Hsph1 Cas9-CKO Strategy

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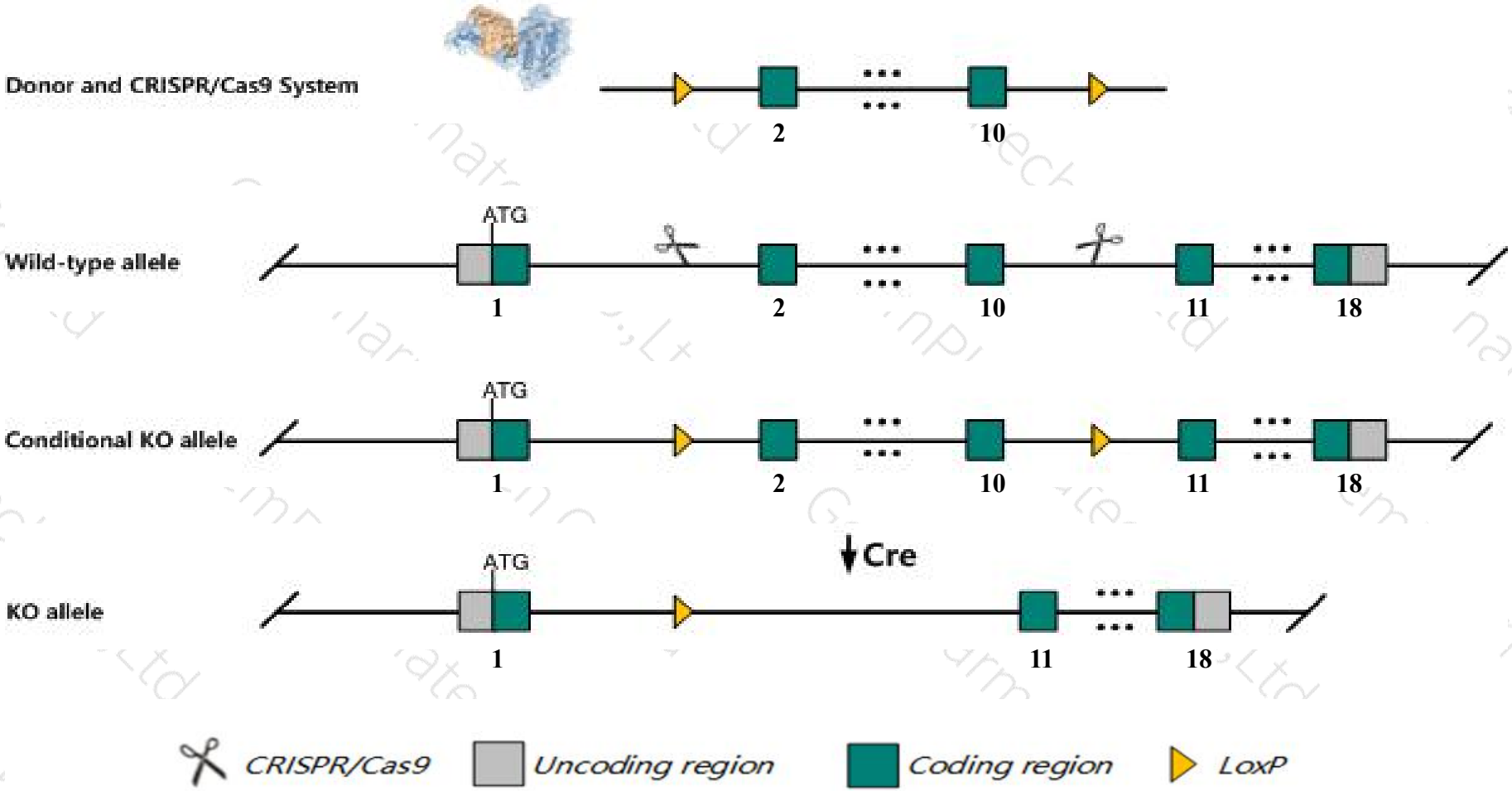
Project Overview

Project Name	***Hsph1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hsph1* gene. The schematic diagram is as follows:



Technical routes

- The *Hsph1* gene has 11 transcripts. According to the structure of *Hsph1* gene, exon2-exon10 of *Hsph1-211* (ENSMUST00000202361.3) transcript is recommended as the knockout region.The region contains 1271bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Hsph1* 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,Homozygous inactivation of this gene leads to decreased susceptibility to ischemic brain injury.

- The *Hsph1* gene is located on the Chr5. 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

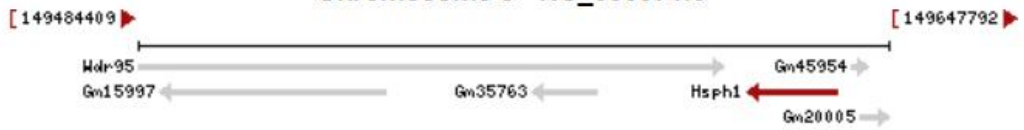
Hsph1 heat shock 105kDa/110kDa protein 1 [*Mus musculus* (house mouse)]

Gene ID: 15505, updated on 12-Aug-2019

Summary

Official Symbol	Hsph1 provided by MGI
Official Full Name	heat shock 105kDa/110kDa protein 1 provided by MGI
Primary source	MGI:MGI:105053
See related	Ensembl:ENSMUSG00000029657
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	105kDa; Hsp105; Hsp110; hsp-E7l; AI790491; hsp110/105
Expression	Broad expression in cortex adult (RPKM 30.2), CNS E11.5 (RPKM 29.9) and 25 other tissues See more
Orthologs	human all

Chromosome 5 - NC_000071.6

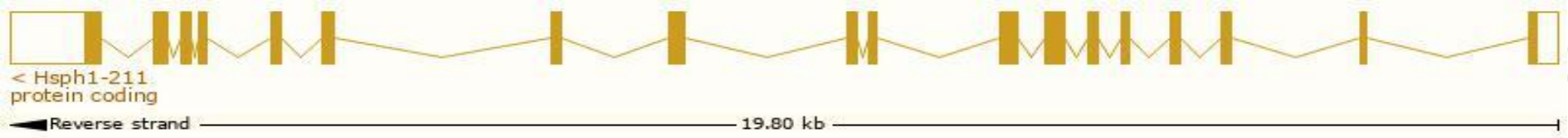


Transcript information（Ensembl）

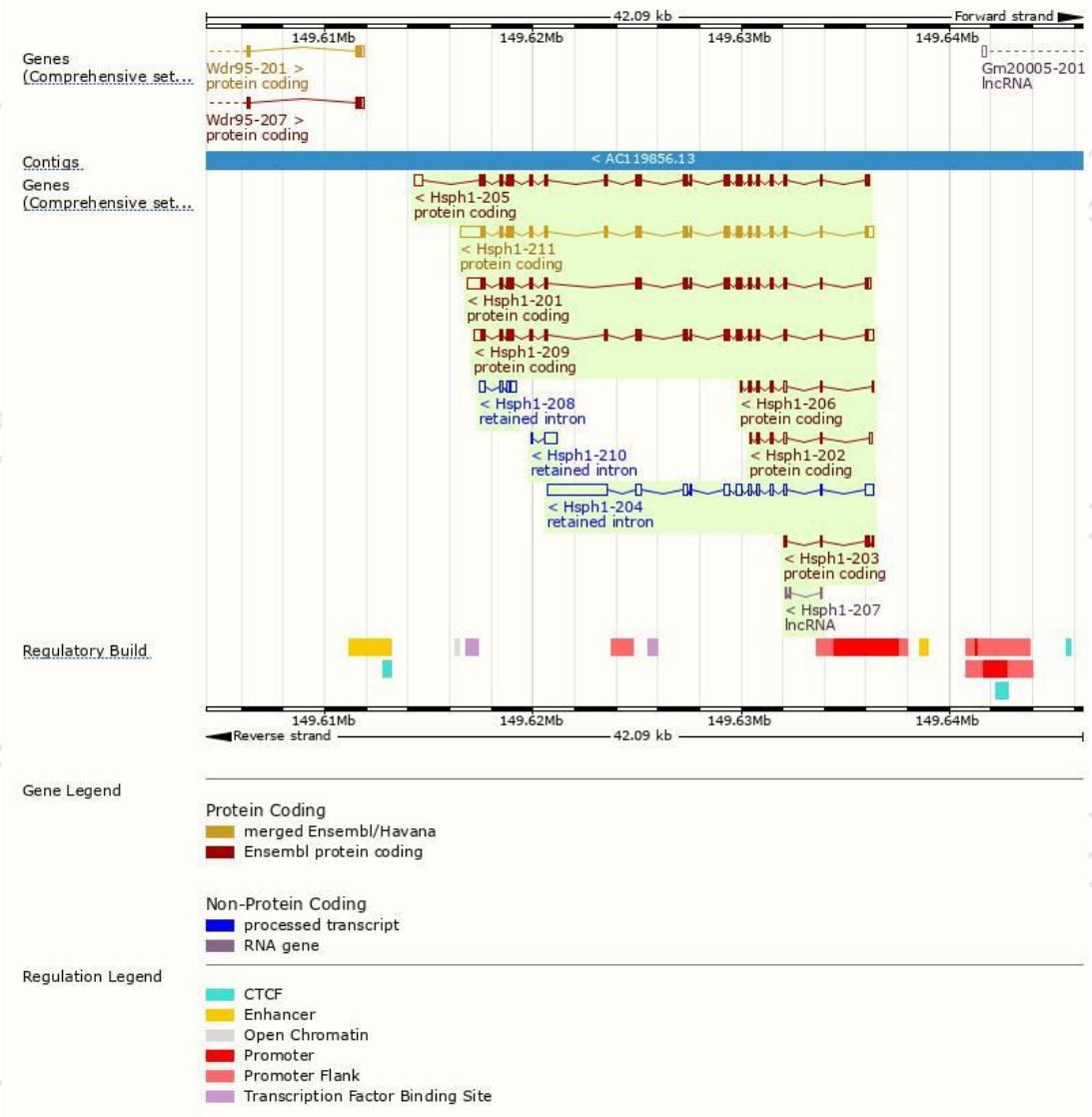
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hsph1-211	ENSMUST00000202361.3	3802	858aa	Protein coding	CCDS19885	Q61699	TSL:1 GENCODE basic APPRIS P3
Hsph1-201	ENSMUST00000074846.13	3240	814aa	Protein coding	CCDS85010	Q61699	TSL:1 GENCODE basic APPRIS ALT1
Hsph1-205	ENSMUST00000201452.3	3140	858aa	Protein coding	CCDS19885	Q61699	TSL:1 GENCODE basic APPRIS P3
Hsph1-209	ENSMUST00000202089.3	3054	817aa	Protein coding	-	E9Q0U7	TSL:5 GENCODE basic
Hsph1-206	ENSMUST00000201559.3	661	144aa	Protein coding	-	D3Z3I9	CDS 3' incomplete TSL:5
Hsph1-202	ENSMUST00000200805.3	587	94aa	Protein coding	-	A0A0J9YTZ7	CDS 3' incomplete TSL:3
Hsph1-203	ENSMUST00000200825.1	416	100aa	Protein coding	-	D3Z027	CDS 3' incomplete TSL:2
Hsph1-204	ENSMUST00000201431.3	4764	No protein	Retained intron	-	-	TSL:1
Hsph1-210	ENSMUST00000202137.1	752	No protein	Retained intron	-	-	TSL:2
Hsph1-208	ENSMUST00000201877.1	751	No protein	Retained intron	-	-	TSL:2
Hsph1-207	ENSMUST00000201666.1	254	No protein	lncRNA	-	-	TSL:5

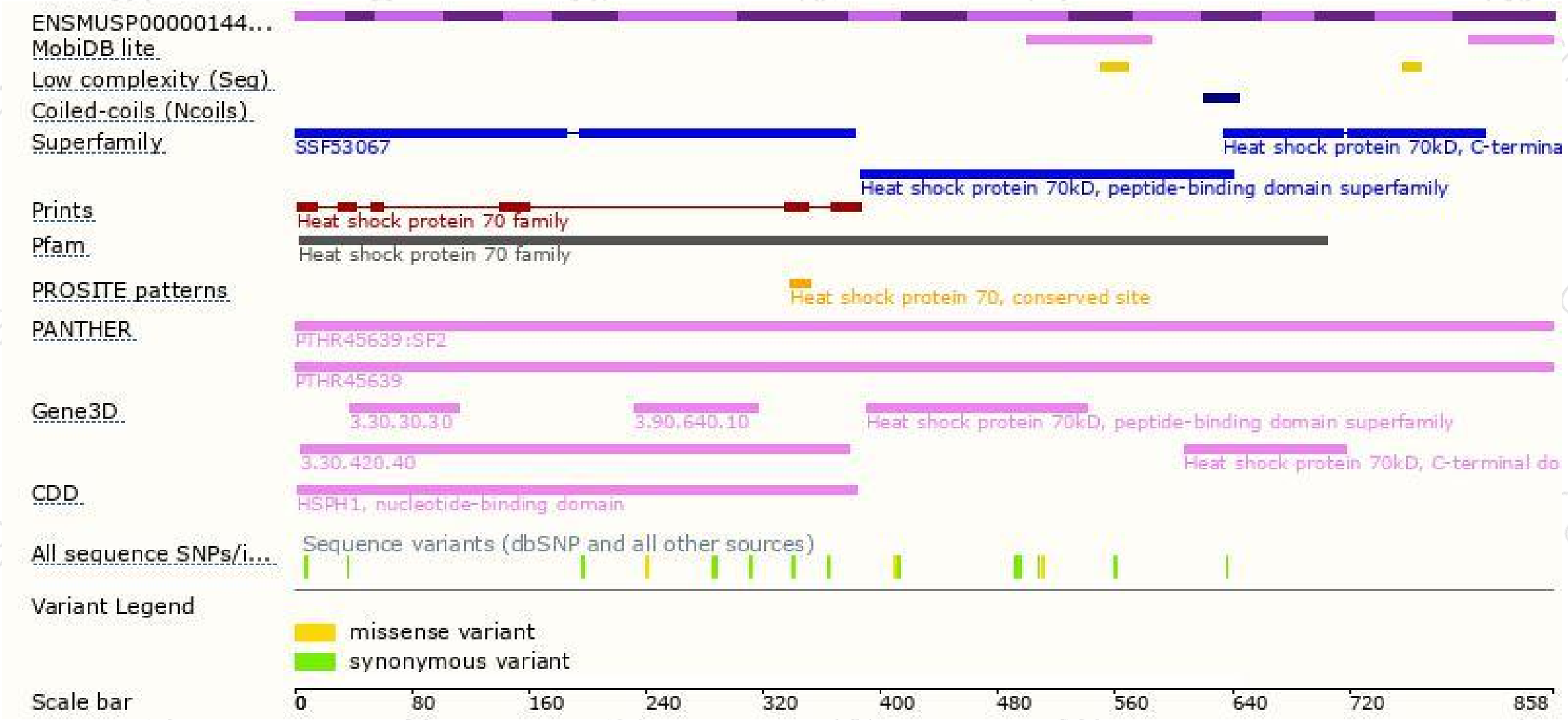
The strategy is based on the design of *Hsph1-211* transcript,The transcription is shown below



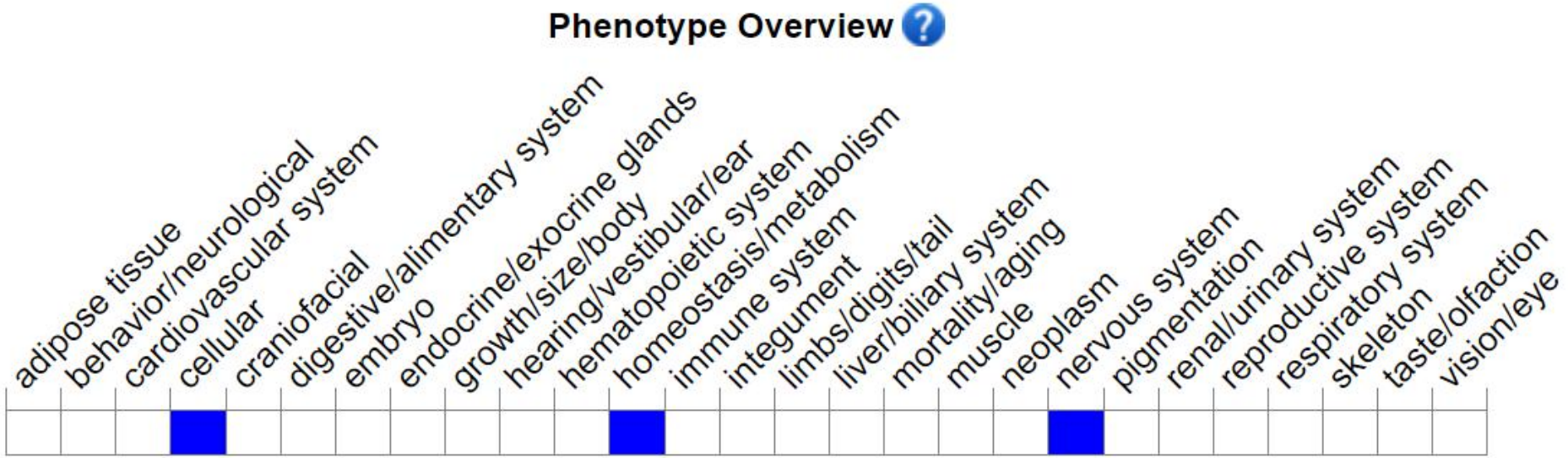
Genomic location distribution



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 inactivation of this gene leads to decreased susceptibility to ischemic brain injury.

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

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