# *Lrig2* Cas9-KO Strategy

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**Reviewer: Xiaojing Li**

**Design Date: 2020-8-24**

# Project Overview

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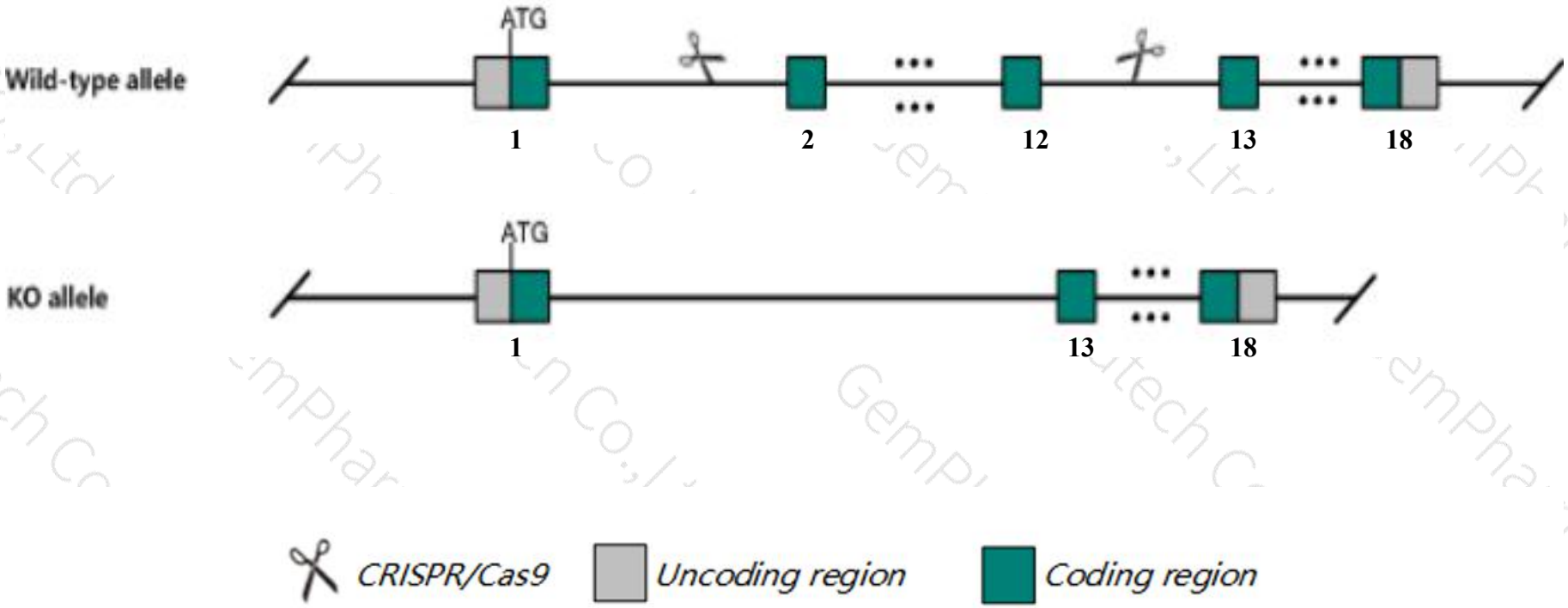
|---|---|
| **Project Name** | ***Lrig2*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lrig2* gene. The schematic diagram is as follows:



# Technical routes

➢ The *Lrig2* gene has 9 transcripts. According to the structure of *Lrig2* gene, exon2-exon12 of *Lrig2-201*(ENSMUST00000046316.10) transcript is recommended as the knockout region.The region contains 1238bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Lrig2* gene. The brief process is as follows: CRISPR/Cas9 system 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.

# Notice

➢ According to the existing MGI data,mice homozygous for a knock-out allele exhibit reduced susceptibility to PDGFB-induced glioma and premature death due to illness with reduced body weight, letahrgy, hackled fur, crouched posture and increased inflammatory response.

➢Transcript 208  CDS 3' incomplete the influences is unknown.

➢ The flox region contain the Gm43696 gene, which may delet it after Cre.

➢ The *Lrig2* gene is located on the Chr3. 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

## Lrig2 leucine-rich repeats and immunoglobulin-like domains 2 [Mus musculus (house mouse)]

Gene ID: 269473, updated on 13-Mar-2020

### Summary

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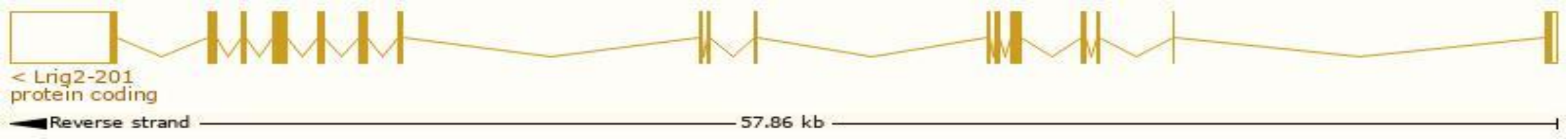
|---|---|
| **Official Symbol** | Lrig2 provided by MGI |
| **Official Full Name** | leucine-rich repeats and immunoglobulin-like domains 2 provided by MGI |
| **Primary source** | MGI:MGI:2443718 |
| **See related** | Ensembl:ENSMUSG00000032913 |
| **Gene type** | protein coding |
| **RefSeq status** | 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** | 4632419I10Rik, BB096938, LIG-2 |
| **Expression** | Ubiquitous expression in CNS E18 (RPKM 7.1), whole brain E14.5 (RPKM 6.7) and 28 other tissues See more |
| **Orthologs** | human all |

# Transcript information（Ensembl）

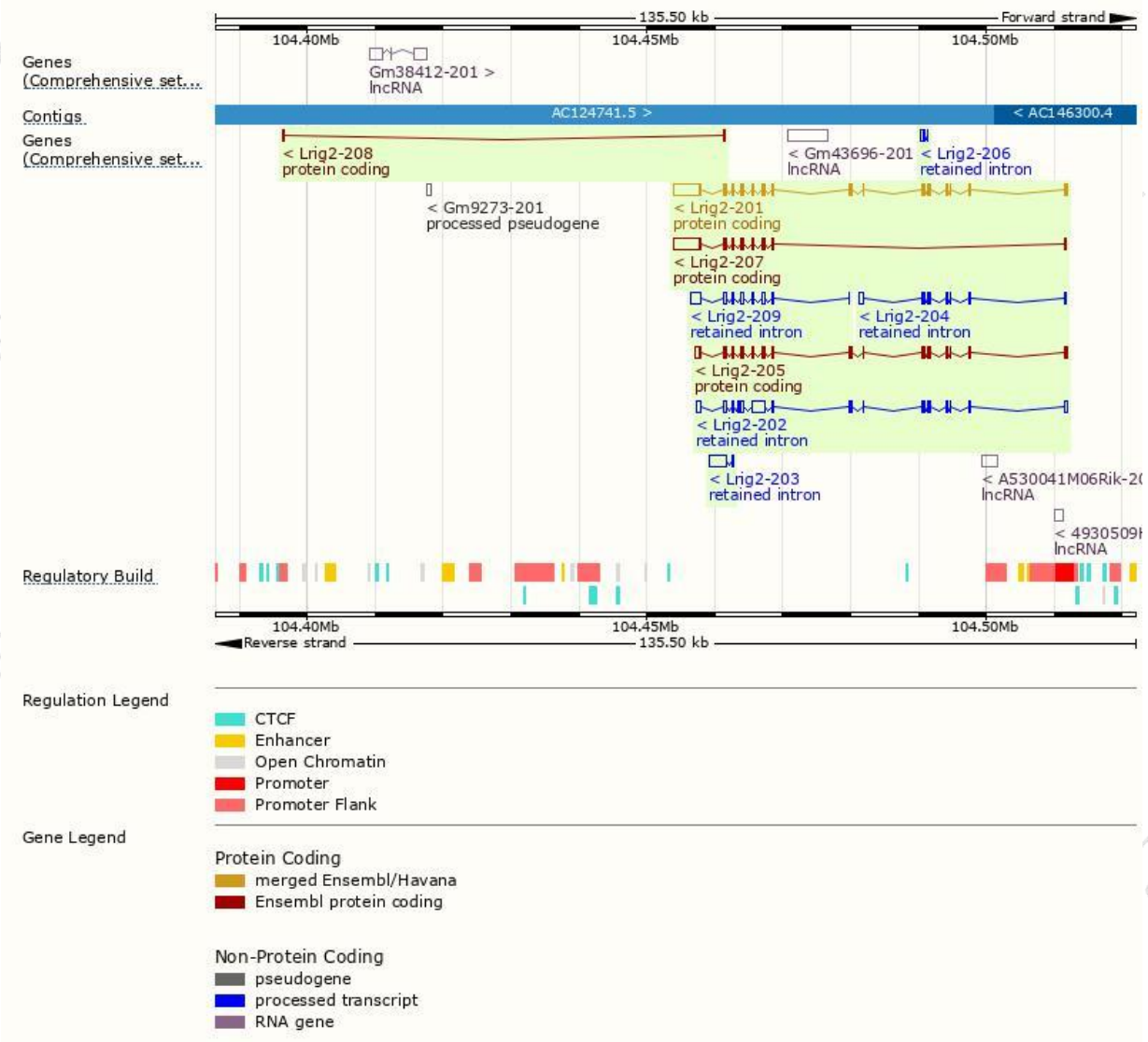
The gene has 9 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|---|---|---|---|---|---|---|---|
| **Lrig2-201** | ENSMUST00000046316.10 | 7099 | 1054aa | Protein coding | CCDS17701 | Q52KR2 | TSL:1 GENCODE basic APPRIS P3 |
| **Lrig2-205** | ENSMUST00000198332.1 | 3946 | 1047aa | Protein coding | CCDS79993 | B2RRI5 | TSL:1 GENCODE basic APPRIS ALT2 |
| **Lrig2-207** | ENSMUST00000199070.4 | 5991 | 689aa | Protein coding | - | Q52KR2 | TSL:1 GENCODE basic |
| **Lrig2-208** | ENSMUST00000199180.1 | 383 | 47aa | Protein coding | - | A0A0G2JG33 | CDS 5' incomplete TSL:2 |
| **Lrig2-202** | ENSMUST00000196518.4 | 5147 | No protein | Retained intron | - | - | TSL:2 |
| **Lrig2-209** | ENSMUST00000200453.4 | 3179 | No protein | Retained intron | - | - | TSL:1 |
| **Lrig2-203** | ENSMUST00000197018.1 | 2647 | No protein | Retained intron | - | - | TSL:1 |
| **Lrig2-204** | ENSMUST00000198089.4 | 1719 | No protein | Retained intron | - | - | TSL:5 |
| **Lrig2-206** | ENSMUST00000198452.1 | 445 | No protein | Retained intron | - | - | TSL:3 |

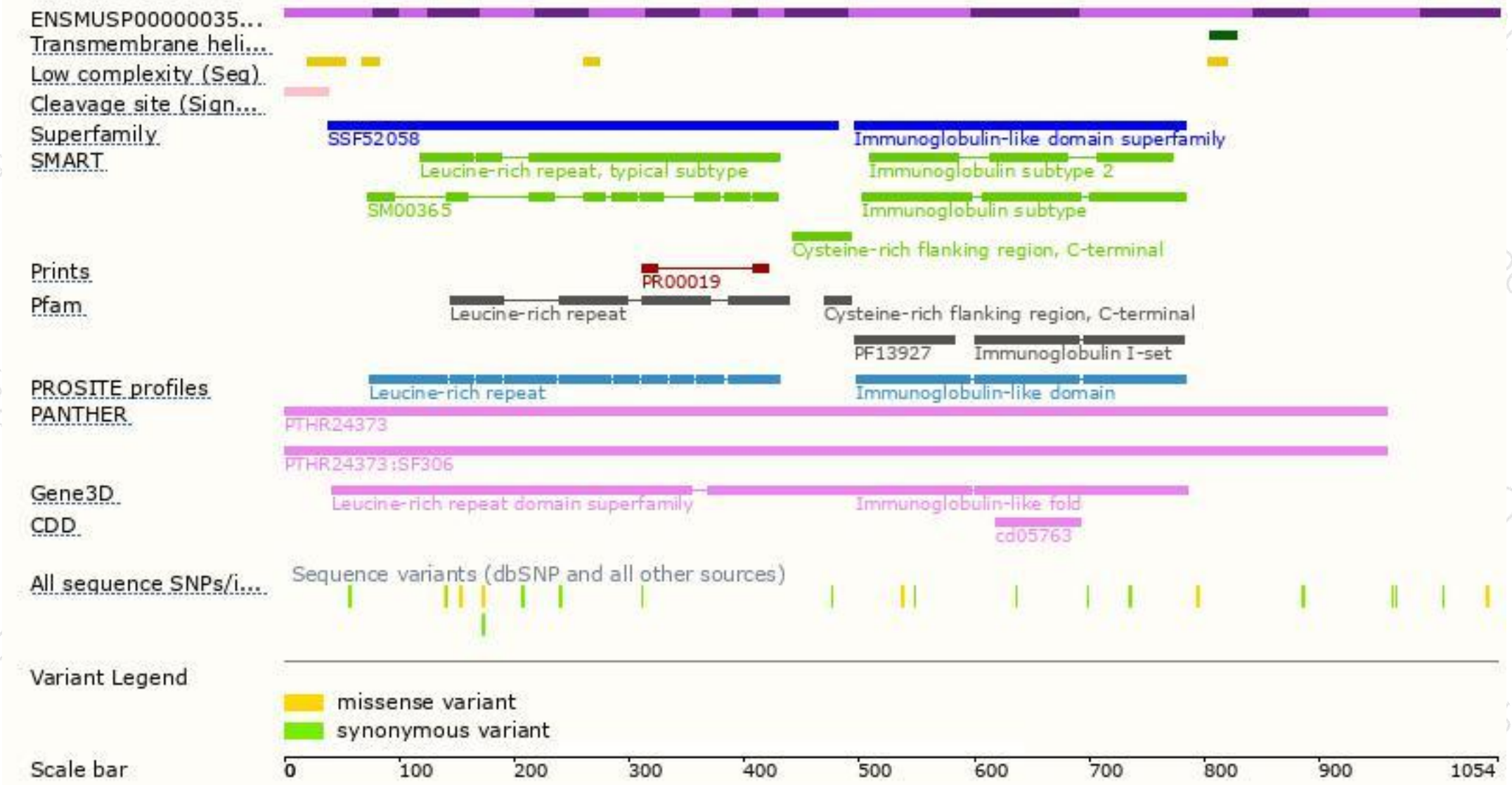
The strategy is based on the design of *Lrig2-201* transcript,the transcription is shown below:



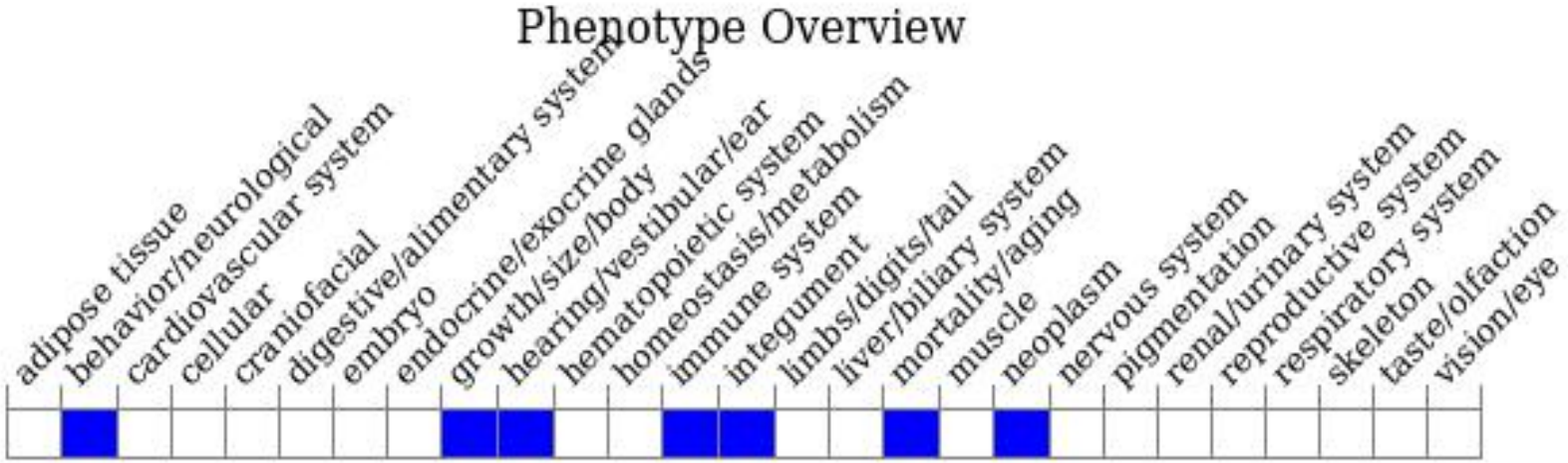
# Genomic location distribution



# 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,mice homozygous for a knock-out allele exhibit reduced susceptibility to PDGFB-induced glioma and premature death due to illness with reduced body weight, letahrgy, hackled fur, crouched posture and increased inflammatory response.

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

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