

# ***Ralgapb Cas9-KO Strategy***

**Designer:**

**Daohua Xu**

**Reviewer :**

**Huimin Su**

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# Project Overview

**Project Name**

*Ralgapb*

**Project type**

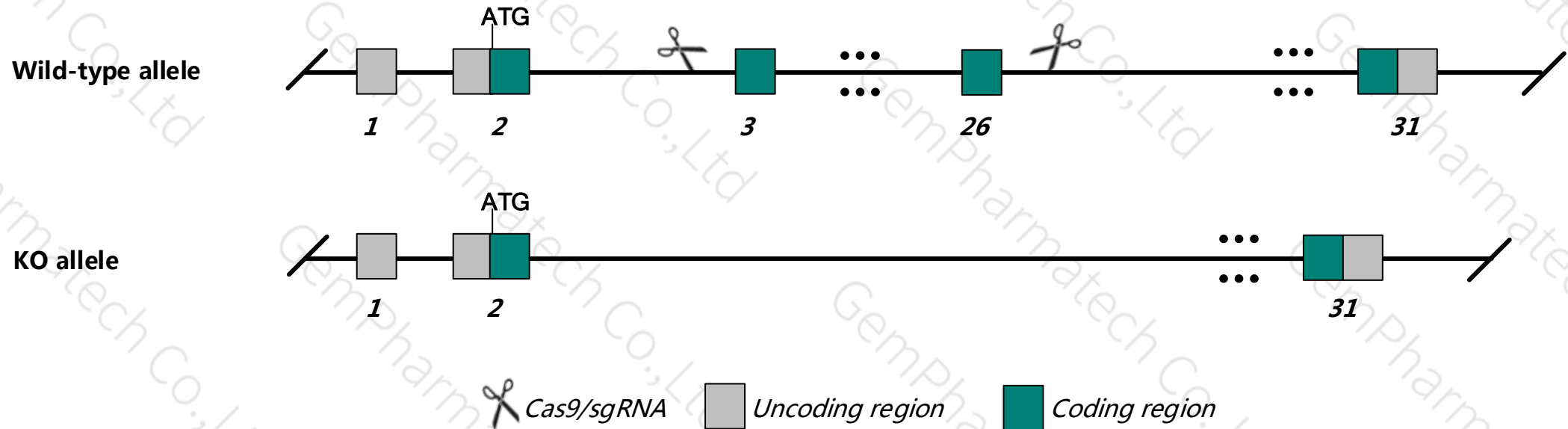
Cas9-KO

**Animal background**

C57BL/6JGpt

# Knockout strategy

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



# Technical routes

- The *Ralgapb* gene has 10 transcripts, According to the structure of *Ralgapb* gene, exon3-exon26 of *Ralgapb*-202 transcript is recommended as the knockout region. The region contains the 3670bp coding sequence. Knock out the region, result in destruction of protein.
- This project uses CRISPR/Cas9 technology to modify *Ralgapb* gene. The brief process is as follows: sgRNA was transcribed in vitro, Cas9, sgRNA were microinjected into fertilized eggs of C57BL/6JGpt mice and homologous recombination was carried out to obtain F0 mice. A stable and hereditary F1 generation mouse model was obtained by mating F0 generation mice with C57BL/6JGpt mice which were confirmed positive by PCR-sequencing.

- The *Ralgapb* gene is located in the Chr2. If the knockout mice are mixed with other mice, two target genes are avoided on the same chromosome as possible, otherwise the offspring of mice with double gene positive and homozygous gene knockout can not be obtained.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of gene transcription and translation processes, all risks cannot be predicted under existing information.

# Gene information ( NCBI )

## Ralgapb Ral GTPase activating protein, beta subunit (non-catalytic) [ *Mus musculus* (house mouse) ]

Gene ID: 228850, updated on 8-Dec-2018

### Summary

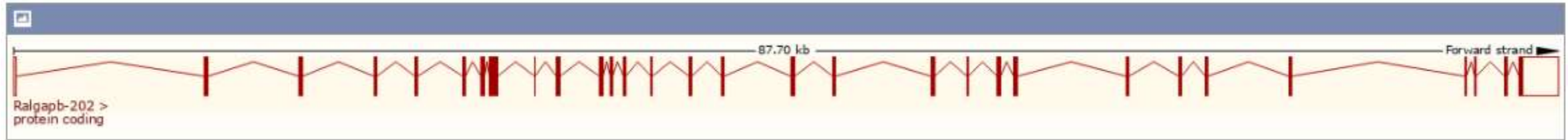
|                    |                                                                                                                                                                           |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Official Symbol    | Ralgapb provided by <a href="#">MGI</a>                                                                                                                                   |
| Official Full Name | Ral GTPase activating protein, beta subunit (non-catalytic) provided by <a href="#">MGI</a>                                                                               |
| Primary source     | <a href="#">MGI:MGI:2444531</a>                                                                                                                                           |
| See related        | <a href="#">Ensembl:ENSMUSG000000027652</a>                                                                                                                               |
| Gene type          | protein coding                                                                                                                                                            |
| RefSeq status      | VALIDATED                                                                                                                                                                 |
| Organism           | <a href="#">Mus musculus</a>                                                                                                                                              |
| Lineage            | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| Also known as      | p170; AI507211; B230339M05Rik                                                                                                                                             |
| Expression         | Ubiquitous expression in cerebellum adult (RPKM 10.3), whole brain E14.5 (RPKM 9.7) and 28 other tissues <a href="#">See more</a>                                         |
| Orthologs          | <a href="#">human</a> <a href="#">all</a>                                                                                                                                 |

# Transcript information ( Ensembl )

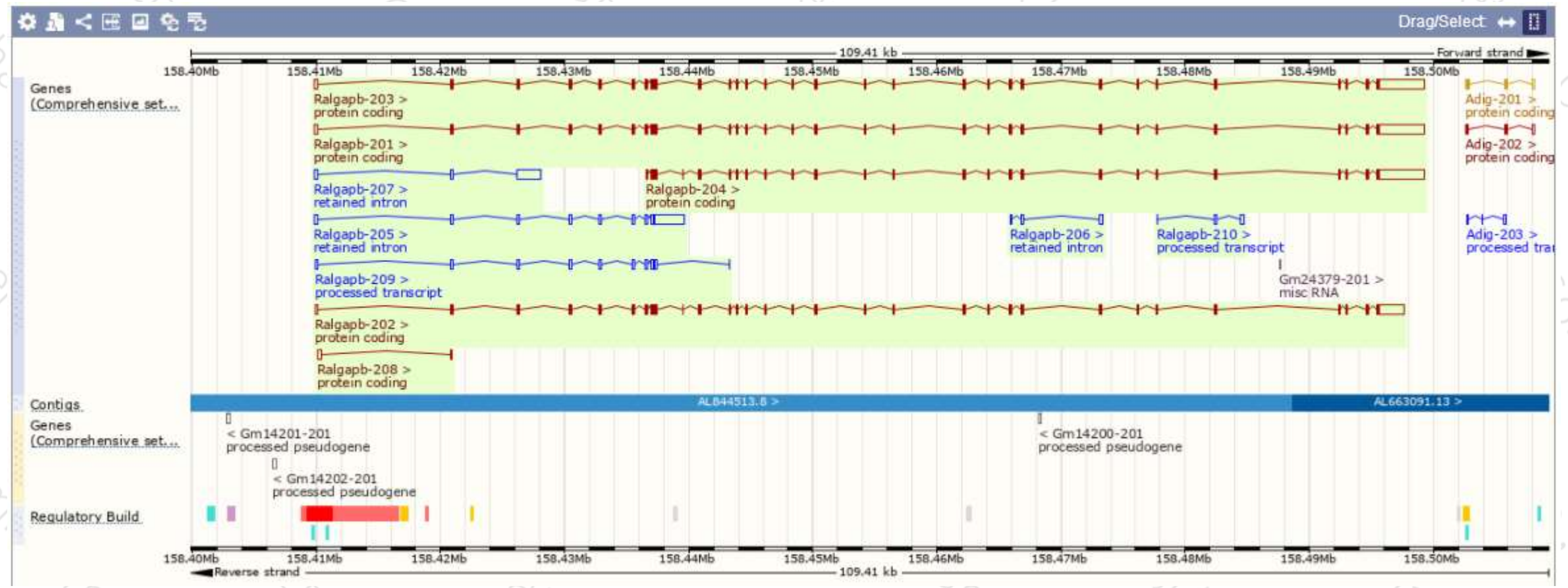
The gene has 10 transcripts, and all transcripts are shown below :

| Show/hide columns (1 hidden) |                                       |      |                        |                      |                           |                        |                                                              | Filter                  |               |             |
|------------------------------|---------------------------------------|------|------------------------|----------------------|---------------------------|------------------------|--------------------------------------------------------------|-------------------------|---------------|-------------|
| Name                         | Transcript ID                         | bp   | Protein                | Biotype              | CCDS                      | UniProt                | RefSeq                                                       | Flags                   |               |             |
| Ralgapb-203                  | <a href="#">ENSMUST00000109486.8</a>  | 8383 | <a href="#">1495aa</a> | Protein coding       | <a href="#">CCDS71179</a> | <a href="#">A2ACC6</a> | <a href="#">NM_001291138</a><br><a href="#">NP_001278067</a> | TSL:1                   | GENCODE basic | APPRIS ALT1 |
| Ralgapb-202                  | <a href="#">ENSMUST00000109485.8</a>  | 6709 | <a href="#">1507aa</a> | Protein coding       | <a href="#">CCDS71178</a> | <a href="#">E9Q0J2</a> | <a href="#">NM_001291137</a><br><a href="#">NP_001278066</a> | TSL:1                   | GENCODE basic | APPRIS P4   |
| Ralgapb-201                  | <a href="#">ENSMUST00000046274.11</a> | 8366 | <a href="#">1491aa</a> | Protein coding       | -                         | <a href="#">F8WHN4</a> | -                                                            | TSL:5                   | GENCODE basic | APPRIS ALT1 |
| Ralgapb-204                  | <a href="#">ENSMUST00000141497.1</a>  | 7131 | <a href="#">1173aa</a> | Protein coding       | -                         | <a href="#">A2ACC7</a> | -                                                            | CDS 5' incomplete TSL:5 |               |             |
| Ralgapb-208                  | <a href="#">ENSMUST00000156281.1</a>  | 432  | <a href="#">19aa</a>   | Protein coding       | -                         | <a href="#">A2APV5</a> | -                                                            | CDS 3' incomplete TSL:2 |               |             |
| Ralgapb-209                  | <a href="#">ENSMUST00000173137.1</a>  | 1729 | No protein             | Processed transcript | -                         | -                      | -                                                            | TSL:5                   |               |             |
| Ralgapb-210                  | <a href="#">ENSMUST00000173458.1</a>  | 459  | No protein             | Processed transcript | -                         | -                      | -                                                            | TSL:3                   |               |             |
| Ralgapb-205                  | <a href="#">ENSMUST00000143394.7</a>  | 3842 | No protein             | Retained intron      | -                         | -                      | -                                                            | TSL:1                   |               |             |
| Ralgapb-207                  | <a href="#">ENSMUST00000150789.7</a>  | 2332 | No protein             | Retained intron      | -                         | -                      | -                                                            | TSL:2                   |               |             |
| Ralgapb-206                  | <a href="#">ENSMUST00000150420.1</a>  | 570  | No protein             | Retained intron      | -                         | -                      | -                                                            | TSL:2                   |               |             |

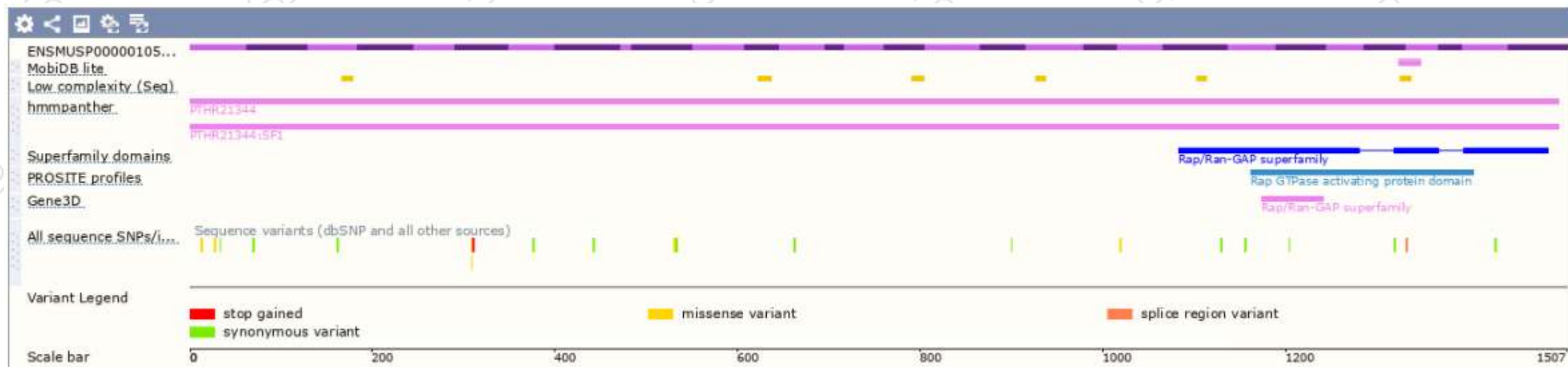
The strategy is based on the design of *Ralgapb-202* transcript,The transcription is shown below :



# Genomic location distribution

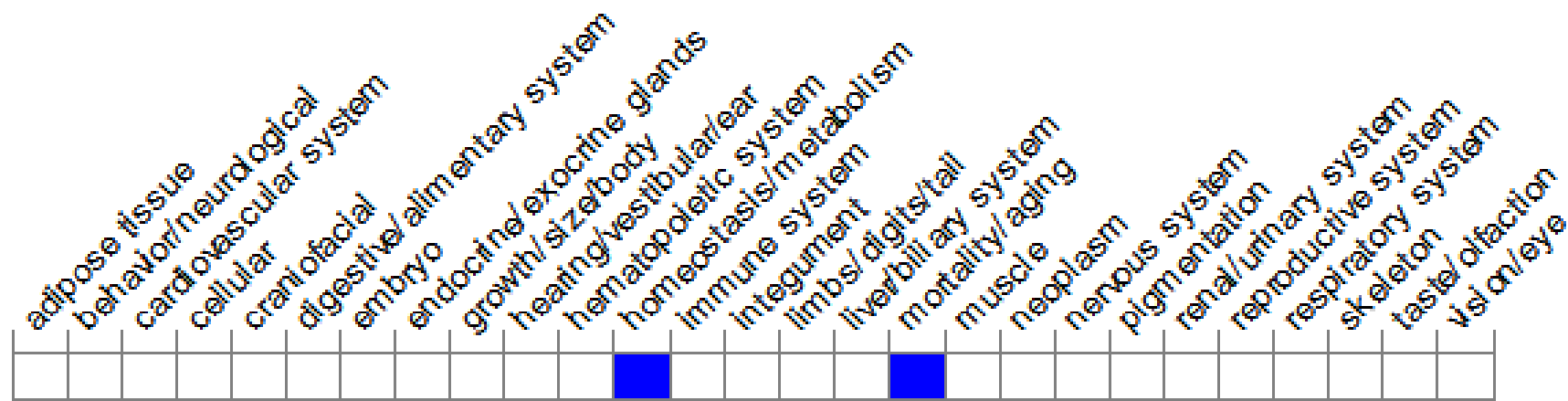


# Protein domain



# Mouse phenotype description(MGI )

## Phenotype Overview ?



Click cells to view annotations.

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

If you have any questions, you are welcome to inquire.  
Tel: 025-5864 1534

