Slc1a2 Cas9-CKO Strategy

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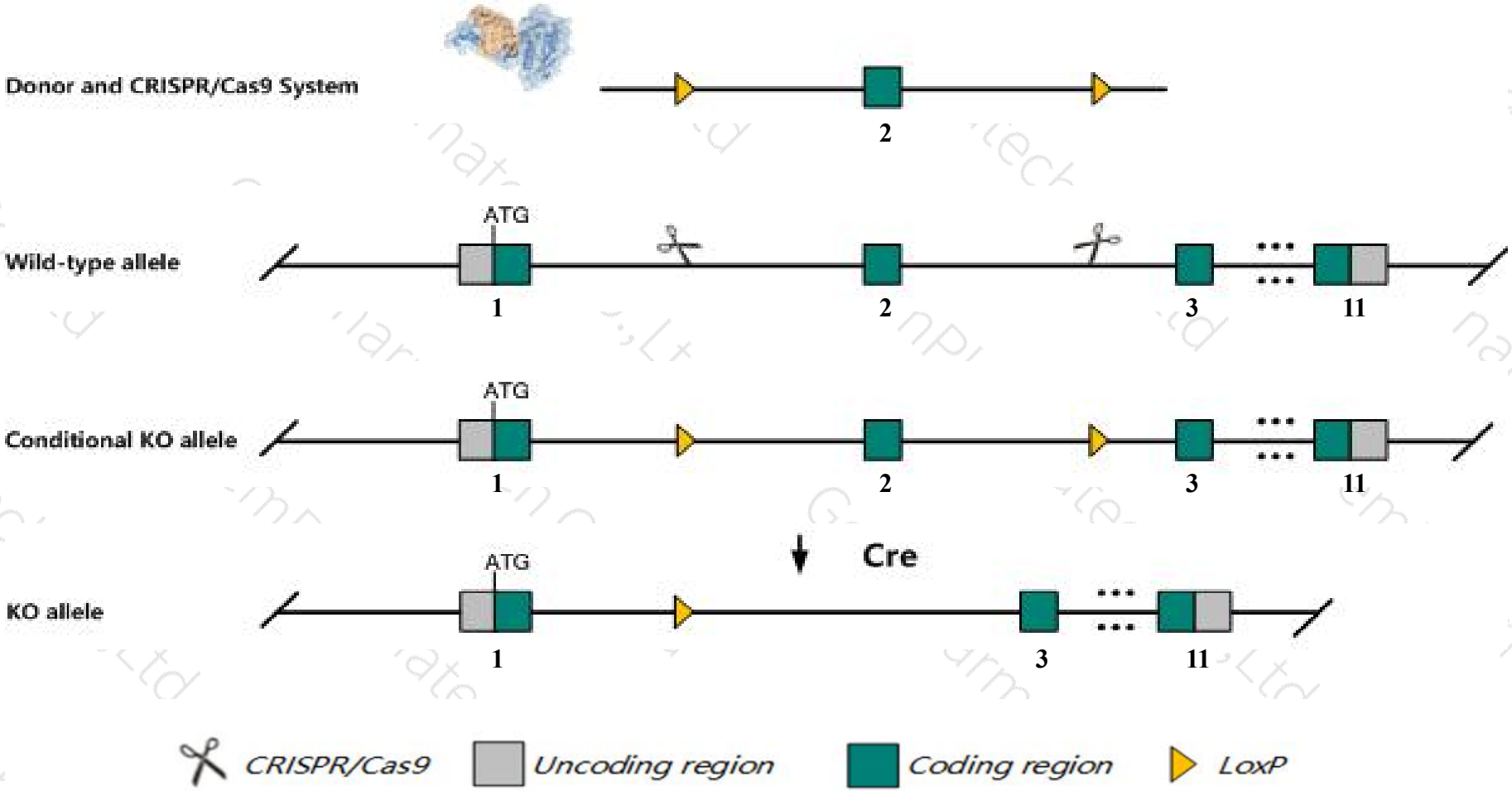
Design Date: 2019-9-28

Project Overview

Project Name	***Slc1a2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc1a2* gene. The schematic diagram is as follows:



Technical routes

- The *Slc1a2* gene has 12 transcripts. According to the structure of *Slc1a2* gene, exon2 of *Slc1a2-202* (ENSMUST00000080210.9) transcript is recommended as the knockout region.The region contains 140bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Slc1a2* 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 disruptions in this gene display spontaneous seizures often leading to death as well as a succeptibility to neuronal degeneration.

- The *Slc1a2* gene is located on the Chr2. 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）

集萃药康 GemPharmatech

Slc1a2 solute carrier family 1 (glial high affinity glutamate transporter), member 2 [Mus musculus (house mouse)]

Gene ID: 20511, updated on 7-Apr-2019

Summary

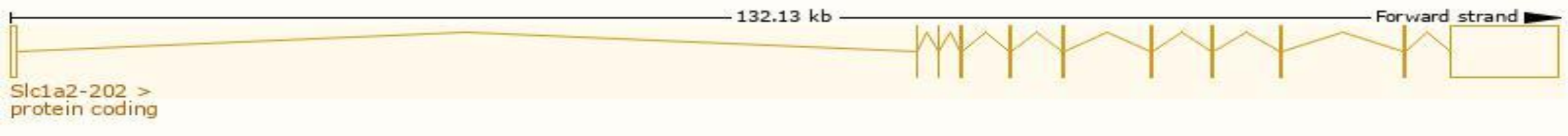
Official Symbol	Slc1a2 provided by MGI
Official Full Name	solute carrier family 1 (glial high affinity glutamate transporter), member 2 provided byMGI
Primary source	MGI:MGI:101931
See related	Ensembl:ENSMUSG00000005089
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1700091C19Rik, 2900019G14Rik, AI159670, Eaat2, GLT-1, GLT1, MGLT1
Expression	Biased expression in cortex adult (RPKM 172.0), frontal lobe adult (RPKM 137.5) and 2 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

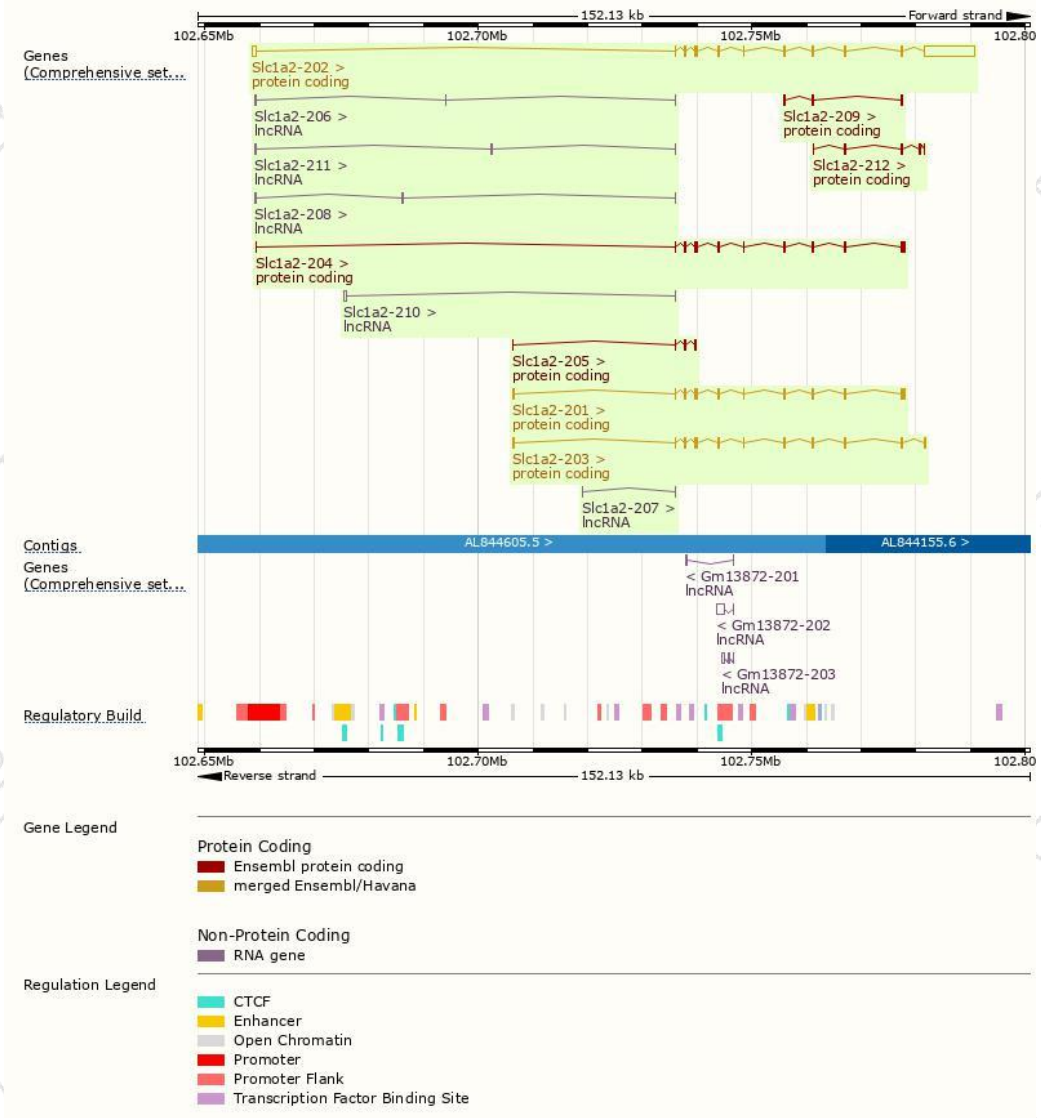
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc1a2-202	ENSMUST00000080210.9	11595	572aa	Protein coding	CCDS38188	P43006 Q3UYK6	TSL:1 GENCODE basic APPRIS P4
Slc1a2-201	ENSMUST00000005220.10	2127	558aa	Protein coding	CCDS16469	A2APL7 P43006	TSL:1 GENCODE basic
Slc1a2-203	ENSMUST00000111212.7	1957	569aa	Protein coding	CCDS38189	A2APL8 P43006	TSL:1 GENCODE basic APPRIS ALT1
Slc1a2-204	ENSMUST00000111213.7	2093	561aa	Protein coding	-	A2APL5	TSL:5 GENCODE basic
Slc1a2-209	ENSMUST00000136488.1	587	196aa	Protein coding	-	F7CAM6	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Slc1a2-212	ENSMUST00000154446.1	567	145aa	Protein coding	-	F6ZRK3	CDS 5' incomplete TSL:5
Slc1a2-205	ENSMUST00000123759.7	510	157aa	Protein coding	-	A2AQI7	CDS 3' incomplete TSL:3
Slc1a2-210	ENSMUST00000137466.1	342	No protein	Processed transcript	-	-	TSL:1
Slc1a2-206	ENSMUST00000125085.7	254	No protein	Processed transcript	-	-	TSL:5
Slc1a2-207	ENSMUST00000128622.1	210	No protein	Processed transcript	-	-	TSL:1
Slc1a2-208	ENSMUST00000136221.7	209	No protein	Processed transcript	-	-	TSL:1
Slc1a2-211	ENSMUST00000145921.1	193	No protein	Processed transcript	-	-	TSL:5

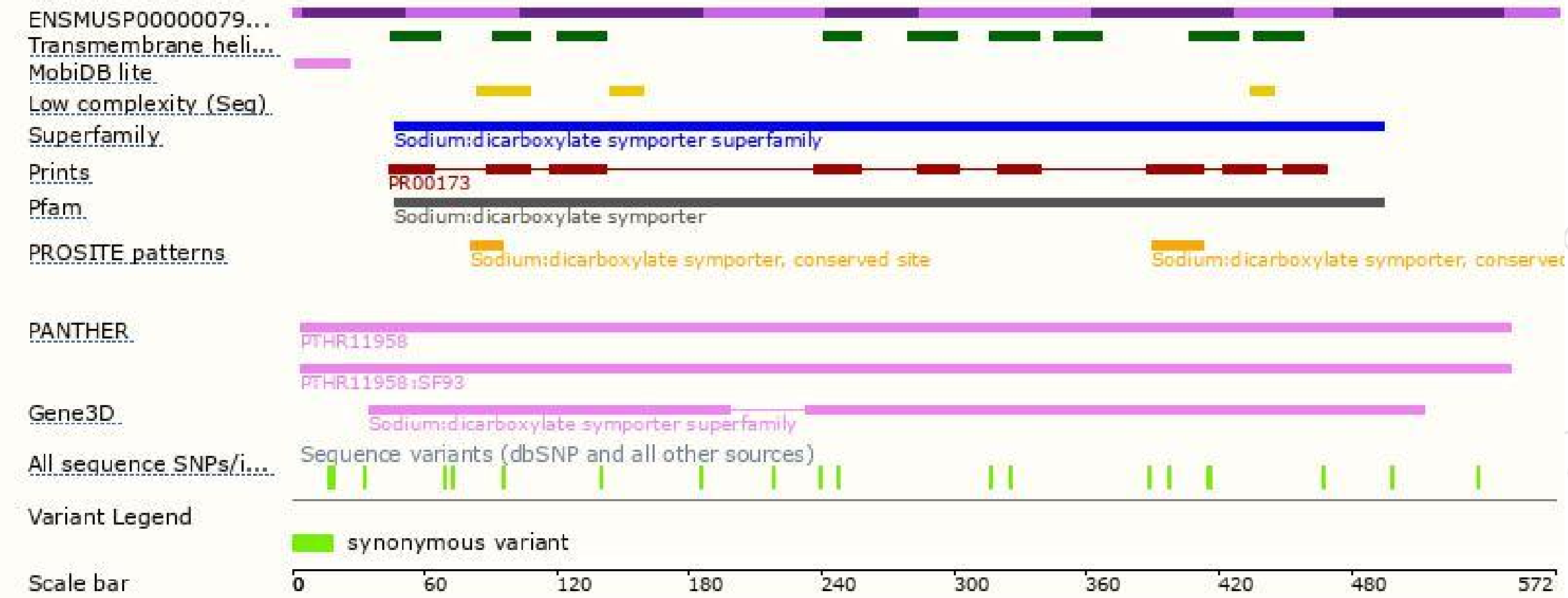
The strategy is based on the design of *Slc1a2-202* transcript,The transcription is shown below



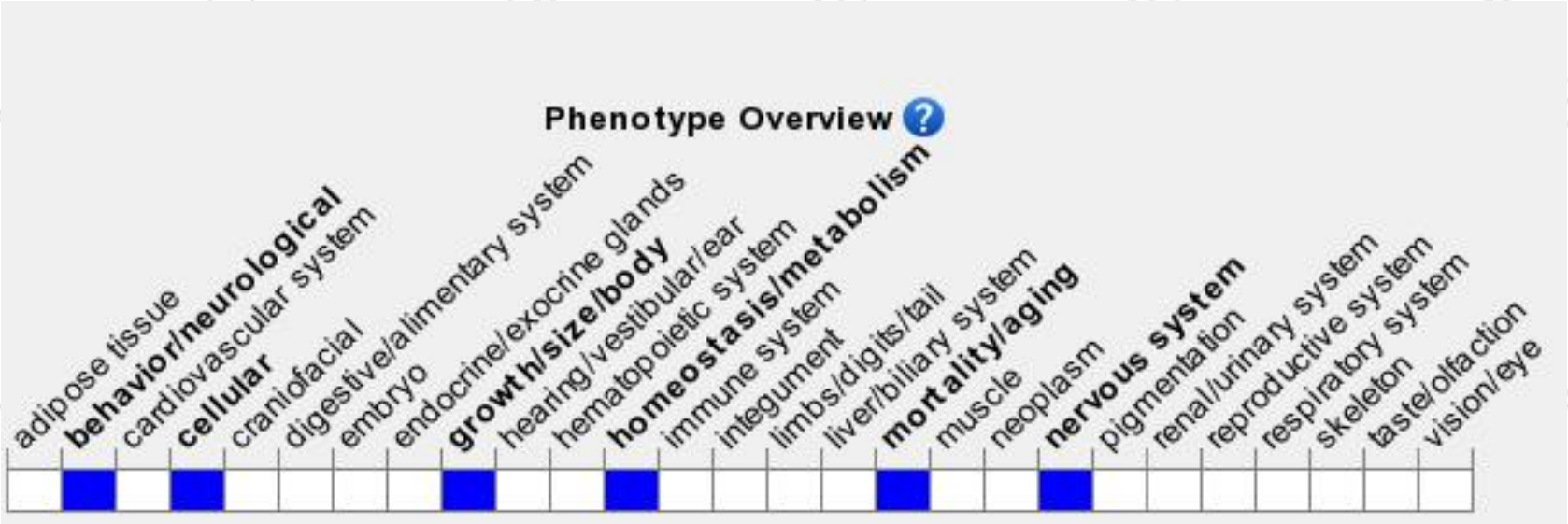
Genomic location distribution



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 disruptions in this gene display spontaneous seizures often leading to death as well as a succeptibility to neuronal degeneration.

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

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