

Arpc2 Cas9-CKO Strategy

Designer:

Jing Jin

Reviewer:

Yang Zeng

Design Date:

2019-11-16

Project Overview

Project Name

Arpc2

Project type

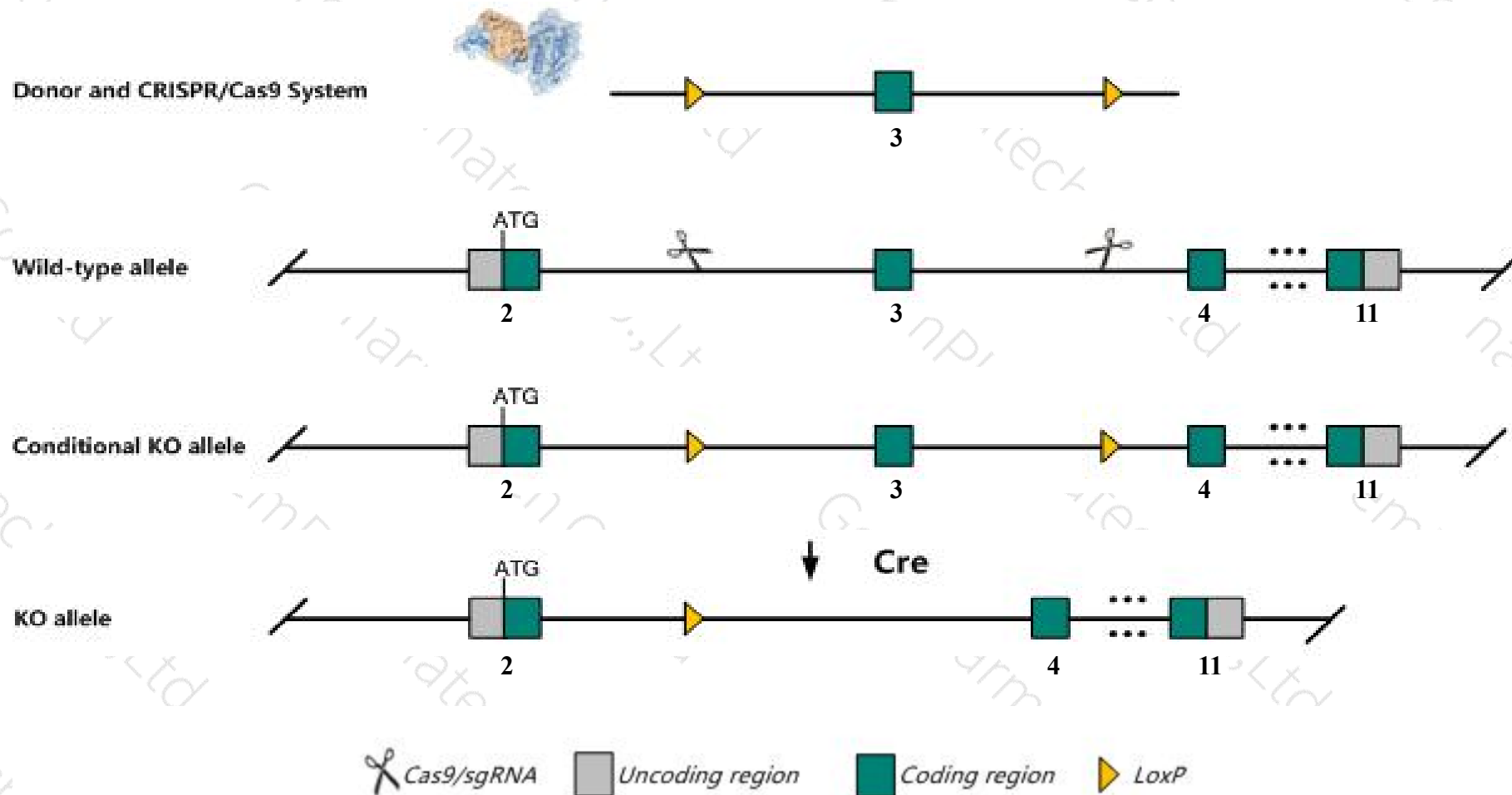
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arpc2* gene. The schematic diagram is as follows:



- The *Arpc2* gene has 4 transcripts. According to the structure of *Arpc2* gene, exon3 of *Arpc2-203* (ENSMUST00000113820.8) transcript is recommended as the knockout region. The region contains 35bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arpc2* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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

- The *Arpc2* gene is located on the Chr1. 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.
- Transcript *Arpc2-204* may not be affected.
- 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.

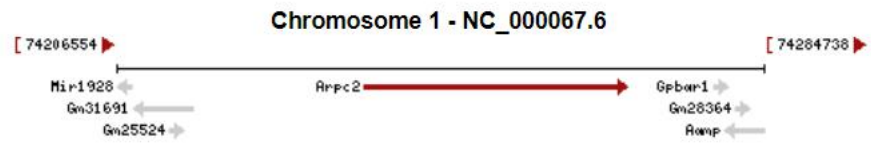
Gene information (NCBI)

Arpc2 actin related protein 2/3 complex, subunit 2 [*Mus musculus* (house mouse)]

Gene ID: 76709, updated on 24-Oct-2019

Summary

- Official Symbol** Arpc2 provided by [MGI](#)
- Official Full Name** actin related protein 2/3 complex, subunit 2 provided by [MGI](#)
- Primary source** [MGI:MGI:1923959](#)
- See related** [Ensembl:ENSMUSG000000006304](#)
- 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** 34kDa; p34-Arc; 2210023N03Rik
- Expression** Ubiquitous expression in placenta adult (RPKM 131.5), bladder adult (RPKM 118.3) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

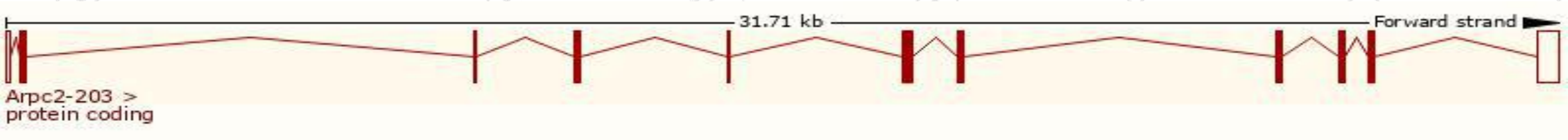


Transcript information (Ensembl)

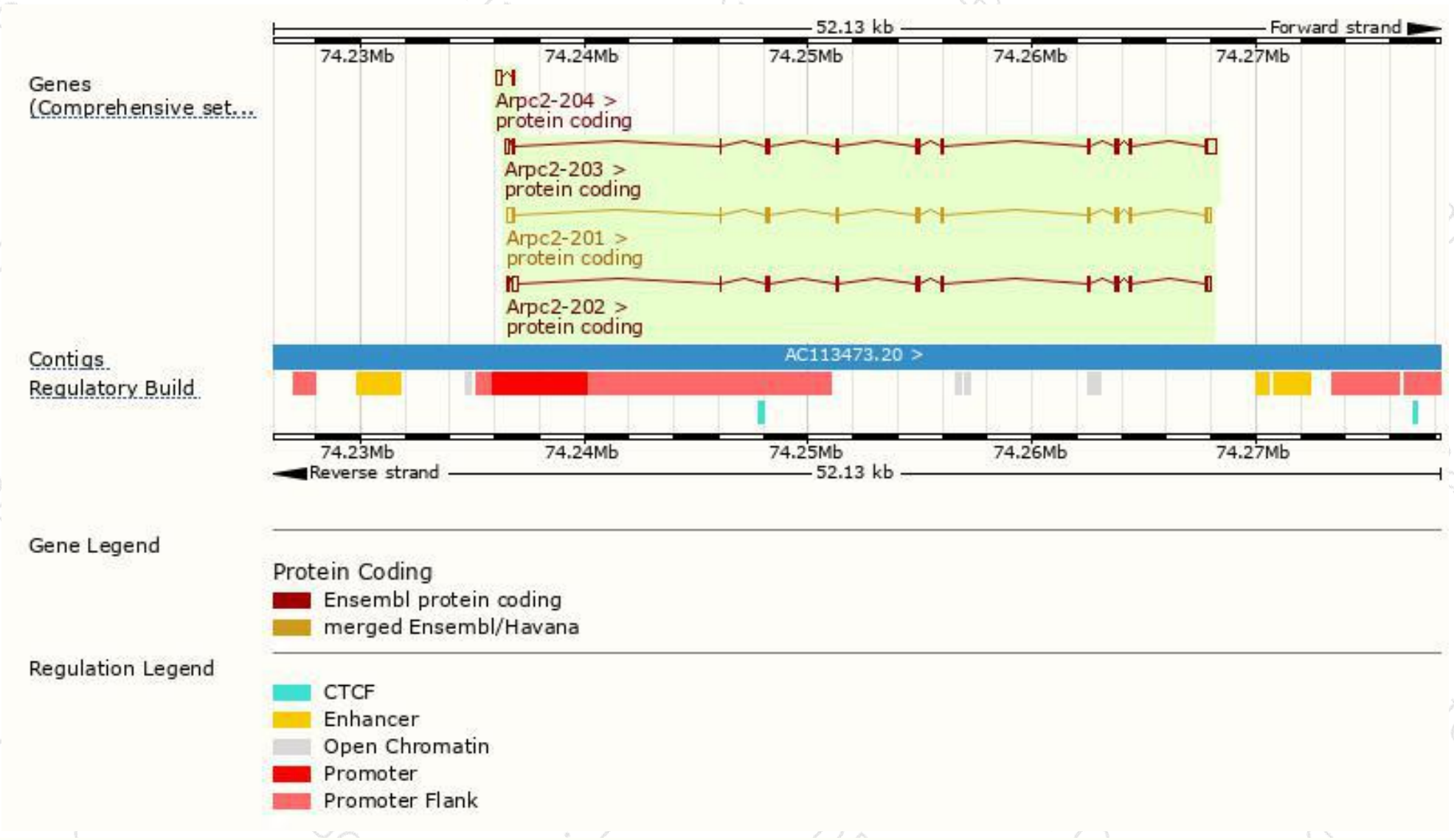
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Arpc2-203	ENSMUST00000113820.8	1439	300aa	ENSMUSP00000109451.2	Protein coding	CCDS35612	Q9CVB6	TSL:1 GENCODE basic APPRIS P1
Arpc2-201	ENSMUST00000006467.13	1404	300aa	ENSMUSP00000006467.7	Protein coding	CCDS35612	Q9CVB6	TSL:1 GENCODE basic APPRIS P1
Arpc2-202	ENSMUST00000113819.1	1313	284aa	ENSMUSP00000109450.1	Protein coding	-	D3YXG6	TSL:5 GENCODE basic
Arpc2-204	ENSMUST00000185733.1	310	26aa	ENSMUSP00000140762.1	Protein coding	-	A0A087WRT2	CDS 3' incomplete TSL:3

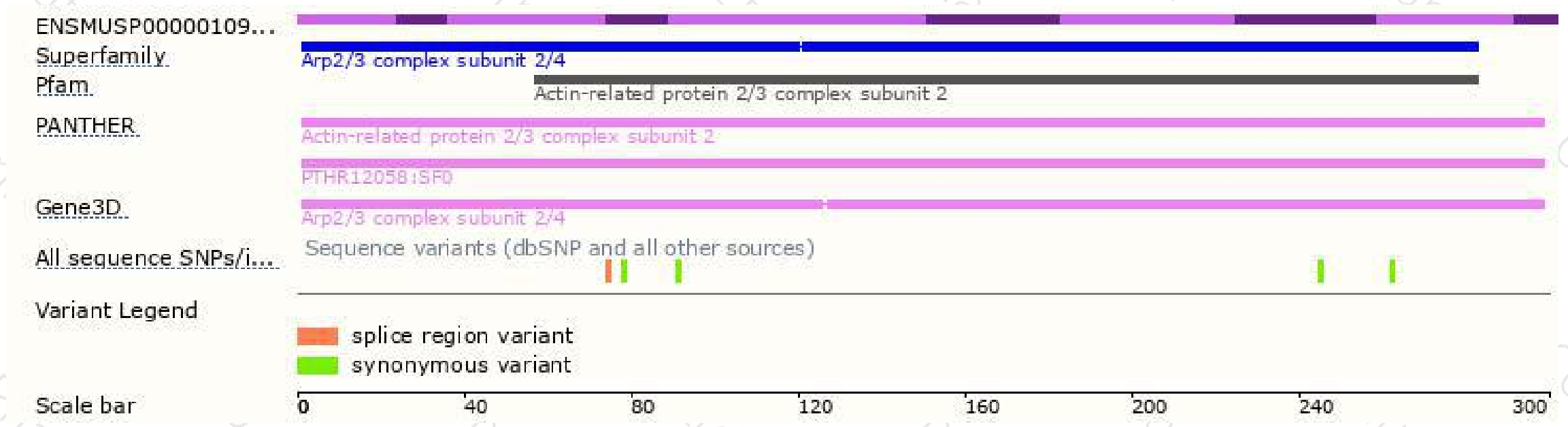
The strategy is based on the design of *Arpc2-203* transcript,The transcription is shown below



Genomic location distribution

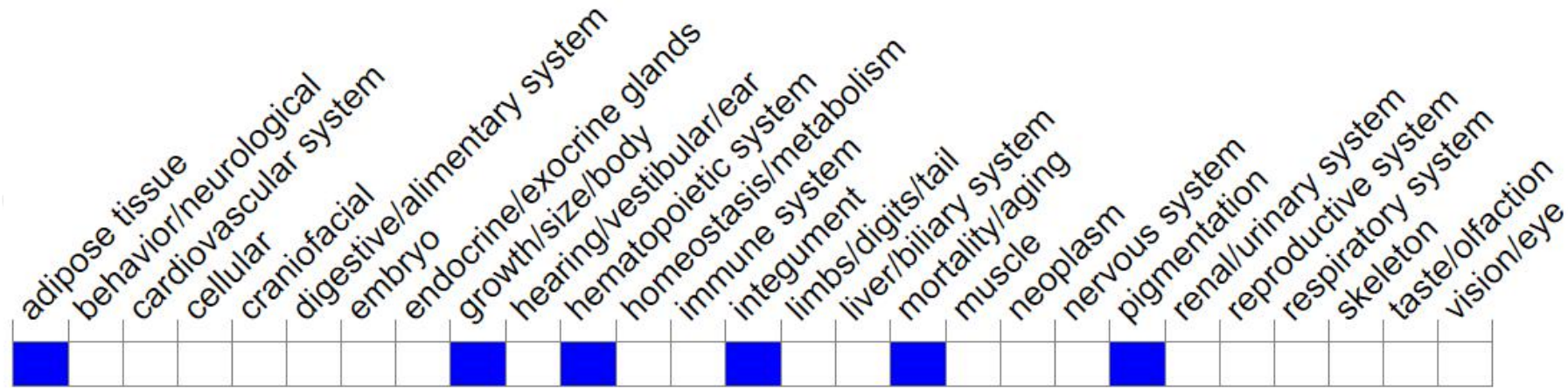


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



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

