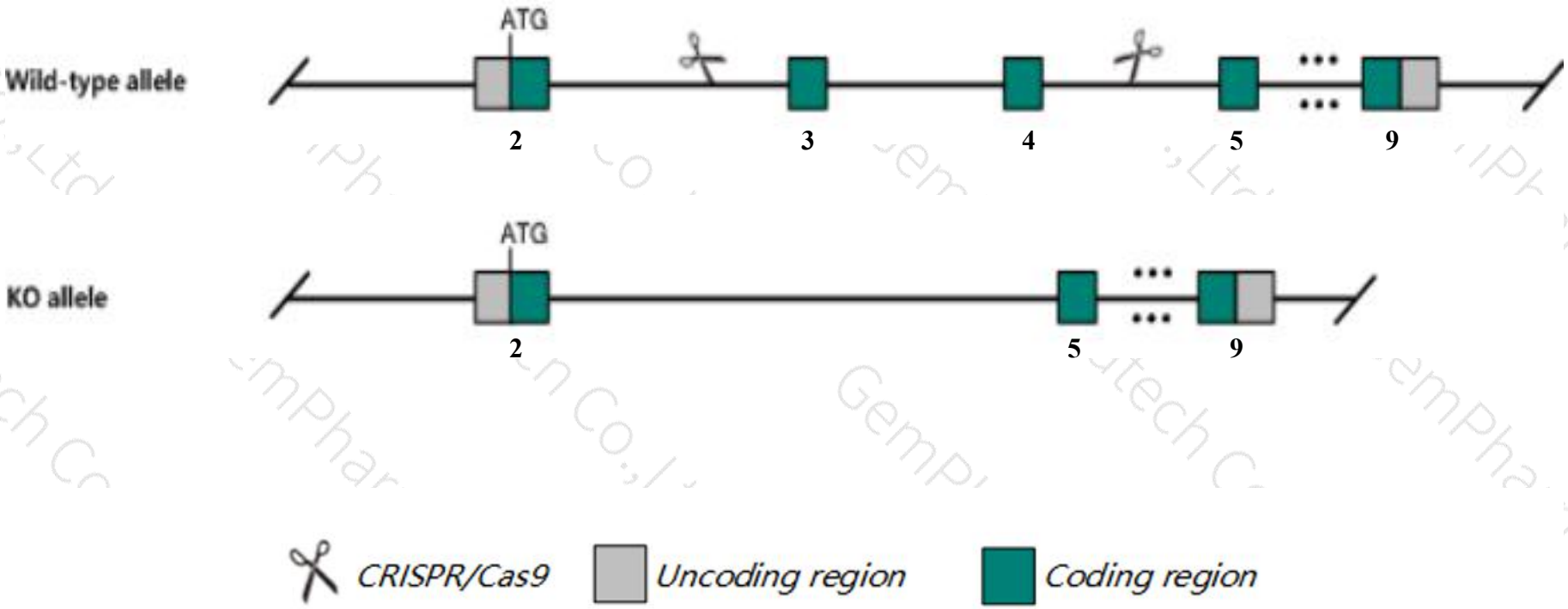
Design Date: 2020-5-12

Project Overview

Project Name	***Ap3m2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ap3m2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ap3m2* gene has 4 transcripts. According to the structure of *Ap3m2* gene, exon3-exon4 of *Ap3m2-201* (ENSMUST00000163739.2) transcript is recommended as the knockout region.The region contains 310bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ap3m2* gene. The brief process is as follows: CRISPR/Cas9 systen

Notice

- According to the existing MGI data,homozygous null mice suffer from spontaneous recurrent epileptic seizures, are more susceptible to drug-induced seizures and show impaired gaba release, fewer synaptic vesicles, enhanced long-term potentiation, and abnormal propagation of neuronal excitability via the temporoammonic pathway.
- The *Ap3m2* gene is located on the Chr8. 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）

集萃药康 GemPharmatech

Ap3m2 adaptor-related protein complex 3, mu 2 subunit [Mus musculus (house mouse)]

Gene ID: 64933, updated on 13-Mar-2020

Summary

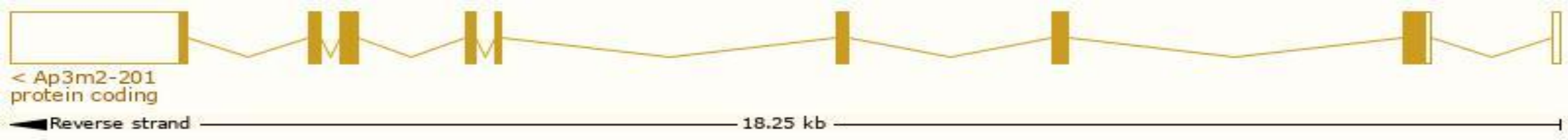
Official Symbol	Ap3m2 provided by MGI
Official Full Name	adaptor-related protein complex 3, mu 2 subunit provided by MGI
Primary source	MGI:MGI:1929214
See related	Ensembl:ENSMUSG00000031539
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5830445E16Rik, AP-3B
Expression	Broad expression in cortex adult (RPKM 20.8), frontal lobe adult (RPKM 18.2) and 19 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

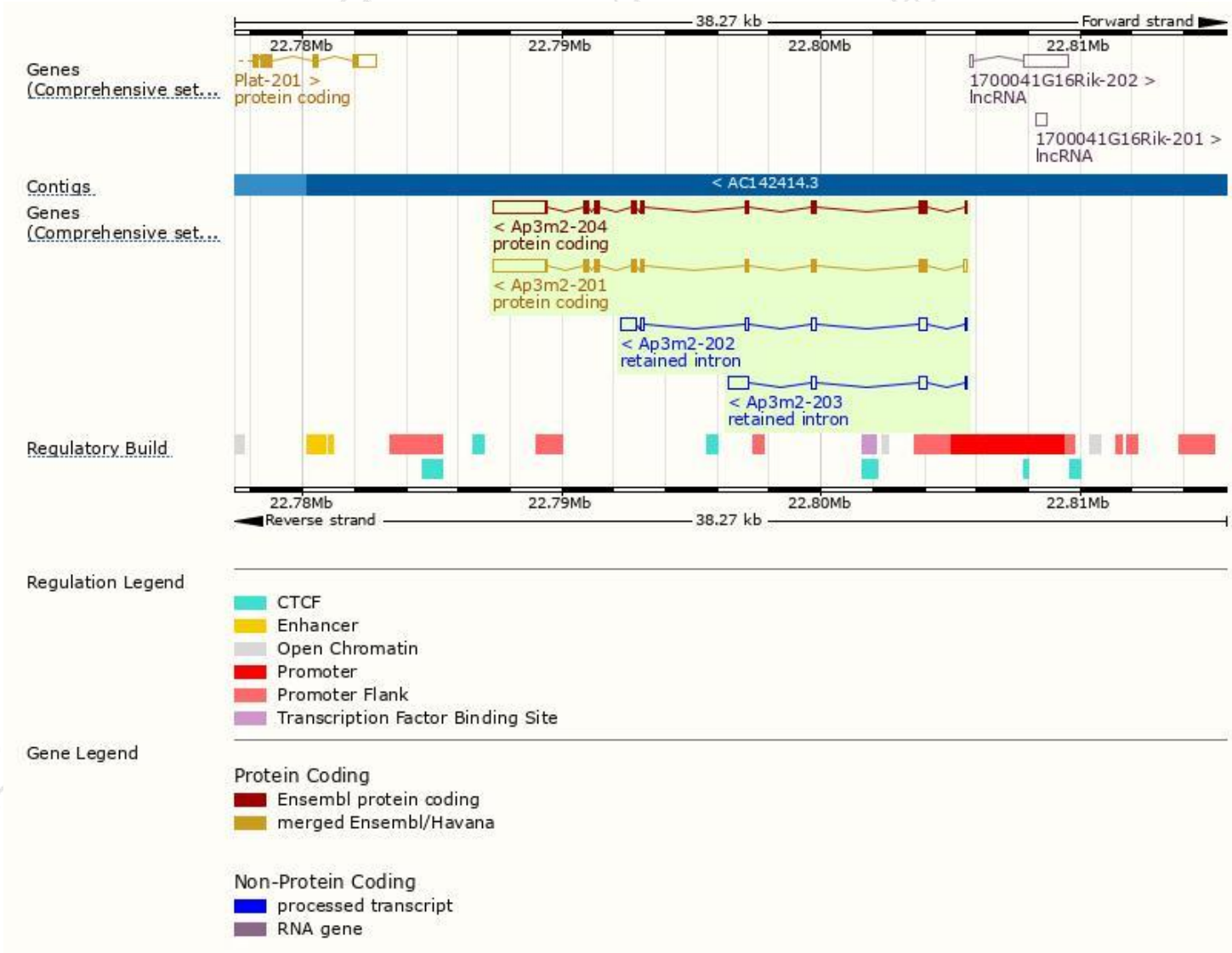
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ap3m2-201	ENSMUST00000163739.2	3417	418aa	Protein coding	CCDS22184	Q8R2R9	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Ap3m2-204	ENSMUST00000210656.1	3373	418aa	Protein coding	CCDS22184	Q8R2R9	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Ap3m2-202	ENSMUST00000210148.1	1351	No protein	Retained intron	-	-	TSL:1
Ap3m2-203	ENSMUST00000210476.1	1339	No protein	Retained intron	-	-	TSL:1

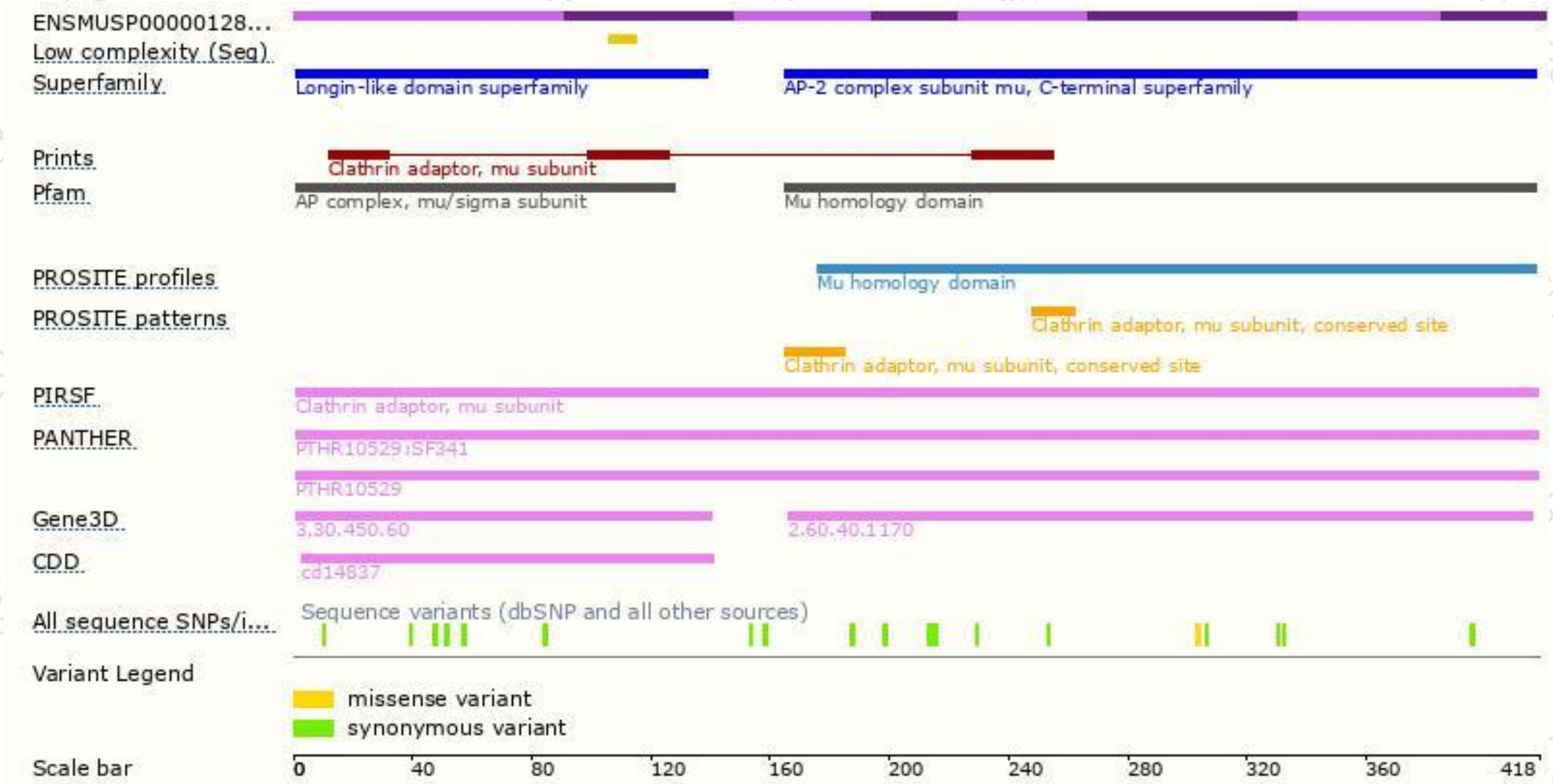
The strategy is based on the design of *Ap3m2-201* transcript,The transcription is shown below



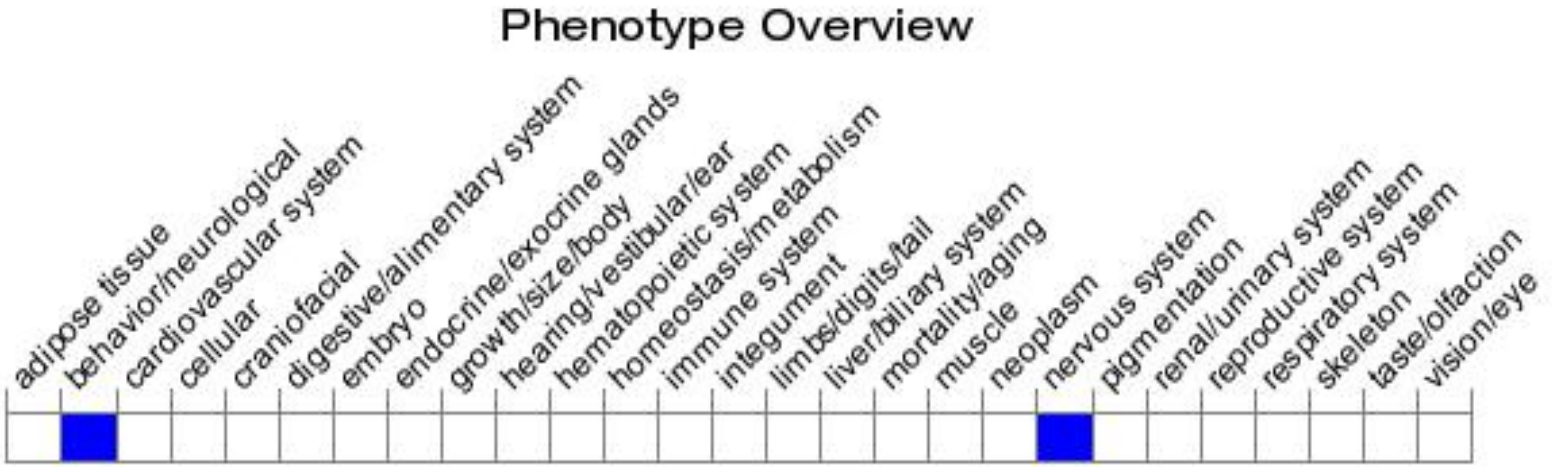
Genomic location distribution



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,Homozygous null mice suffer from spontaneous recurrent epileptic seizures, are more susceptible to drug-induced seizures and show impaired GABA release, fewer synaptic vesicles, enhanced long-term potentiation, and abnormal propagation of neuronal excitability via the temporoammonic pathway.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd