

Magel2 Cas9-KO Strategy

Designer: Xueting Zhang

Reviewer: Daohua Xu

Design Date: 2020-7-20

Project Overview

Project Name

Magel2

Project type

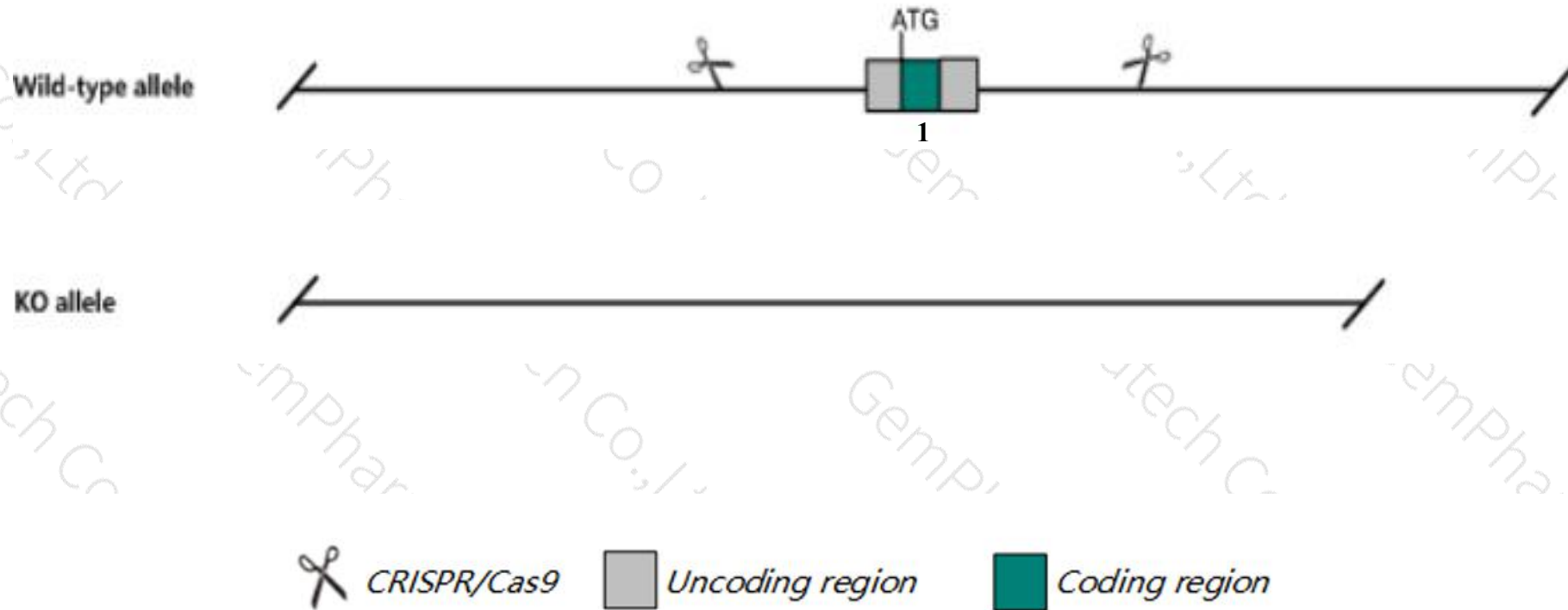
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Magel2* gene. The schematic diagram is as follows:



- The *Magel2* gene has 1 transcript. According to the structure of *Magel2* gene, exon1 of *Magel2*-201(ENSMUST00000080403.6) transcript is recommended as the knockout region. The region contains all 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 *Magel2* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, mice heterozygous for a null allele that is inherited paternally exhibit some postnatal lethality, reduced male fertility, abnormal circadian rhythm, and hypoactivity. Mice heterozygous for another paternal knock-out allele exhibit 50% neonatal lethality associated with weak suckling activity.
- *Gm32061* gene will be destroyed.
- The *Magel2* gene is located on the Chr7. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Mag12 melanoma antigen, family L, 2 [Mus musculus (house mouse)]

Gene ID: 27385, updated on 13-Mar-2020

Summary



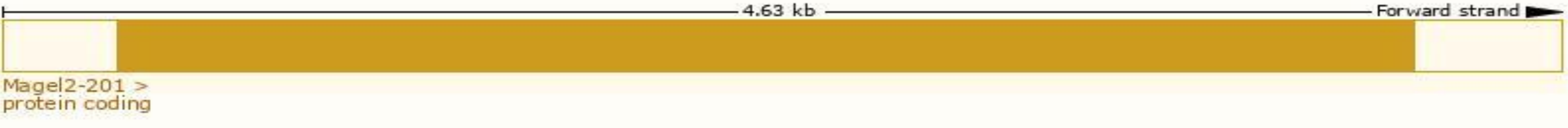
Official Symbol [Mag12](#) provided by [MGI](#)
Official Full Name [melanoma antigen, family L, 2](#) provided by [MGI](#)
Primary source [MGI:MGI:1351648](#)
See related [Ensembl:ENSMUSG00000056972](#)
Gene type protein coding
RefSeq status VALIDATED
Organism [Mus musculus](#)
Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as Mage-12, NDNL1, nM15, ns7
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

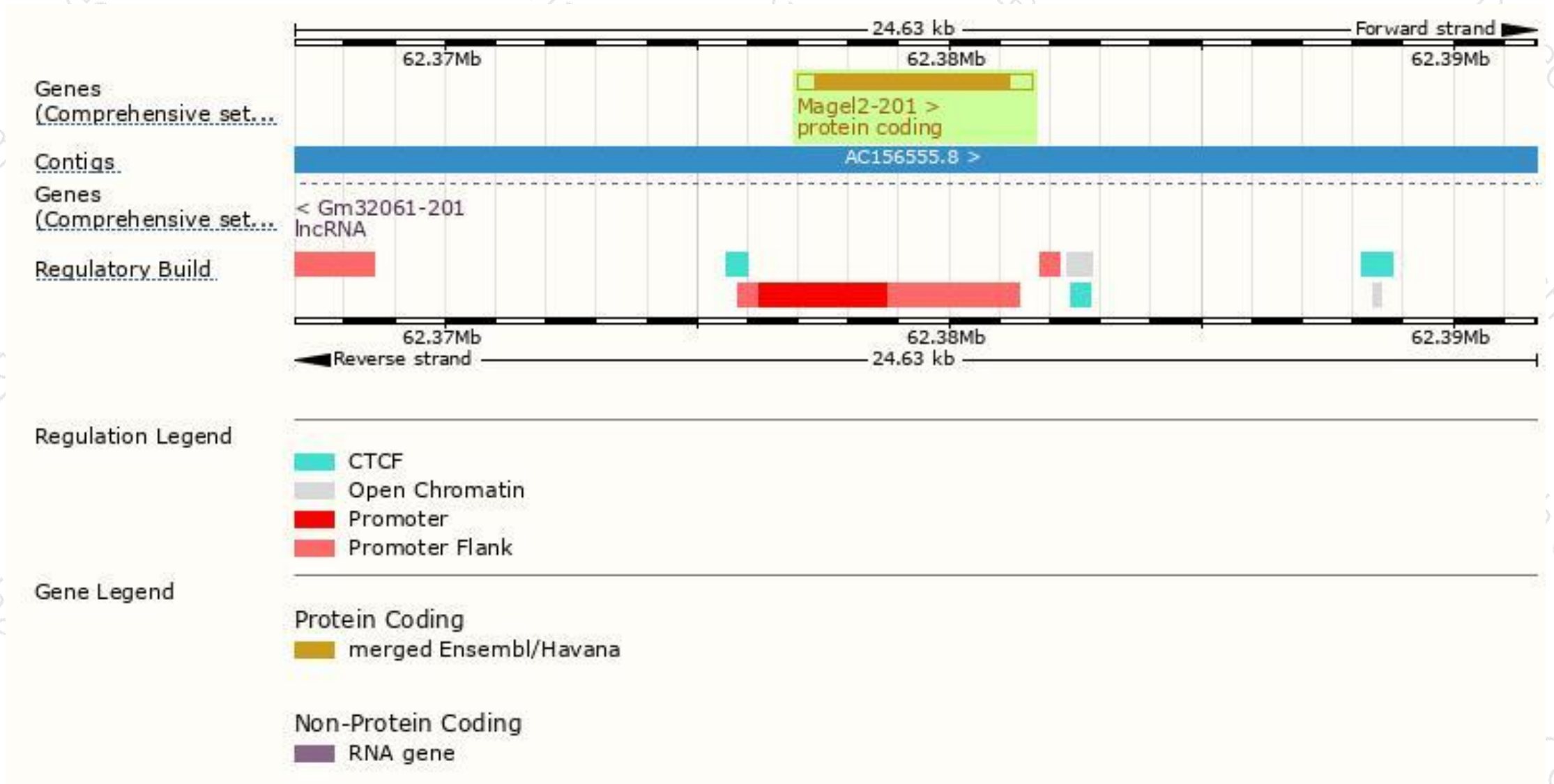
The gene has 1 transcript, and the transcript is shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|------------|--------------------------------------|------|------------------------|----------------|---------------------------|------------------------|--------------------------------|
| Magel2-201 | ENSMUST00000080403.6 | 4631 | 1284aa | Protein coding | CCDS52264 | Q9QZ04 | TSL:NA GENCODE basic APPRIS P1 |

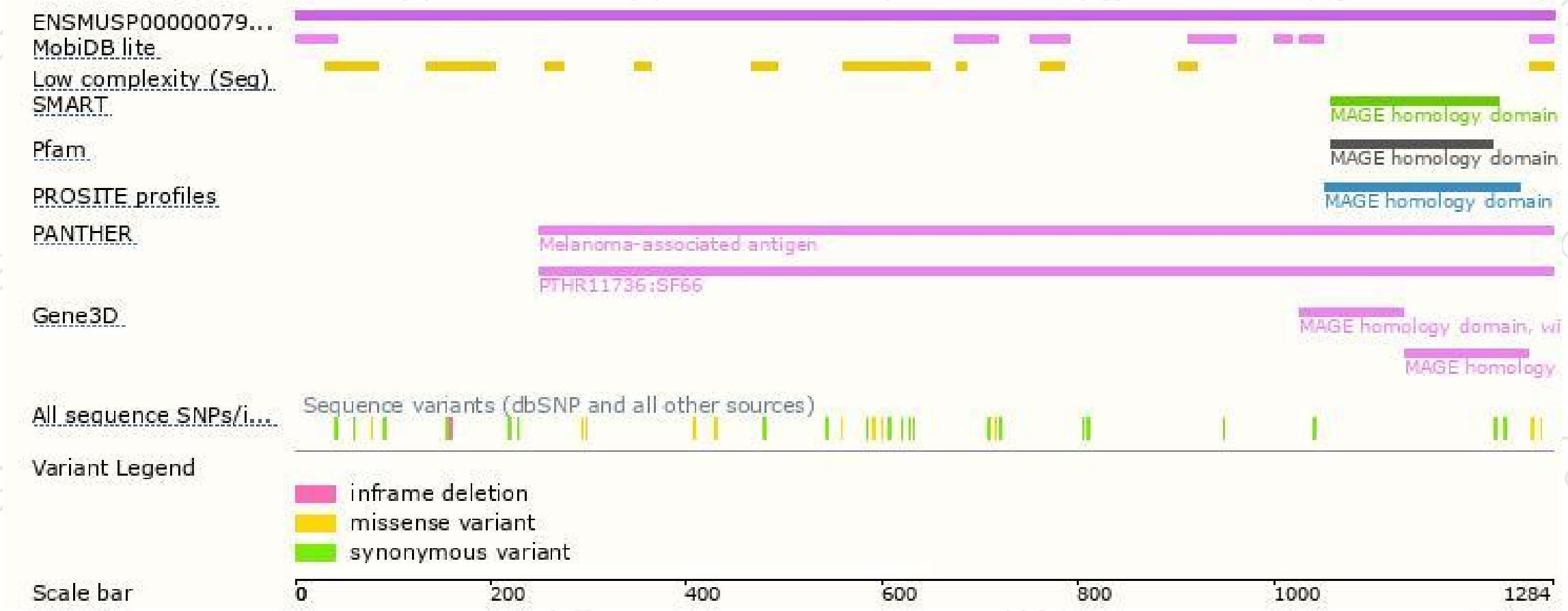
The strategy is based on the design of *Magel2-201* transcript, the transcription is shown below:



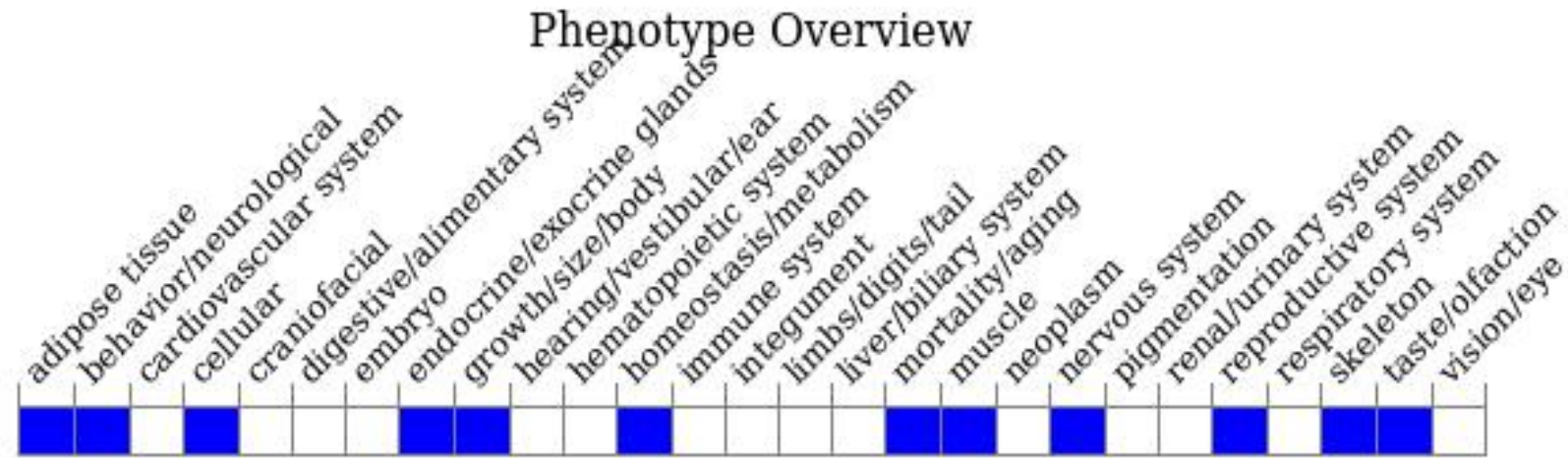
Genomic location distribution



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 heterozygous for a null allele that is inherited paternally exhibit some postnatal lethality, reduced male fertility, abnormal circadian rhythm, and hypoactivity. Mice heterozygous for another paternal knock-out allele exhibit 50% neonatal lethality associated with weak suckling activity.

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

Tel: 400-9660890

