

# ***S1pr4*** Cas9-CKO Strategy

Designer: Xueting Zhang

Design Date: 2019-8-5

# Project Overview

**Project Name**

*S1pr4*

**Project type**

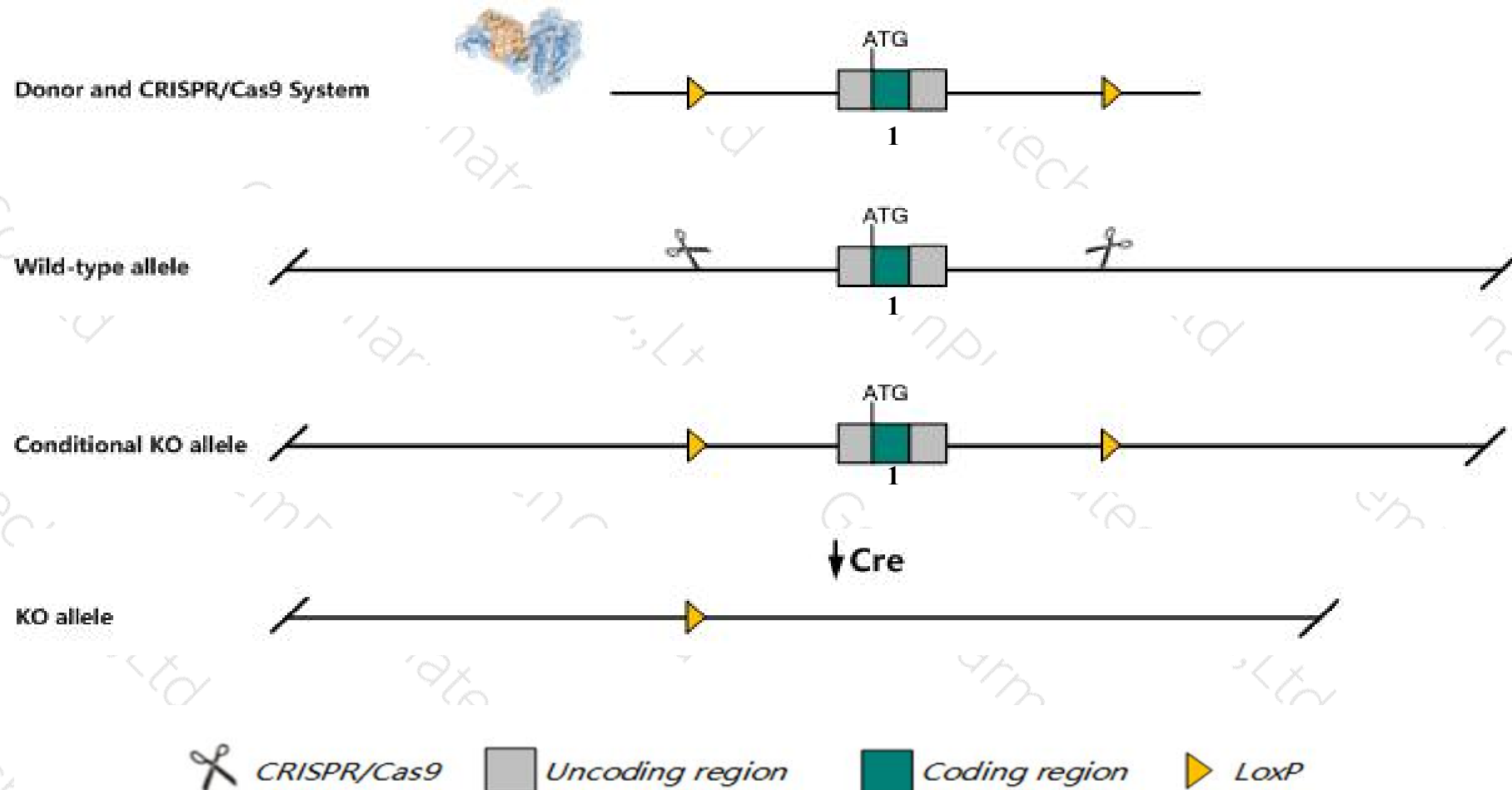
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slpr4* gene. The schematic diagram is as follows:



- The *Slpr4* gene has 1 transcript. According to the structure of *Slpr4* gene, exon1 of *Slpr4-201* (ENSMUST00000053646.6) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Slpr4* 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, Homozygous mutation of this gene results in mid-gestation embryonic lethality. Heterozygotes exhibit decreased prepulse inhibition.
- The floxed region is near to the N-terminal of *Ncln* gene and the C-terminal of *Gnal5* gene, this strategy may influence the regulatory function of the N-terminal of *Ncln* gene and the C-terminal of *Gnal5* gene.
- The *Slpr4* gene is located on the Chr10. 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)

## S1pr4 sphingosine-1-phosphate receptor 4 [ *Mus musculus* (house mouse) ]

Gene ID: 13611, updated on 31-Jan-2019

### Summary

- Official Symbol** S1pr4 provided by MGI
- Official Full Name** sphingosine-1-phosphate receptor 4 provided by MGI
- Primary source** [MGI:MGI:1333809](#)
- See related** [Ensembl:ENSMUSG00000044199](#)
- 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** Edg6; Lpc1; S1p4
- Summary** This gene encodes a member of the G-protein coupled receptor 1 family. The encoded protein is a receptor for the lysophospholipid sphingosine 1-phosphate. The encoded protein is one of the predominant sphingosine 1-phosphate G-protein coupled receptors expressed in T cells, and it plays a role in suppression of T cell proliferation, generation of cytokines, and potentially other aspects of immune activation. [provided by RefSeq, Feb 2010]
- Orthologs** [human](#) [all](#)

### Genomic context

**Location:** 10; 10 C1

See S1pr4 in [Genome Data Viewer](#)

**Exon count:** 1

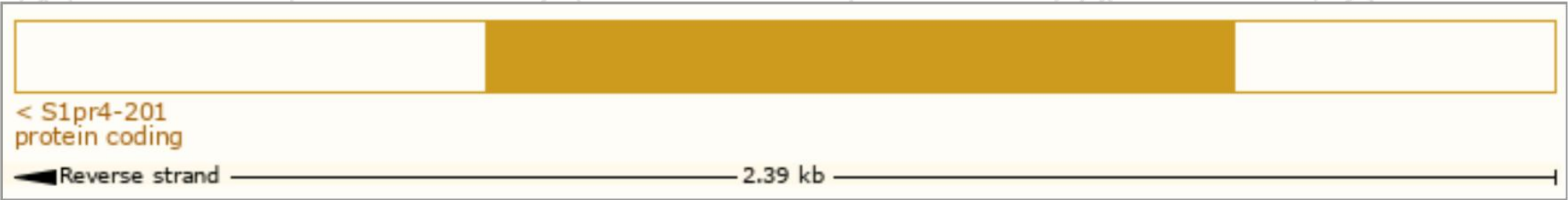
Annotation release	Status	Assembly	Chr	Location
<a href="#">106</a>	current	GRCm38.p4 ( <a href="#">GCF_000001635.24</a> )	10	NC_000076.6 (81497745..81500137, complement)
Build 37.2	previous assembly	MGSCv37 ( <a href="#">GCF_000001635.18</a> )	10	NC_000076.5 (80960490..80962882, complement)

# Transcript information (Ensembl)

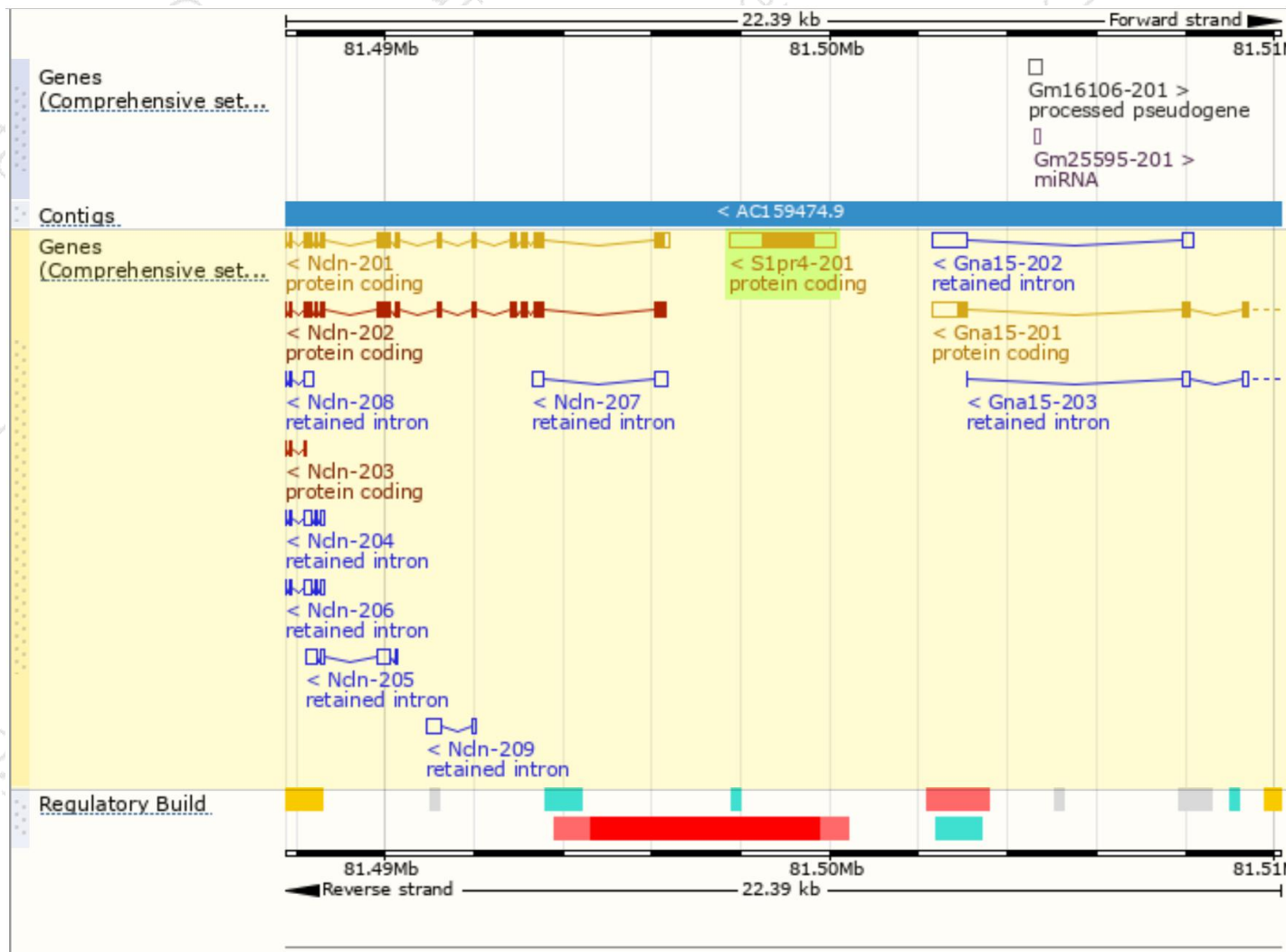
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
S1pr4-201	<a href="#">ENSMUST00000053646.6</a>	2386	<a href="#">386aa</a>	Protein coding	<a href="#">CCDS24059</a>	<a href="#">Q9Z0L1</a>	TSL:NA GENCODE basic APPRIS P1

The strategy is based on the design of *S1pr4-201* transcript, The transcription is shown below



# Genomic location distribution

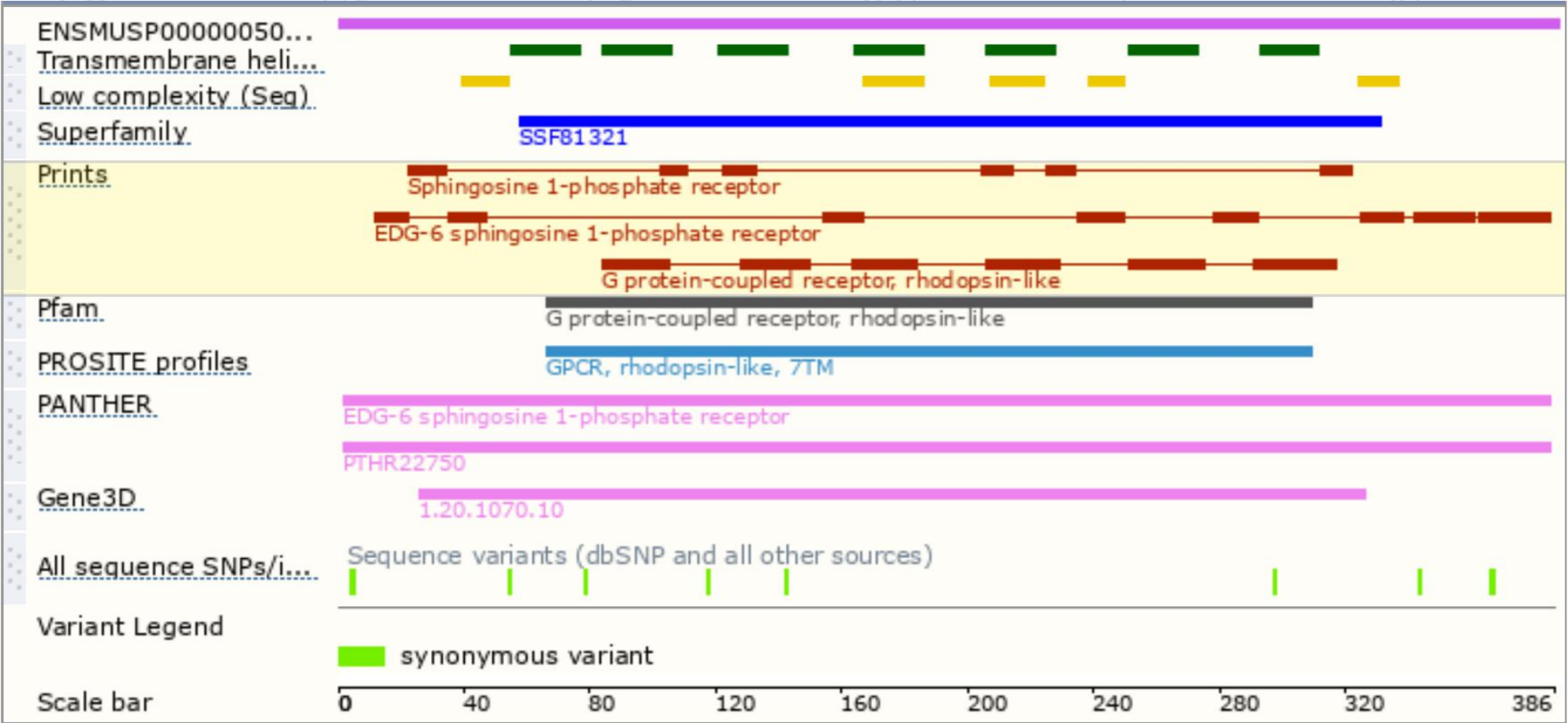




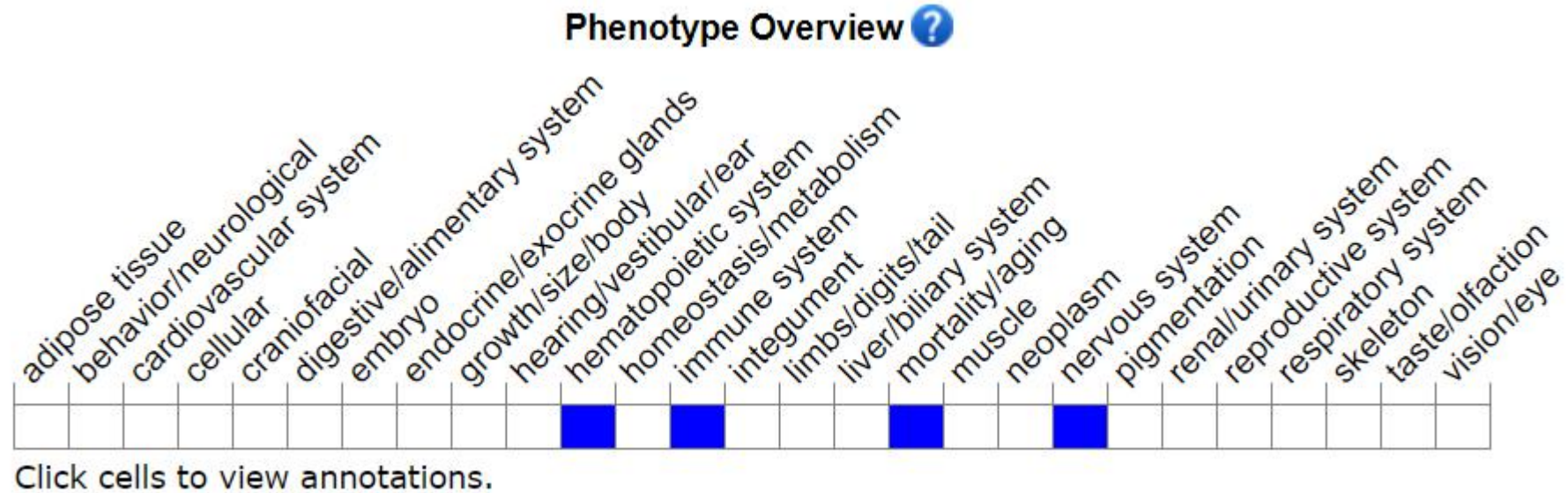
# Protein domain



集萃药康  
GemPharmatech



# Mouse phenotype description(MGI)



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

Homozygous mutation of this gene results in mid-gestation embryonic lethality. Heterozygotes exhibit decreased prepulse inhibition.

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

Tel: 400-9660890

