

Lpar5 Cas9-CKO Strategy

Designer:

Jinling Wang

Design Date:

2019-9-30

Project Overview

Project Name

Lpar5

Project type

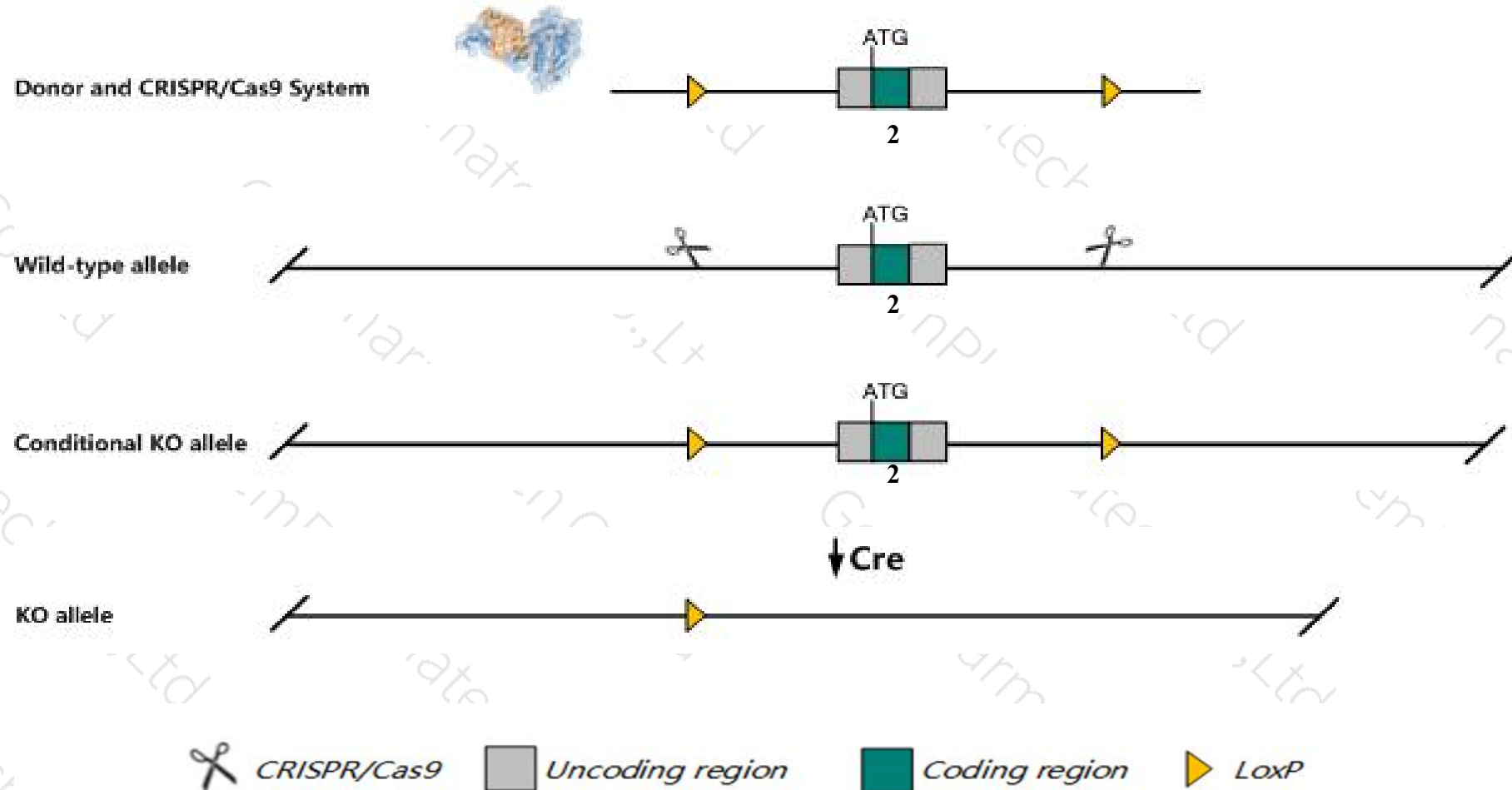
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lpar5* gene. The schematic diagram is as follows:



- The *Lpar5* gene has 3 transcripts. According to the structure of *Lpar5* gene, exon2 of *Lpar5-203* (ENSMUST00000171989.2) 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 *Lpar5* 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, Mice homozygous for a knock-out allele exhibit resistance to neuropathic pain and myelin sheath alterations. Mice homozygous for a different targeted allele exhibit decreased nociception sensitivity, decreased anxiety-related response and enhanced coordination and spatial learning.
- The *Lpar5* gene is located on the Chr6. 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)

Lpar5 lysophosphatidic acid receptor 5 [Mus musculus (house mouse)]

Gene ID: 381810, updated on 13-Mar-2019

Summary



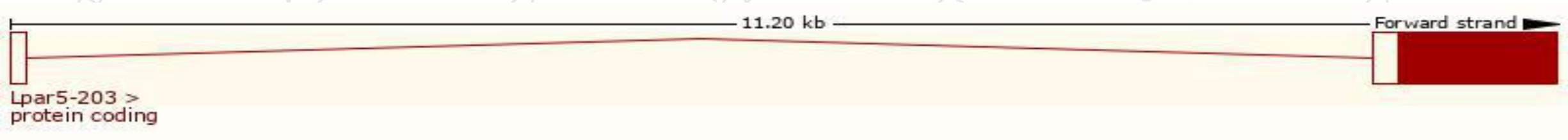
Official Symbol	Lpar5 provided by MGI
Official Full Name	lysophosphatidic acid receptor 5 provided by MGI
Primary source	MGI:MGI:2685918
See related	Ensembl:ENSMUSG00000067714
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	GPR93, Gm1072, Gpr92, LPA5
Expression	Biased expression in small intestine adult (RPKM 19.8), duodenum adult (RPKM 18.6) and 7 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

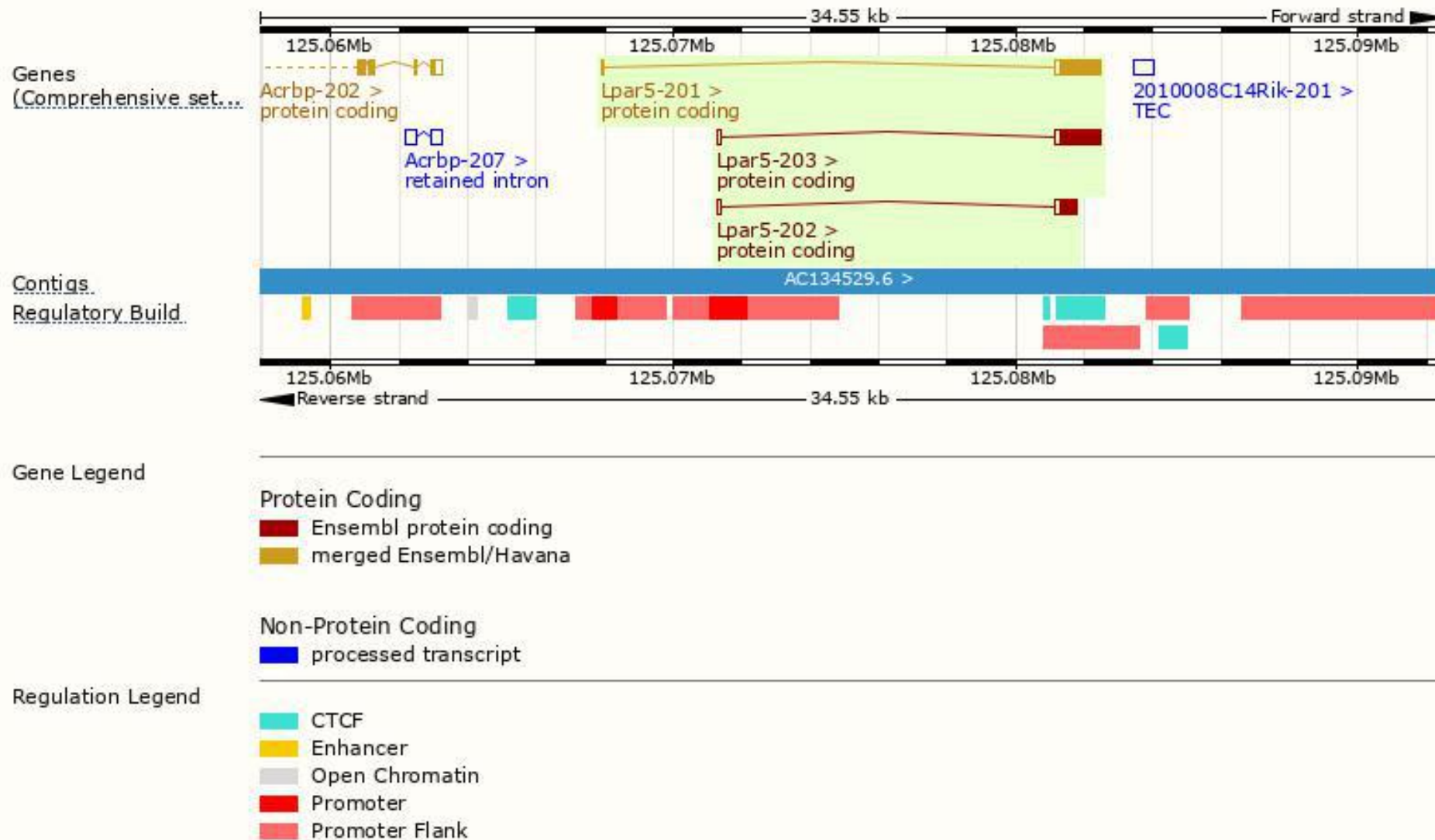
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lpar5-203	ENSMUST00000171989.2	1458	384aa	Protein coding	CCDS51911	G3X9K0	TSL:2 GENCODE basic APPRIS P1
Lpar5-201	ENSMUST00000088292.6	1393	384aa	Protein coding	CCDS51911	G3X9K0	TSL:1 GENCODE basic APPRIS P1
Lpar5-202	ENSMUST00000140346.8	794	163aa	Protein coding	-	F6S365	CDS 3' incomplete TSL:2

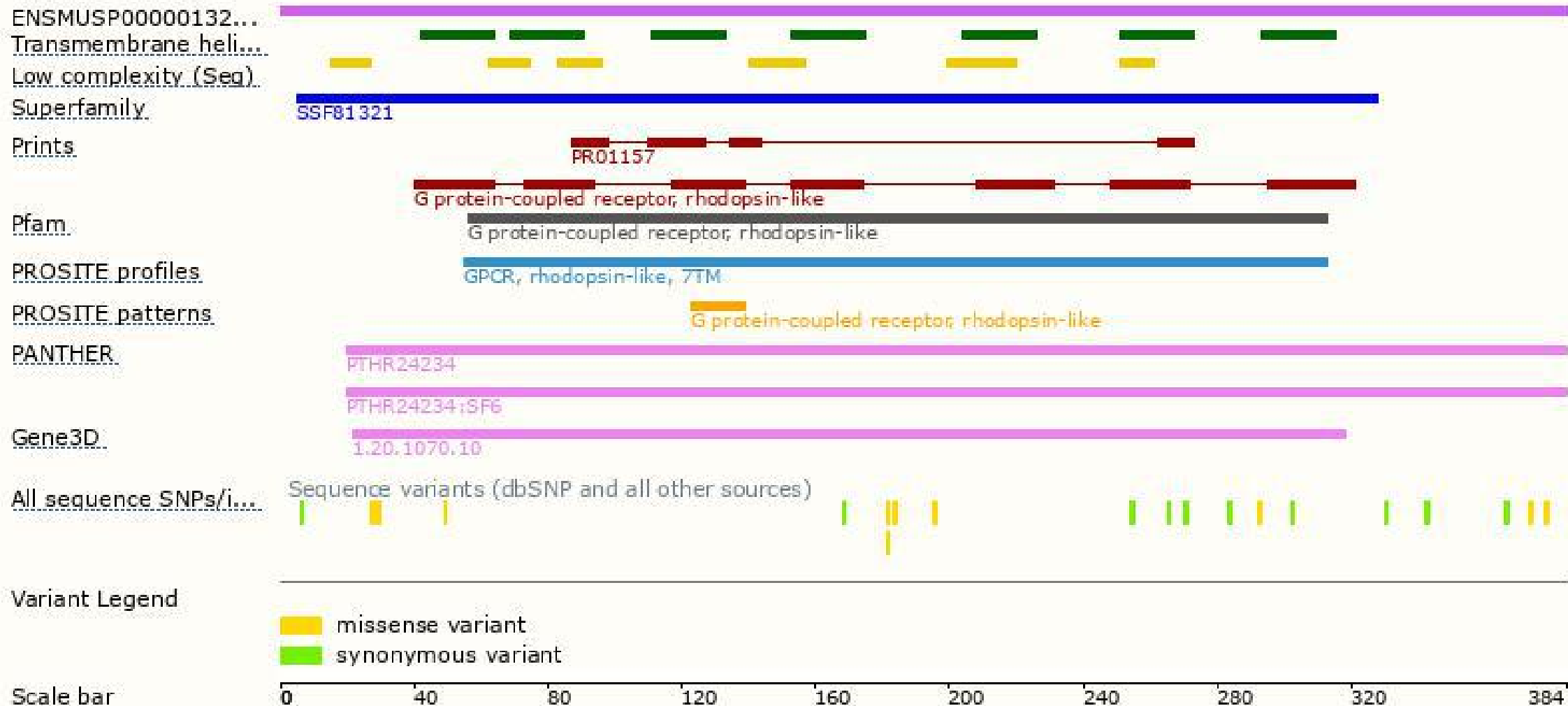
The strategy is based on the design of *Lpar5-203* transcript,The transcription is shown below



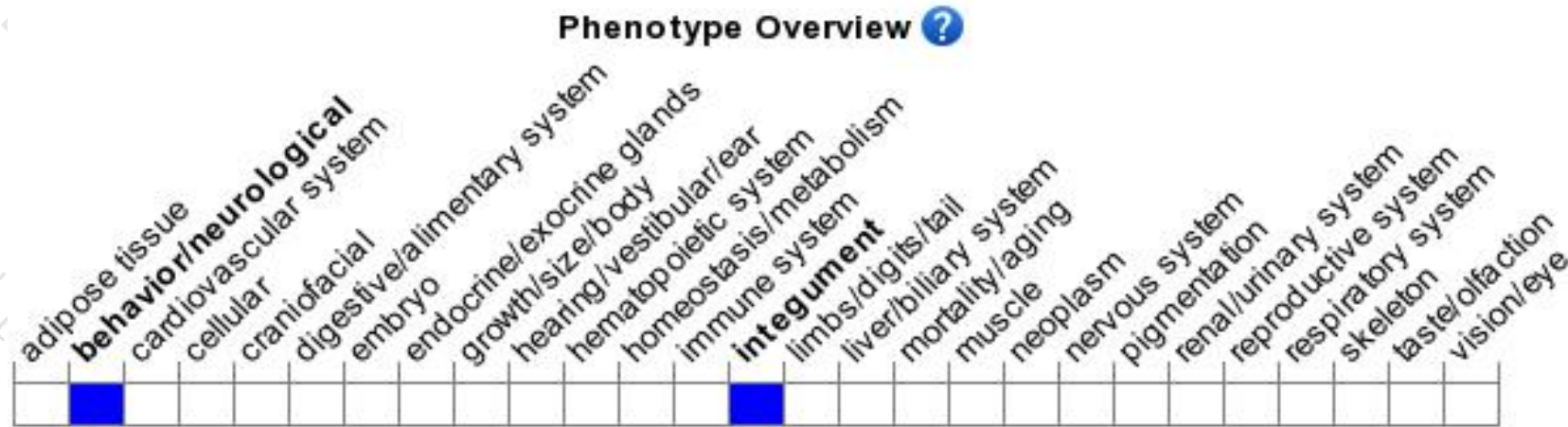
Genomic location distribution



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 resistance to neuropathic pain and myelin sheath alterations. Mice homozygous for a different targeted allele exhibit decreased nociception sensitivity, decreased anxiety-related response and enhanced coordination and spatial learning.

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

Tel: 400-9660890

