

Ccnb2 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Ccnb2

Project type

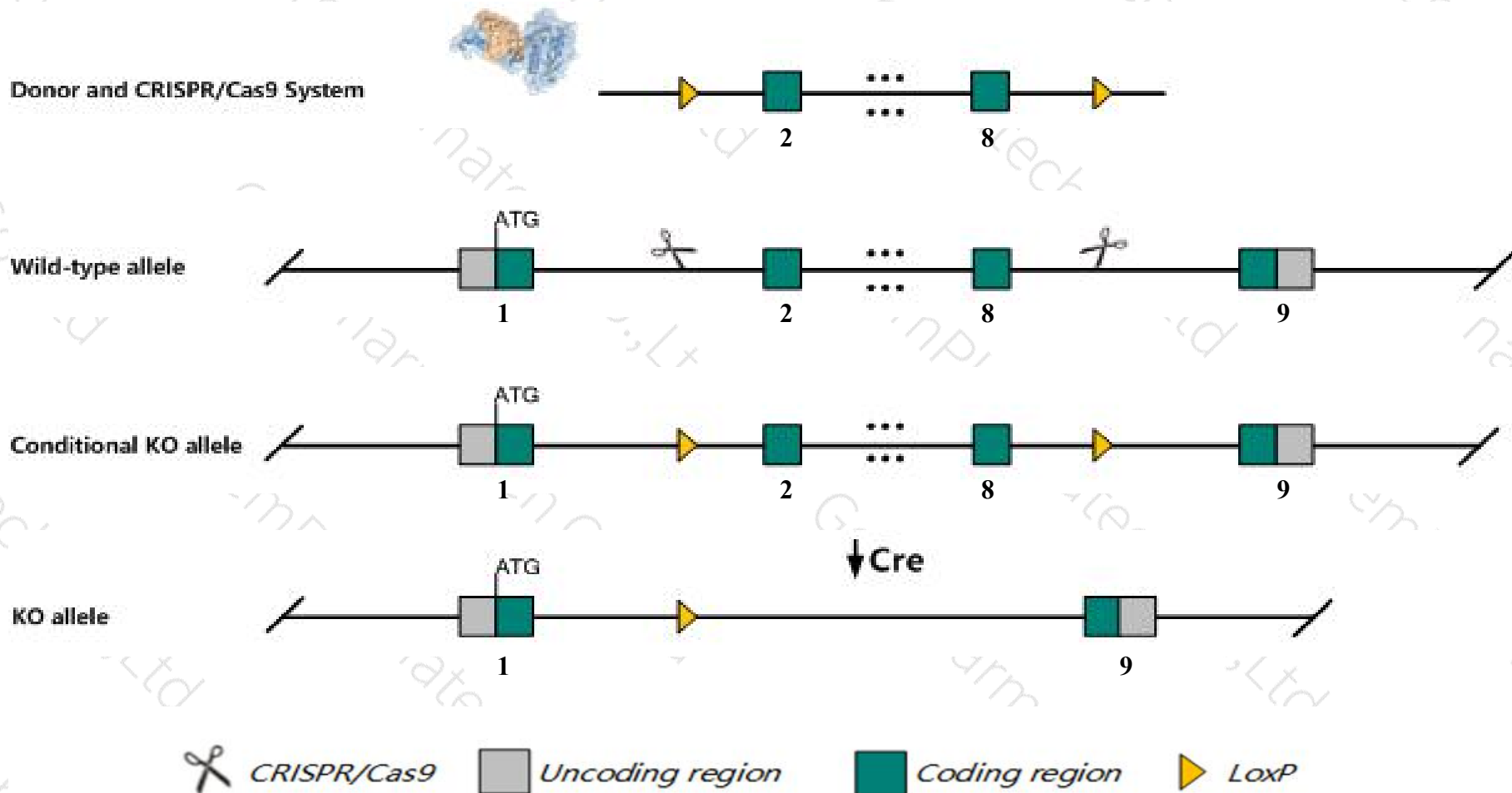
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ccnb2* gene. The schematic diagram is as follows:



- The *Ccnb2* gene has 1 transcript. According to the structure of *Ccnb2* gene, exon2-exon8 of *Ccnb2-201* (ENSMUST00000034742.7) transcript is recommended as the knockout region. The region contains most 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 *Ccnb2* 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 mutation of this gene results in reduced body weight and reduced litter size. Homozygous pups are underrepresented in litters from a heterozygous intercross.
- The KO region deletes most of the coding sequence, but does not result in frameshift.
- The *Ccnb2* gene is located on the Chr9. 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.

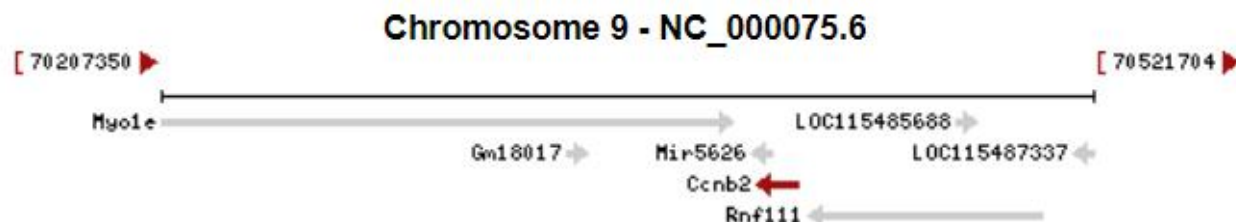
Gene information (NCBI)

Ccnb2 cyclin B2 [*Mus musculus* (house mouse)]

Gene ID: 12442, updated on 28-Sep-2019

Summary

Official Symbol	Ccnb2 provided by MGI
Official Full Name	cyclin B2 provided by MGI
Primary source	MGI:MGI:88311
See related	Ensembl:ENSMUSG00000032218
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	CycB2
Expression	Broad expression in liver E14.5 (RPKM 72.5), liver E14 (RPKM 70.4) and 15 other tissues See more
Orthologs	human all

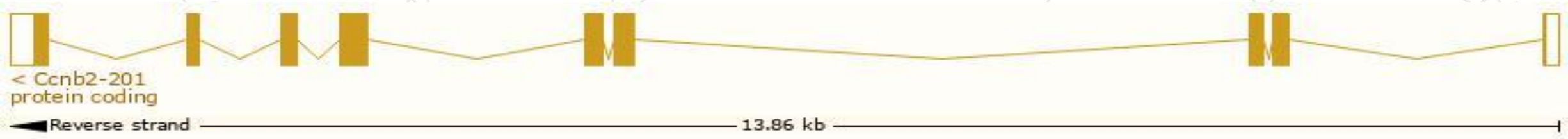


Transcript information (Ensembl)

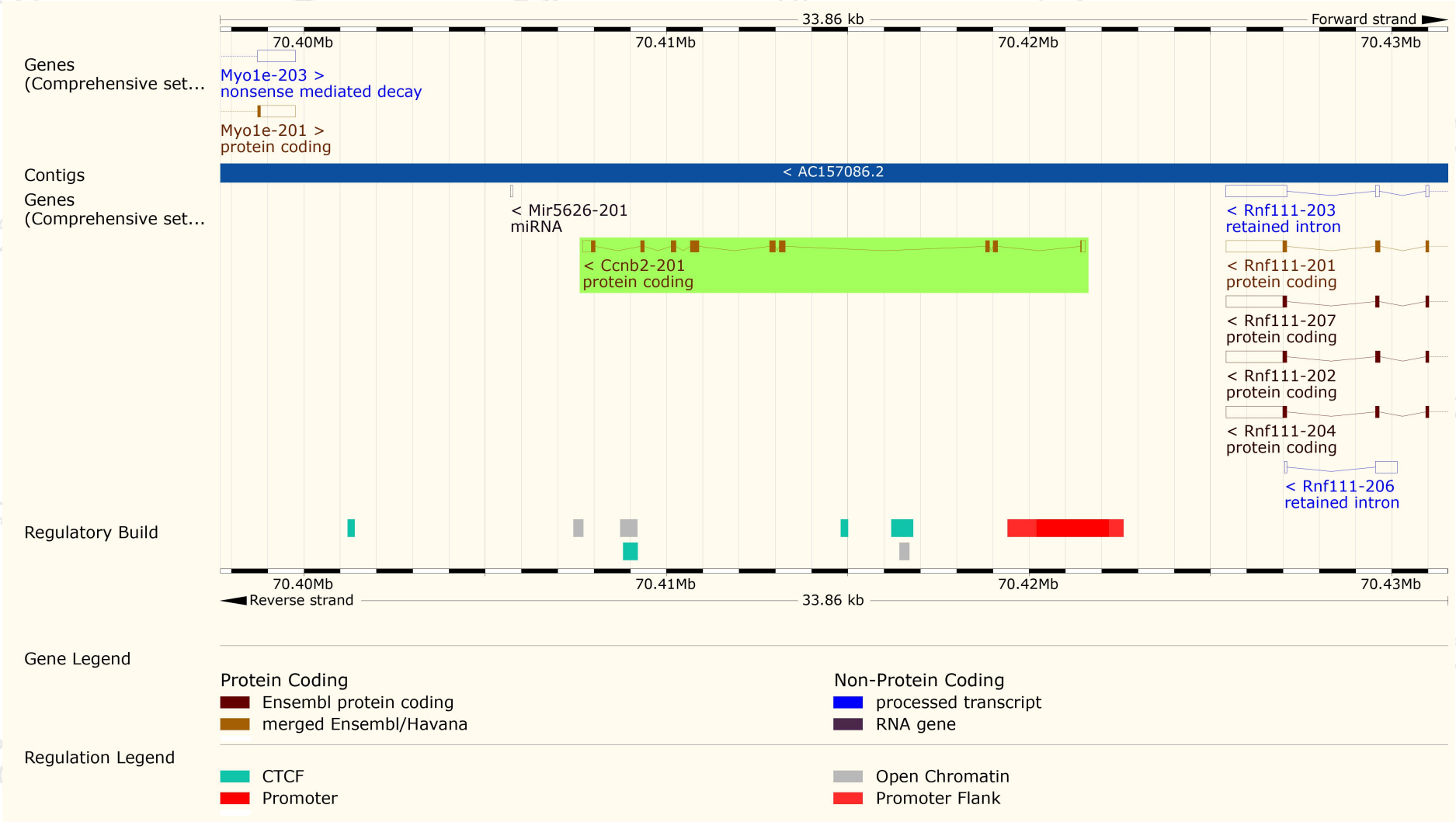
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Ccnb2-201	ENSMUST00000034742.7	1531	398aa	ENSMUSP00000034742.6	Protein coding	CCDS23320	P30276	TSL:1 Gencode basic APPRIS P1

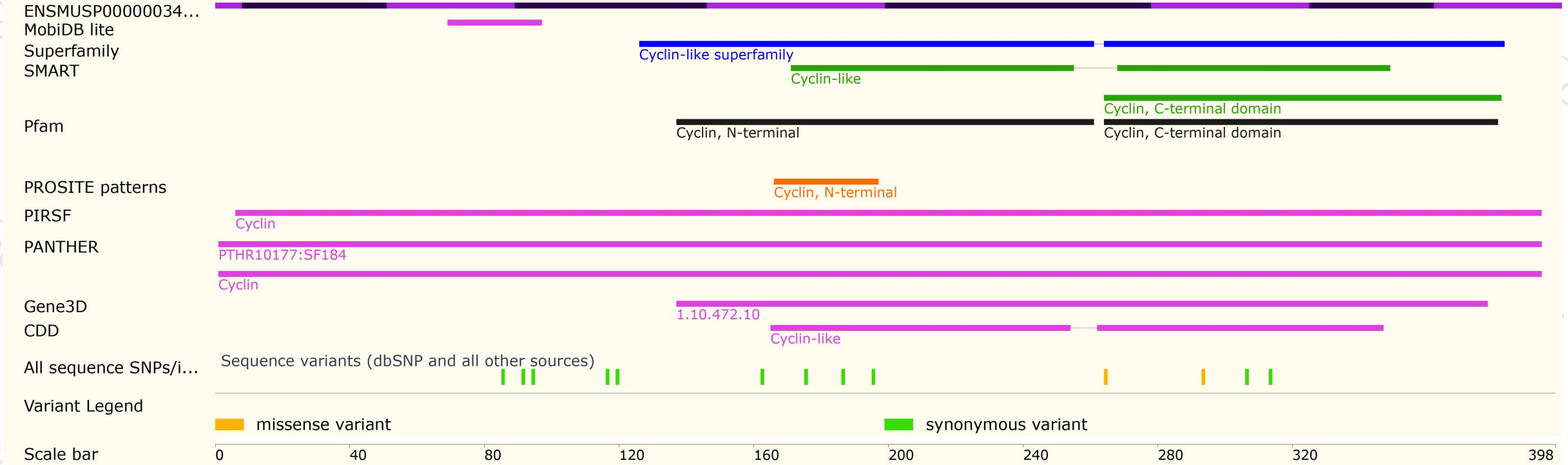
The strategy is based on the design of *Ccnb2-201* transcript, The transcription is shown below



Genomic location distribution

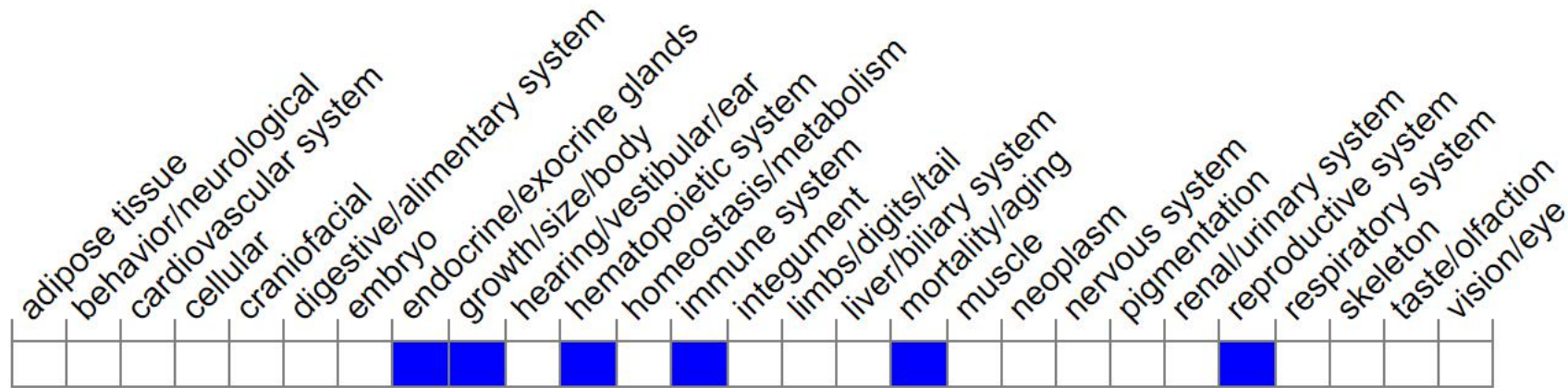


Protein domain



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/>).

According to the existing MGI data, Homozygous mutation of this gene results in reduced body weight and reduced litter size. Homozygous pups are underrepresented in litters from a heterozygous intercross.

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

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