

Ccnb1 Cas9-CKO Strategy

Designer: Jinling Wang

Reviewer: Fengjuan Wang

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Project Overview

Project Name

Ccnb1

Project type

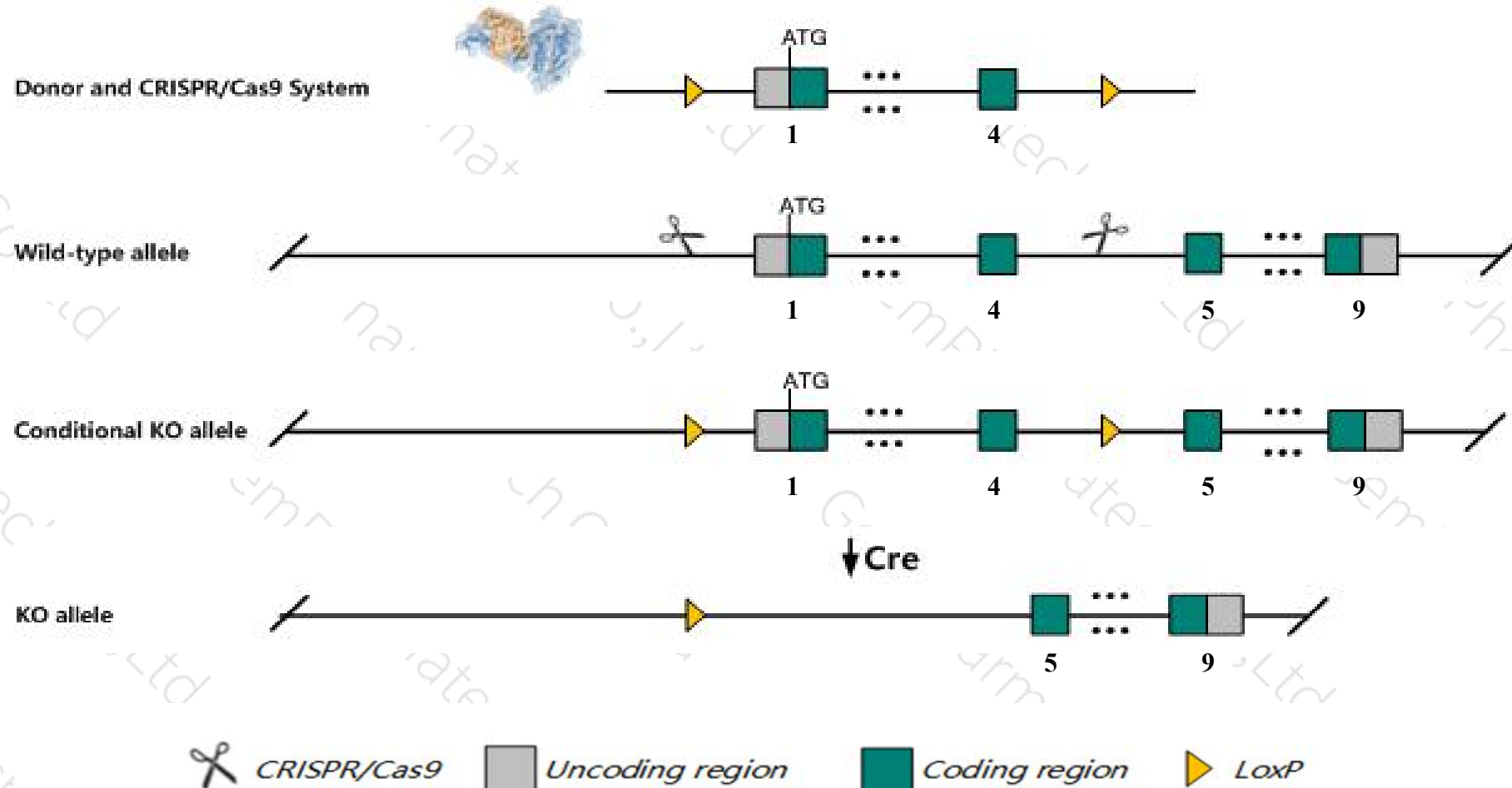
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Ccnbl* gene has 7 transcripts. According to the structure of *Ccnbl* gene, exon1-exon4 of *Ccnbl*-201(ENSMUST00000072119.14) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ccnbl* 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 is embryonic lethal.
- The *Ccnb1* gene is located on the Chr13. 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)

Ccnb1 cyclin B1 [Mus musculus (house mouse)]

Gene ID: 268697, updated on 13-Mar-2020

Summary



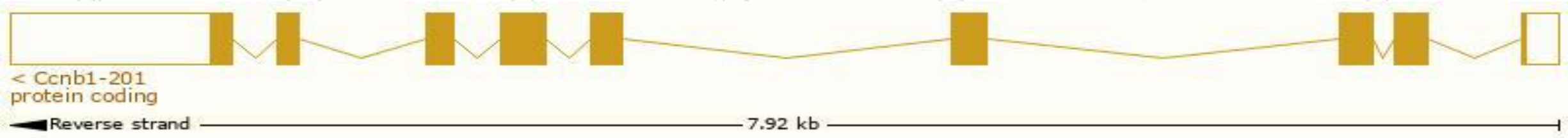
Official Symbol	Ccnb1 provided by MGI
Official Full Name	cyclin B1 provided by MGI
Primary source	MGI:MGI:88302
See related	Ensembl:ENSMUSG00000041431
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ccnb1-rs1, Ccnb1-rs13, CycB1, Cycb-4, Cycb-5, Cycb1-rs1
Expression	Biased expression in liver E14 (RPKM 79.4), liver E14.5 (RPKM 71.8) and 11 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

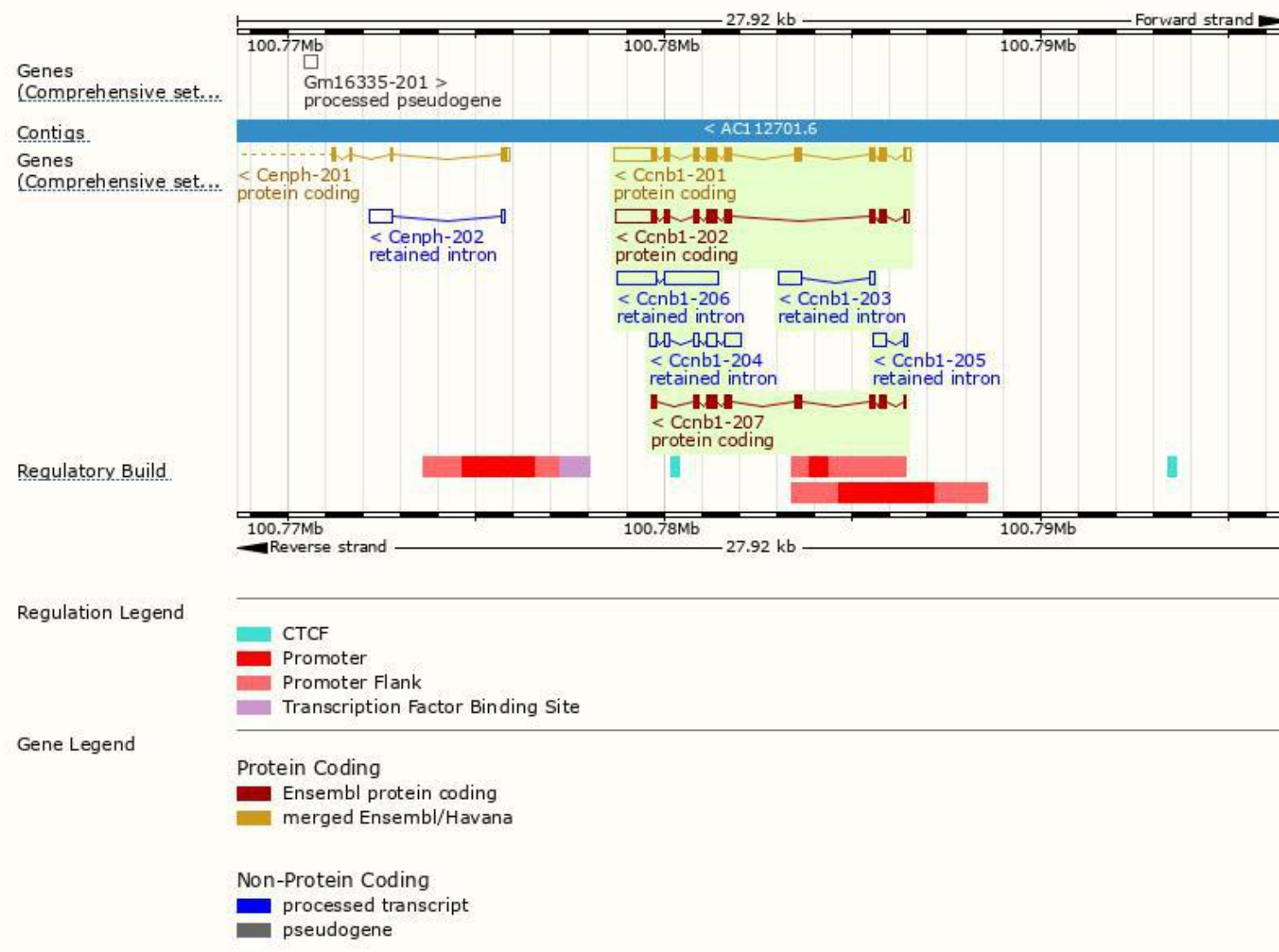
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccnb1-201	ENSMUST00000072119.14	2489	430aa	Protein coding	CCDS36768	P24860 Q3TQW9	TSL:1 GENCODE basic APPRIS P2
Ccnb1-202	ENSMUST00000091295.13	2140	369aa	Protein coding	-	Q68EM3	TSL:1 GENCODE basic APPRIS ALT2
Ccnb1-207	ENSMUST00000174038.1	1182	393aa	Protein coding	-	G3UY65	TSL:5 GENCODE basic
Ccnb1-206	ENSMUST00000147790.1	2471	No protein	Retained intron	-	-	TSL:1
Ccnb1-204	ENSMUST00000134080.1	1075	No protein	Retained intron	-	-	TSL:2
Ccnb1-203	ENSMUST00000128279.1	751	No protein	Retained intron	-	-	TSL:2
Ccnb1-205	ENSMUST00000142056.1	461	No protein	Retained intron	-	-	TSL:2

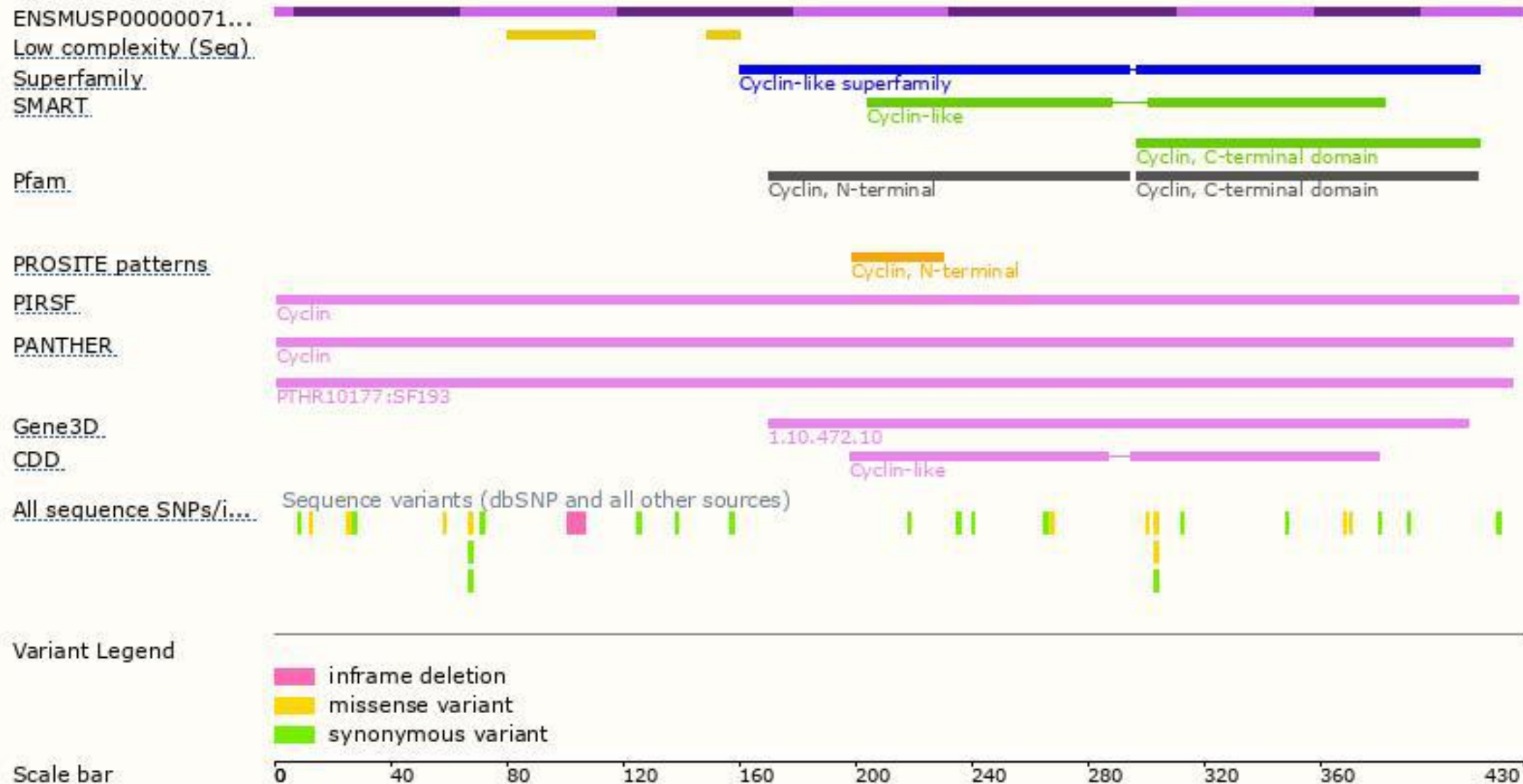
The strategy is based on the design of *Ccnb1-201* transcript,the transcription is shown below:



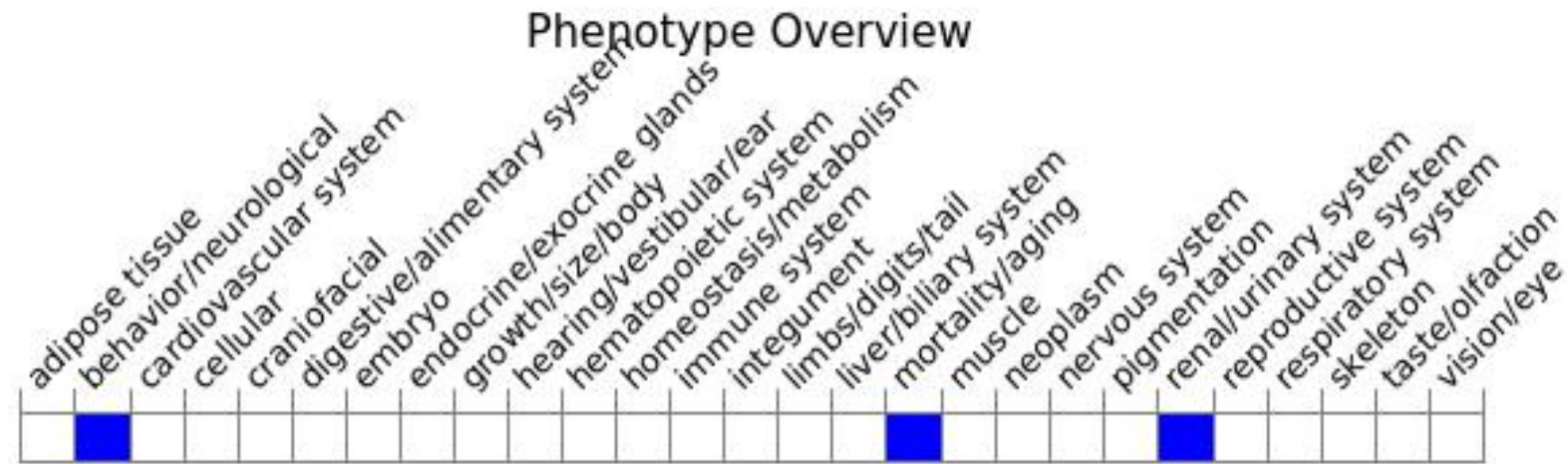
Genomic location distribution



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, homozygous mutation of this gene is embryonic lethal.

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

Tel: 400-9660890

