

Lrig1 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Lrig1

Project type

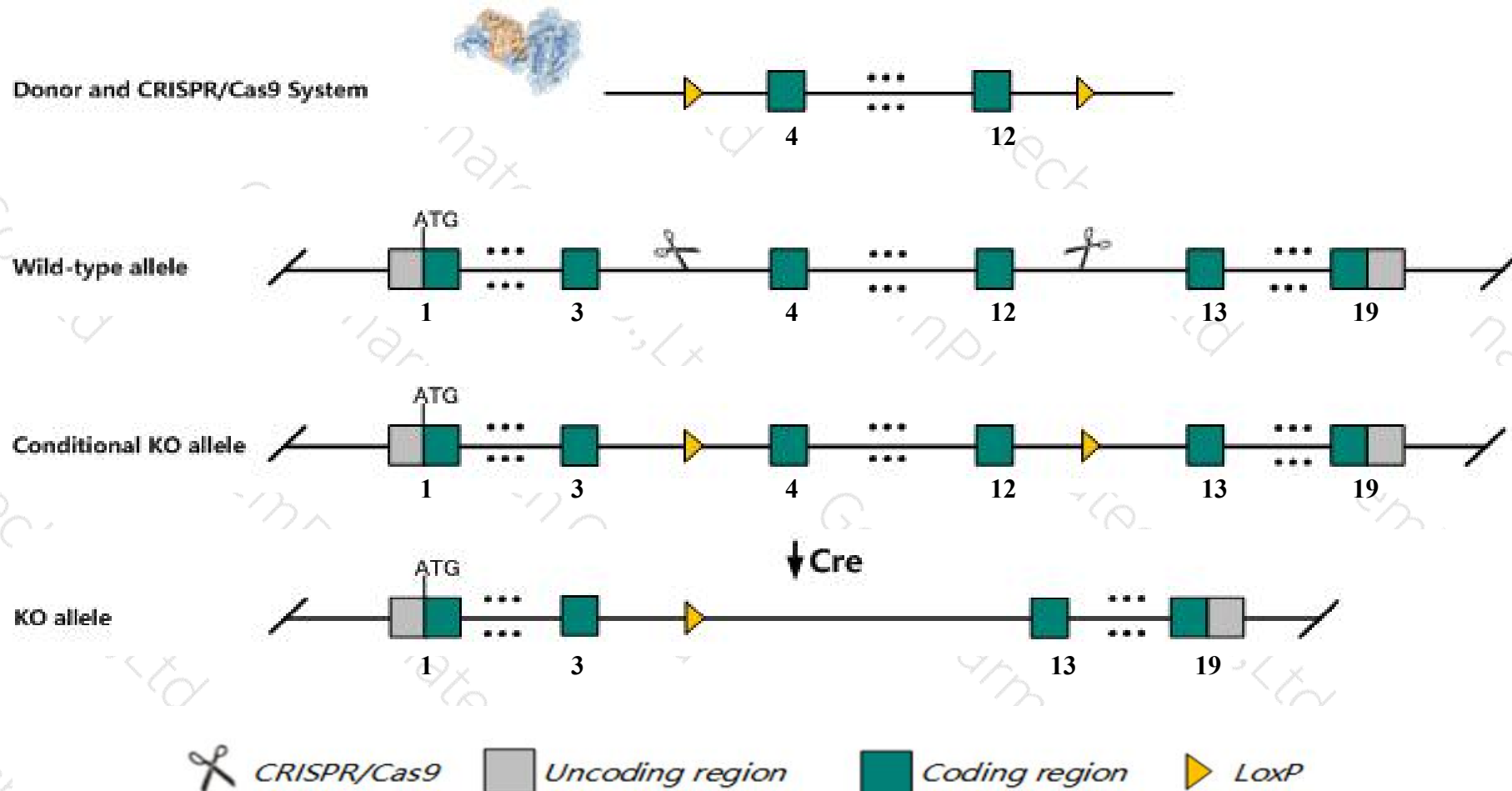
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lrig1* gene. The schematic diagram is as follows:



Technical routes

- The *Lrig1* gene has 7 transcripts. According to the structure of *Lrig1* gene, exon4-exon12 of *Lrig1*-202 (ENSMUST00000101126.2) transcript is recommended as the knockout region. The region contains 1103bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Lrig1* 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 null mice developed psoriasiform epidermal hyperplasia. Homozygotes exhibit hair follicle, epidermis, vertebral, eye and hearing abnormalities, decreased body size and fat amount, and increased susceptibility to bacterial infection.
- The *Lrig1* 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)

Lrig1 leucine-rich repeats and immunoglobulin-like domains 1 [*Mus musculus* (house mouse)]

Gene ID: 16206, updated on 16-Dec-2019

Summary



Official Symbol Lrig1 provided by [MGI](#)

Official Full Name leucine-rich repeats and immunoglobulin-like domains 1 provided by [MGI](#)

Primary source [MGI:MGI:107935](#)

See related [Ensembl:ENSMUSG00000030029](#)

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 Img; LIG-1; D6Bwg0781e

Expression Ubiquitous expression in colon adult (RPKM 30.2), cerebellum adult (RPKM 20.8) and 26 other tissues [See more](#)

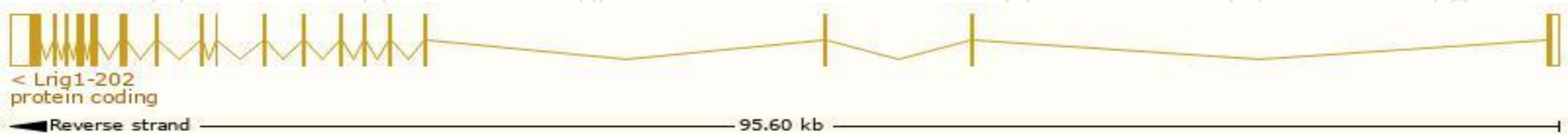
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

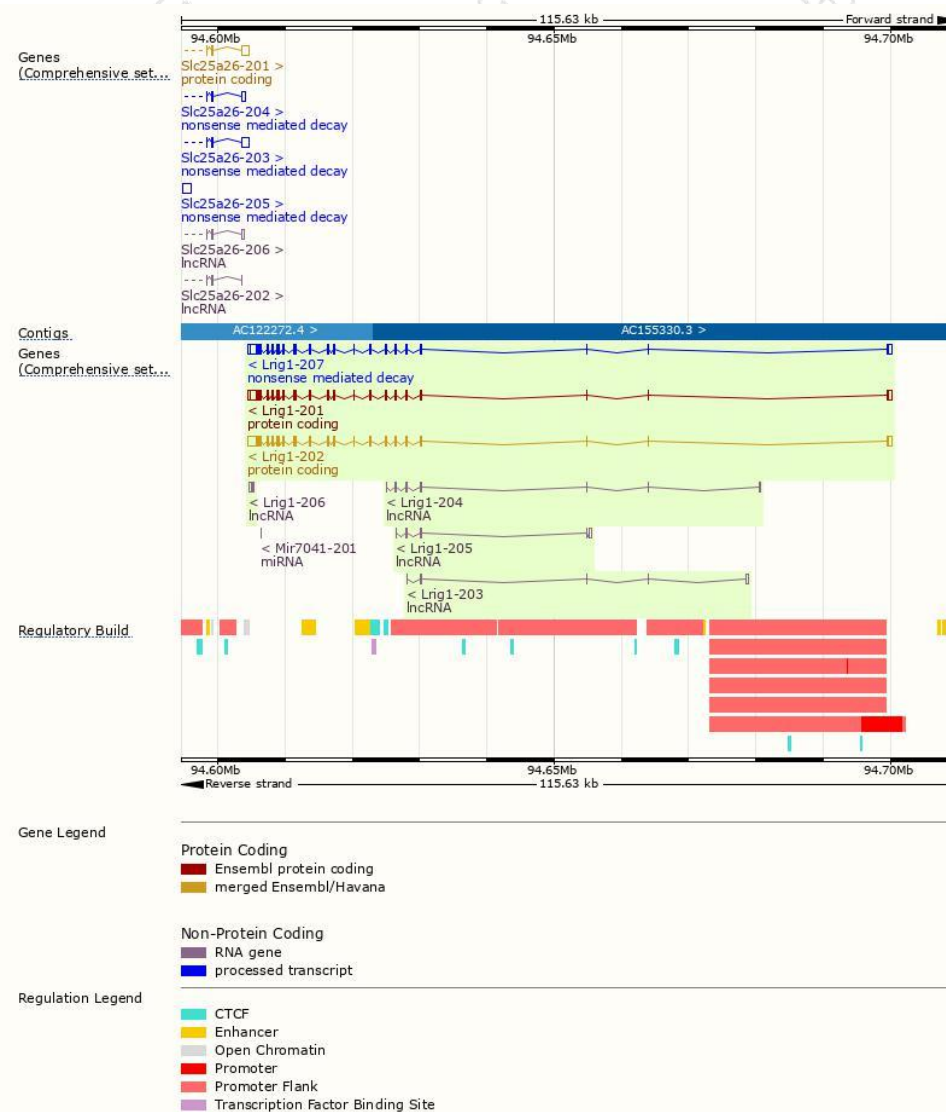
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Lrig1-202	ENSMUST000000101126.2	4951	1091aa	ENSMUSP00000098686.2	Protein coding	CCDS20380	P70193	TSL:1 GENCODE basic APPRIS P1
Lrig1-201	ENSMUST00000032105.10	4831	1091aa	ENSMUSP00000032105.4	Protein coding	CCDS20380	P70193	TSL:1 GENCODE basic APPRIS P1
Lrig1-207	ENSMUST000000204645.2	4849	1091aa	ENSMUSP000000144963.1	Nonsense mediated decay	-	P70193	TSL:1
Lrig1-205	ENSMUST000000150811.7	700	No protein	-	lncRNA	-	-	TSL:3
Lrig1-204	ENSMUST000000141014.7	666	No protein	-	lncRNA	-	-	TSL:3
Lrig1-203	ENSMUST000000124165.1	587	No protein	-	lncRNA	-	-	TSL:3
Lrig1-206	ENSMUST000000203876.1	438	No protein	-	lncRNA	-	-	TSL:3

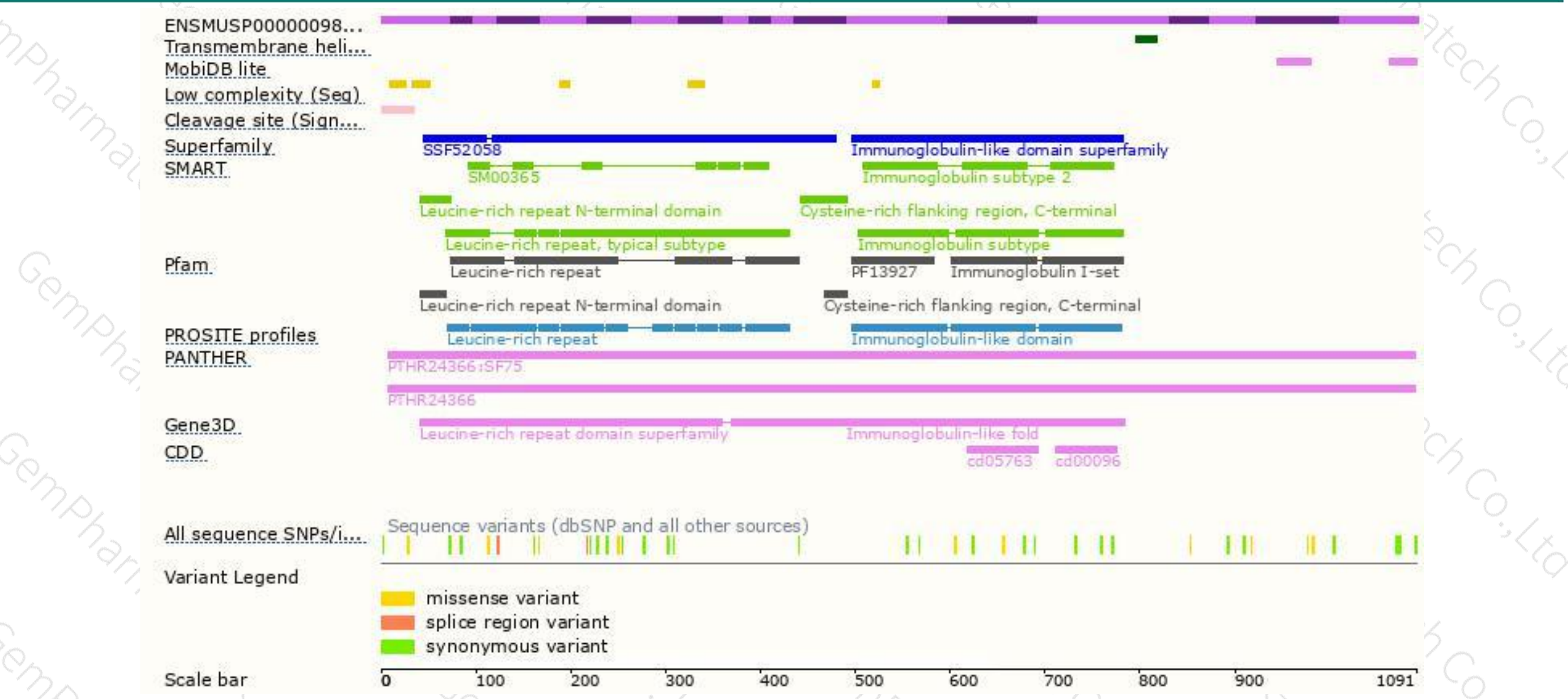
The strategy is based on the design of *Lrig1*-202 transcript,The transcription is shown below



Genomic location distribution

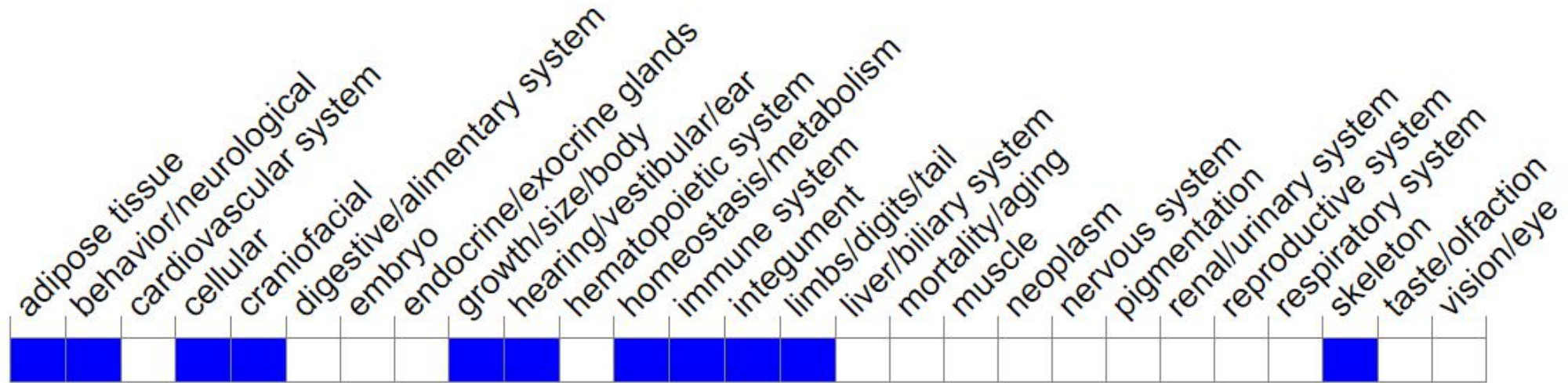


Protein domain



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/>).

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

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