

Adamtsl4 Cas9-KO Strategy

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Project Overview

Project Name

Adamtsl4

Project type

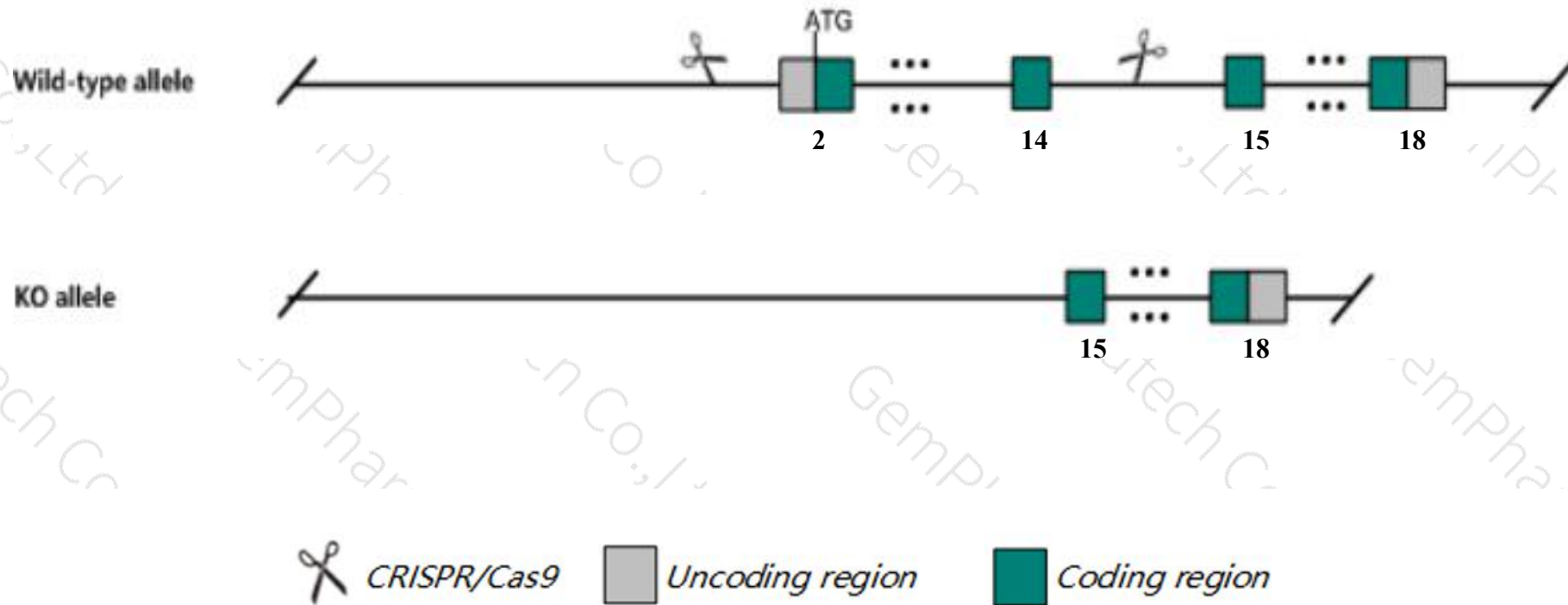
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adamtsl4* gene. The schematic diagram is as follows:



- The *Adamtsl4* gene has 5 transcripts. According to the structure of *Adamtsl4* gene, exon2-exon14 of *Adamtsl4*-202(ENSMUST00000117782.7) 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 *Adamtsl4* 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 homozygous for an ENU-induced single point mutation exhibit ectopia lentis, increased ocular axial length, and focal retinal pigment epithelium defects with reduced retinal pigmentation and altered cellular morphology.
- The *Adamtsl4* gene is located on the Chr3. 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)

Adamtsl4 ADAMTS-like 4 [Mus musculus (house mouse)]

Gene ID: 229595, updated on 13-Mar-2020

Summary



Official Symbol Adamtsl4 provided by [MGI](#)

Official Full Name ADAMTS-like 4 provided by [MGI](#)

Primary source [MGI:MGI:2389008](#)

See related [Ensembl:ENSMUSG00000015850](#)

Gene type protein coding

RefSeq status REVIEWED

Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as ADAMTSL-4, Tsrc1

Summary The protein encoded by this gene is a member of the ADAMTS superfamily of secreted proteins, which contain a metalloprotease domain at the N-terminus and a C-terminal ancillary domain. ADAMTS-like proteins lack protease activity and resemble the ancillary domain of ADAMTS proteins. ADAMTS-like proteins have been implicated in regulation of the extracellular matrix. The encoded protein contains 7 thrombospondin type 1 repeats, a conserved extracellular domain. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Sep 2014]

Expression Broad expression in lung adult (RPKM 18.4), bladder adult (RPKM 18.2) and 17 other tissues [See more](#)

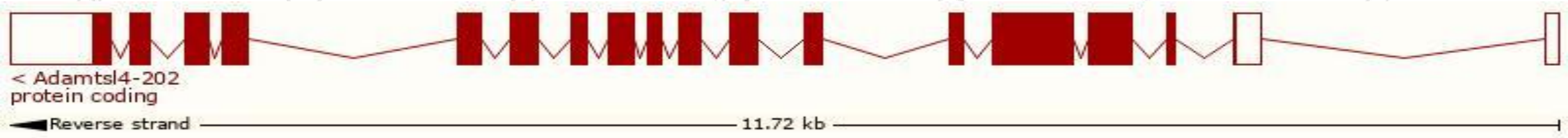
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

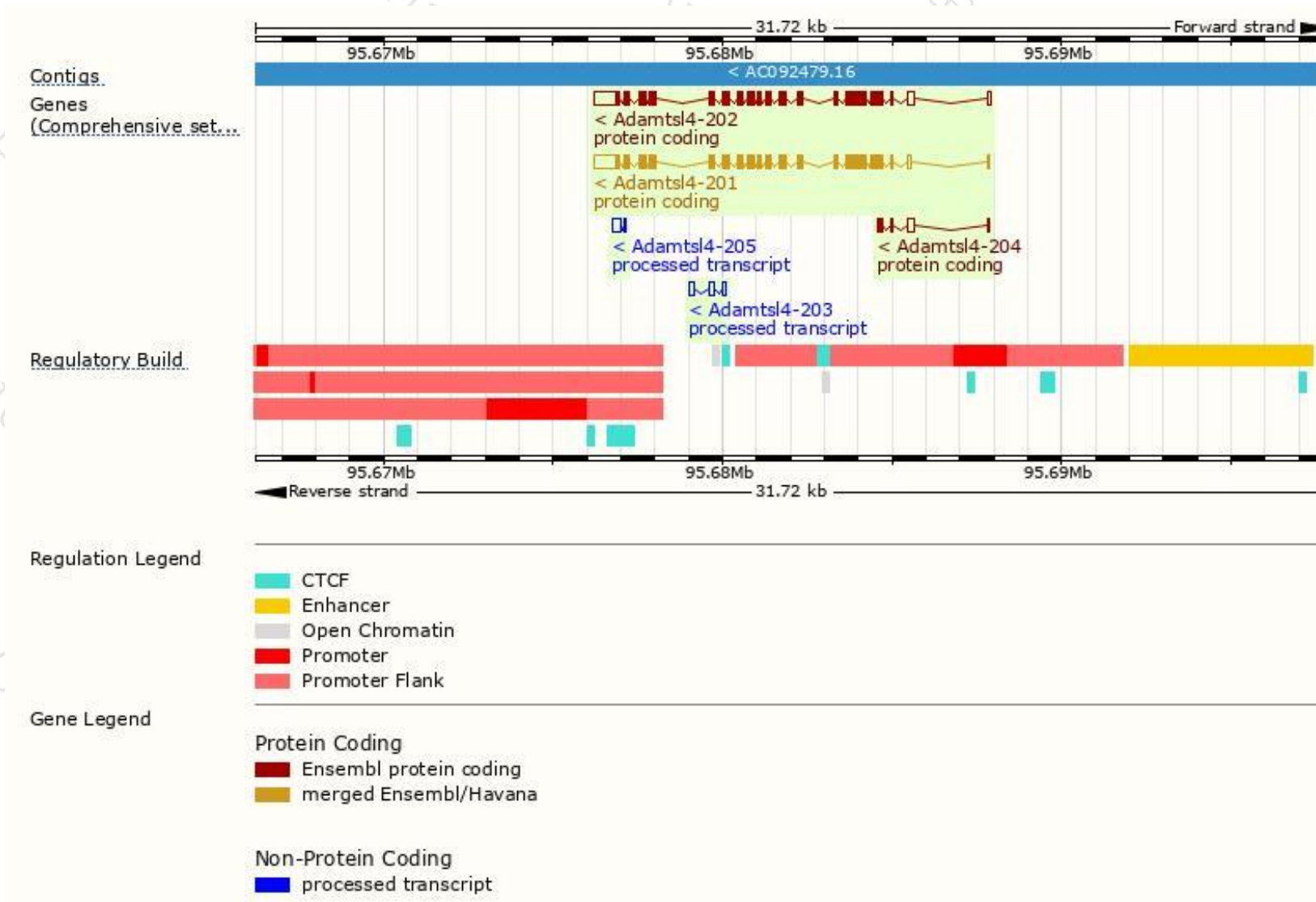
The gene has 5 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|--------------|--------------------------------------|------|------------------------|----------------------|---------------------------|------------------------|-------------------------------|
| Adamtsl4-202 | ENSMUST00000117782.7 | 4036 | 1036aa | Protein coding | CCDS17618 | Q80T21 | TSL:1 GENCODE basic APPRIS P1 |
| Adamtsl4-201 | ENSMUST00000015994.3 | 3856 | 1036aa | Protein coding | CCDS17618 | Q80T21 | TSL:1 GENCODE basic APPRIS P1 |
| Adamtsl4-204 | ENSMUST00000148854.1 | 452 | 70aa | Protein coding | - | D3Z0T6 | CDS 3' incomplete TSL:3 |
| Adamtsl4-203 | ENSMUST00000124410.1 | 403 | No protein | Processed transcript | - | - | TSL:3 |
| Adamtsl4-205 | ENSMUST00000151054.1 | 288 | No protein | Processed transcript | - | - | TSL:3 |

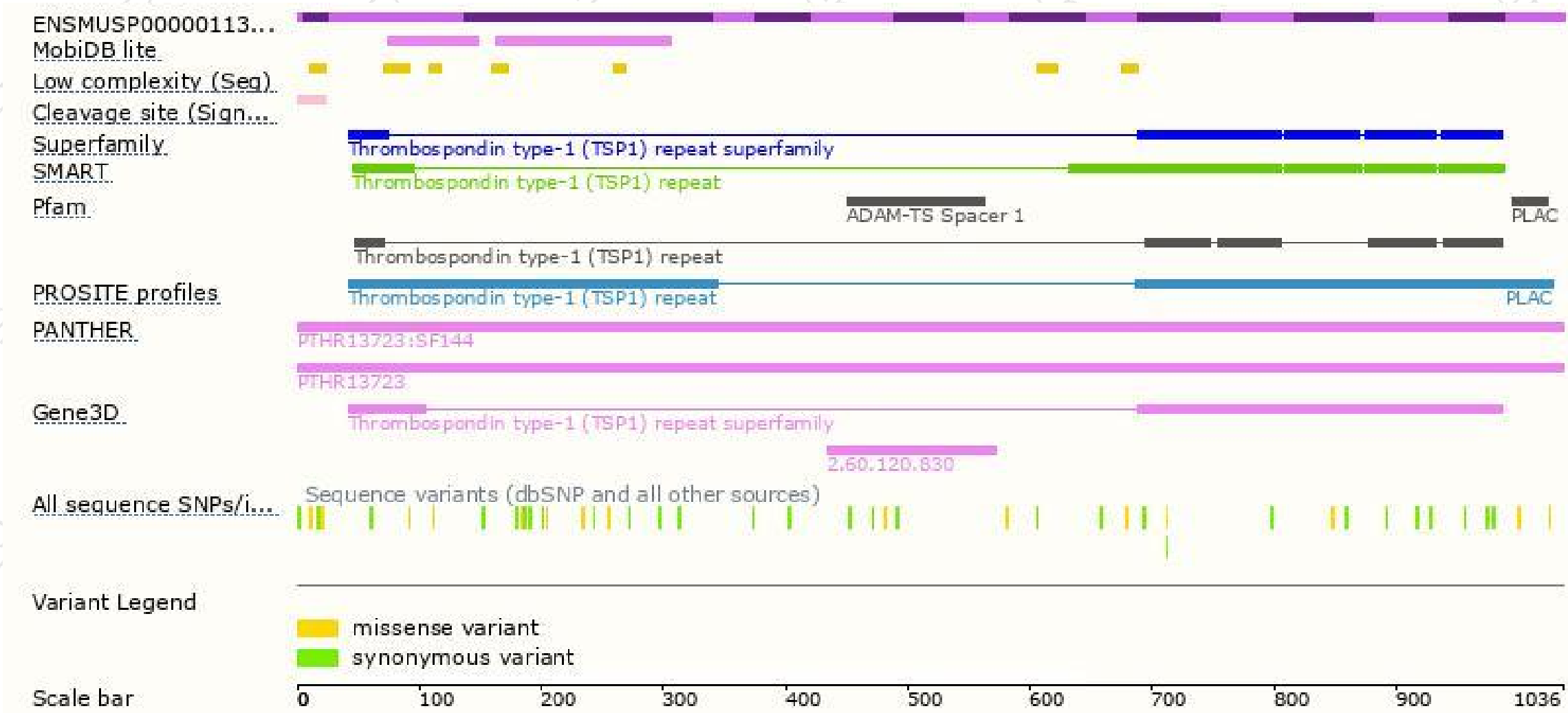
The strategy is based on the design of *Adamtsl4-202* transcript,the transcription is shown below:



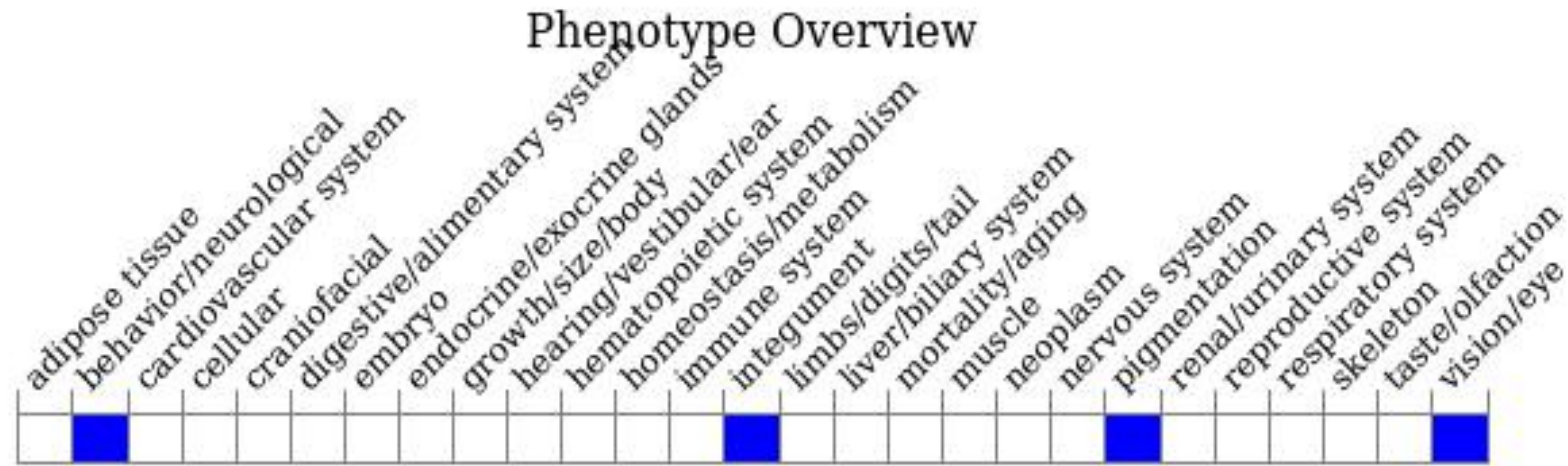
Genomic location distribution



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 an ENU-induced single point mutation exhibit ectopia lentis, increased ocular axial length, and focal retinal pigment epithelium defects with reduced retinal pigmentation and altered cellular morphology.

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

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