

***Eri1* Cas9-CKO Strategy**

Designer: JiaYu

Reviewer: Xiaojing Li

Design Date: 2020-8-6

Project Overview

Project Name

Eri1

Project type

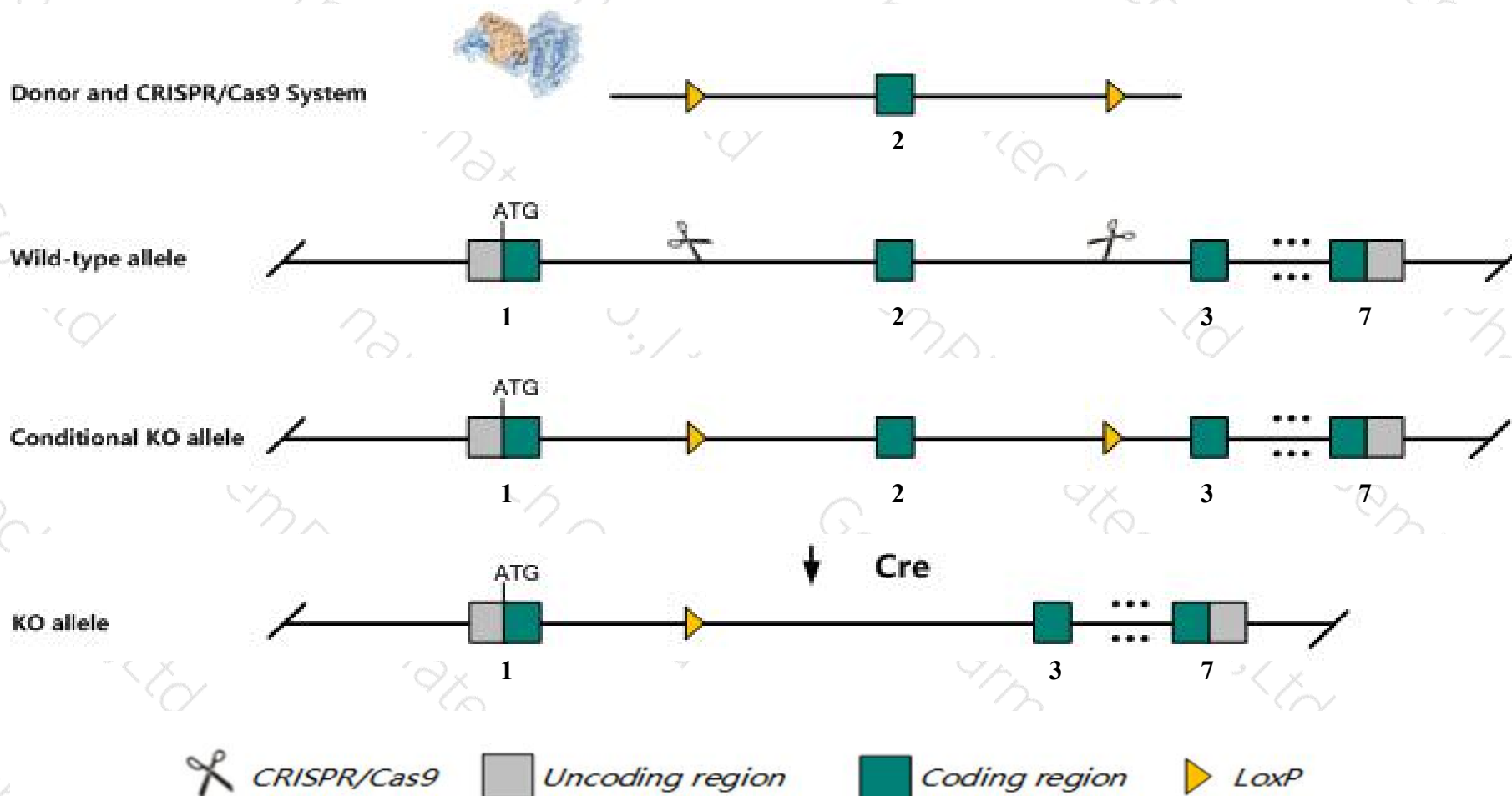
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Eri1* gene has 4 transcripts. According to the structure of *Eri1* gene, exon2 of *Eri1-201*(ENSMUST00000033927.7) transcript is recommended as the knockout region. The region contains 179bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Eri1* 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, mice homozygous for a null allele exhibit postnatal lethality, decreased body size beginning at E15.5, and decreased proliferation of mouse embryonic fibroblasts.
- The *Eri1* gene is located on the Chr8. 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)

Eri1 exoribonuclease 1 [Mus musculus (house mouse)]

Gene ID: 67276, updated on 13-Mar-2020

Summary



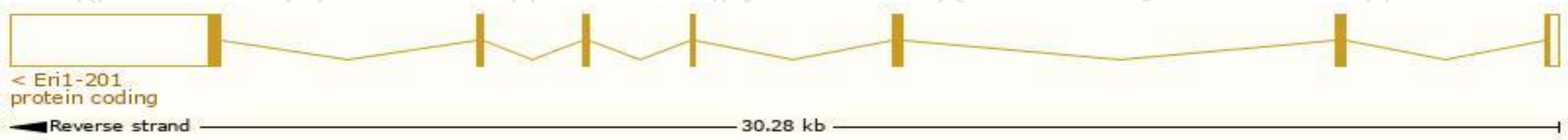
Official Symbol	Eri1 provided by MGI
Official Full Name	exoribonuclease 1 provided by MGI
Primary source	MGI:MGI:1914526
See related	Ensembl:ENSMUSG00000031527
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	3'hexo, 3110010F15Rik, Thex1, eri-1
Expression	Ubiquitous expression in liver E14 (RPKM 6.8), liver E14.5 (RPKM 5.6) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

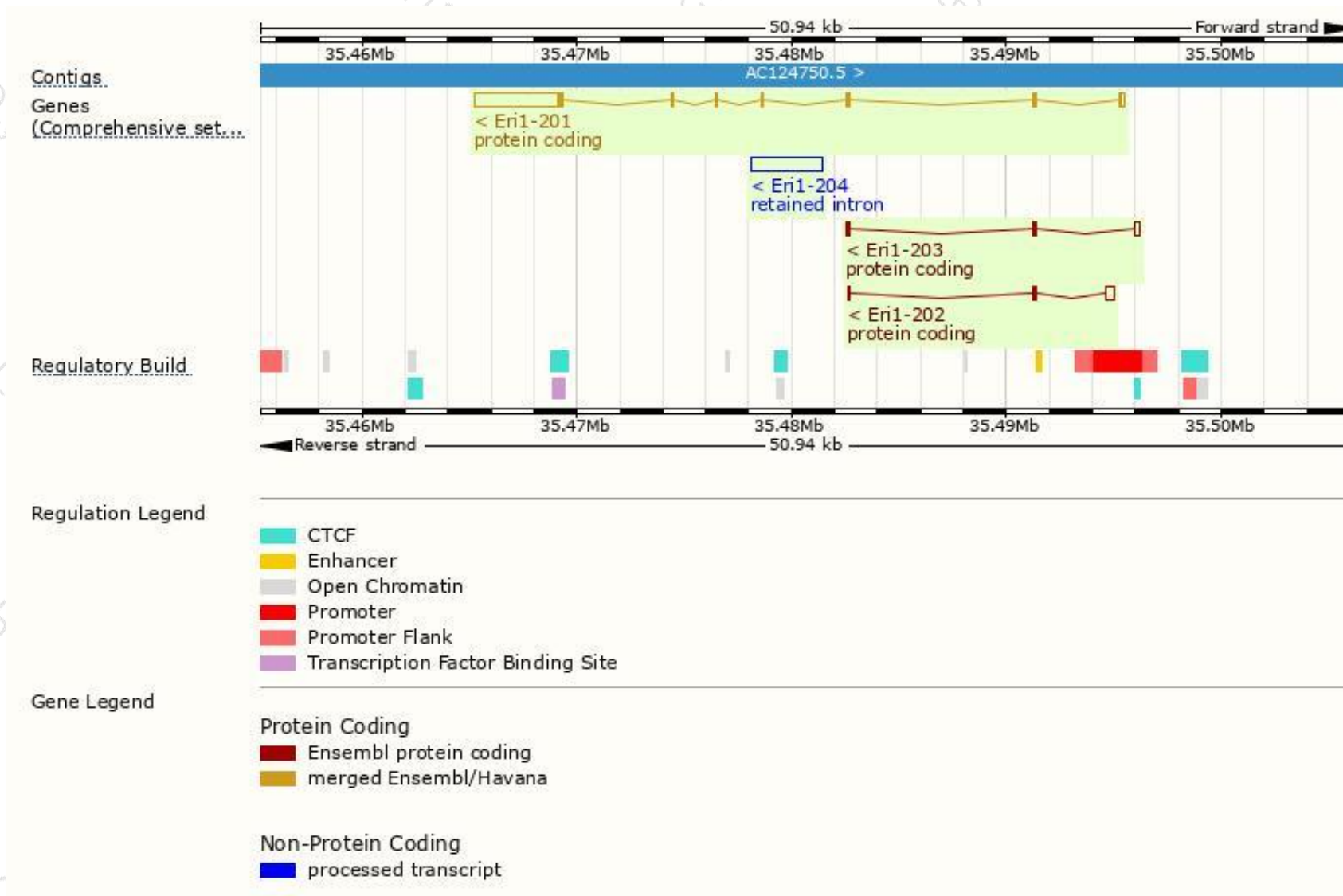
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Eri1-201	ENSMUST00000033927.7	5079	345aa	Protein coding	CCDS22244	A0A0R4J0C8	TSL:1 GENCODE basic APPRIS P1
Eri1-202	ENSMUST00000210483.1	665	50aa	Protein coding	-	A0A1B0GSW4	CDS 3' incomplete TSL:3
Eri1-203	ENSMUST00000210884.1	592	94aa	Protein coding	-	A0A1B0GRC5	CDS 3' incomplete TSL:3
Eri1-204	ENSMUST00000211536.1	3253	No protein	Retained intron	-	-	TSL:NA

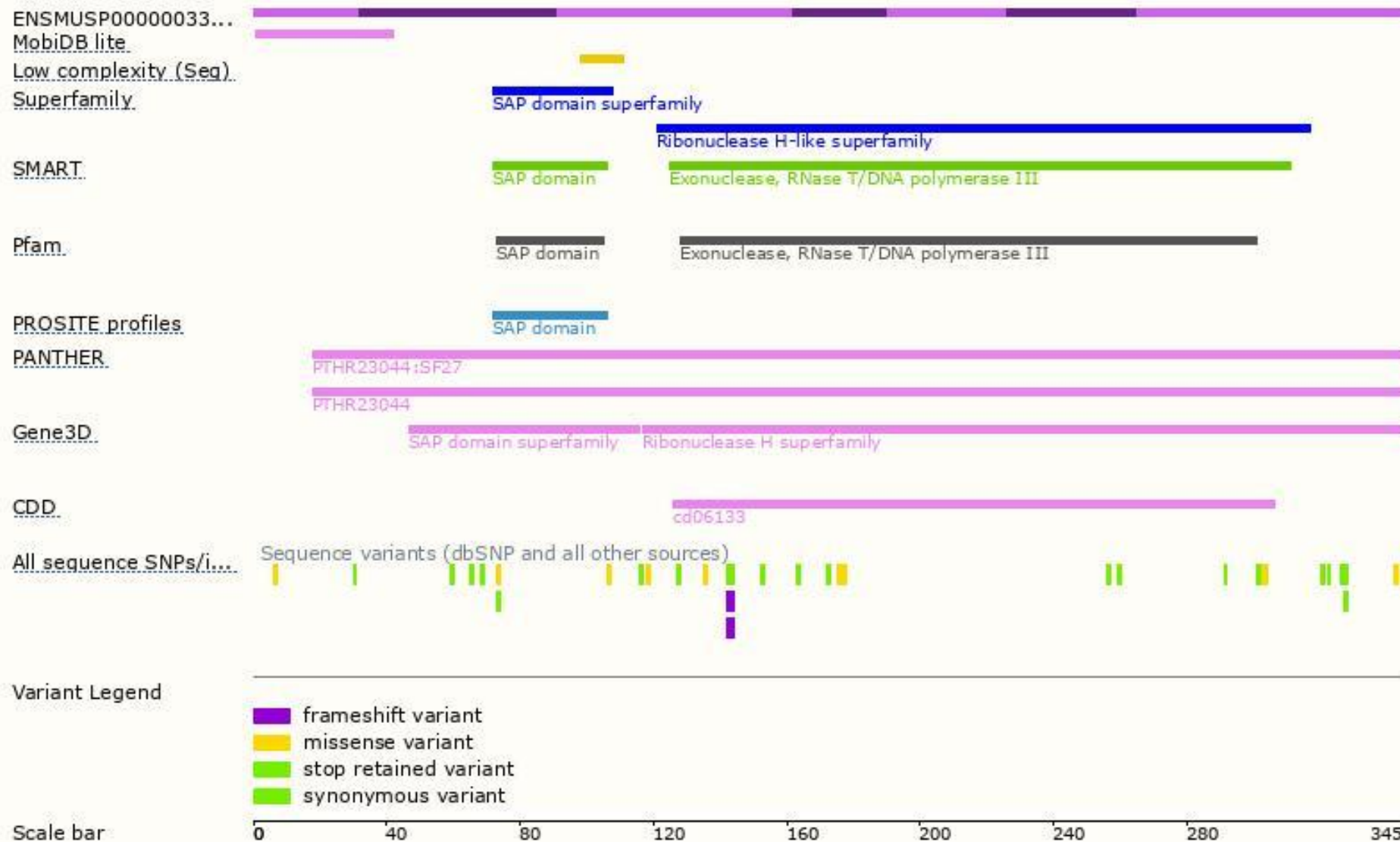
The strategy is based on the design of *Eri1-201* transcript,the transcription is shown below:



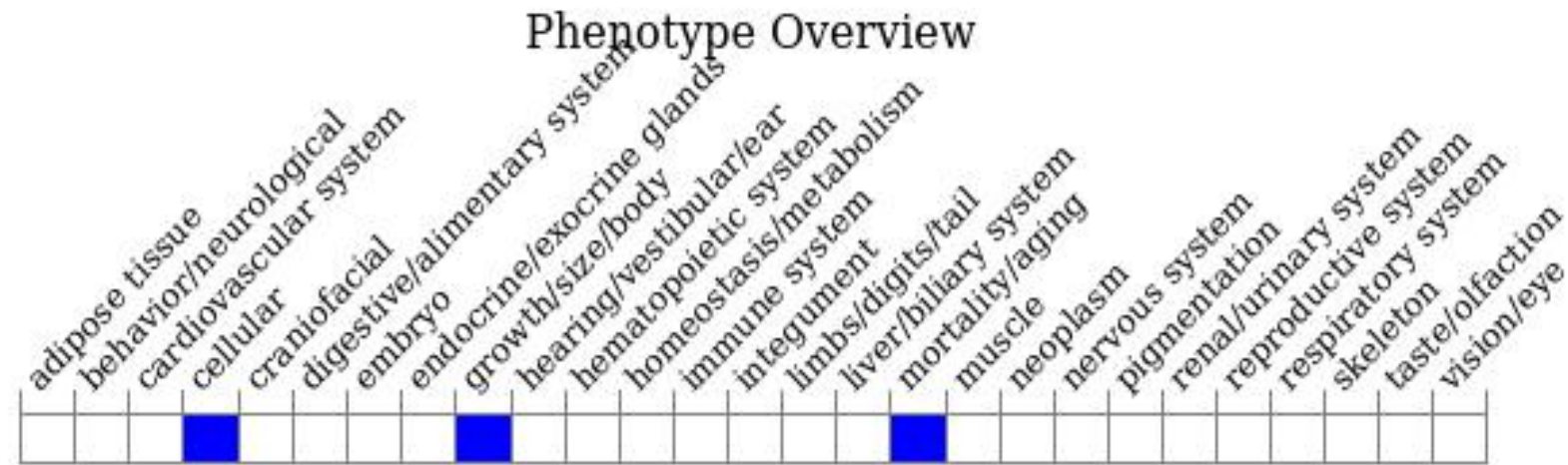
Genomic location distribution



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, mice homozygous for a null allele exhibit postnatal lethality, decreased body size beginning at E15.5, and decreased proliferation of mouse embryonic fibroblasts.

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

Tel: 400-9660890

