

***Eml4* Cas9-CKO Strategy**

Designer: Miaomiao Cui

Reviewer: Lingyan Wu

Design Date: 2021-7-9

Project Overview

Project Name

Eml4

Project type

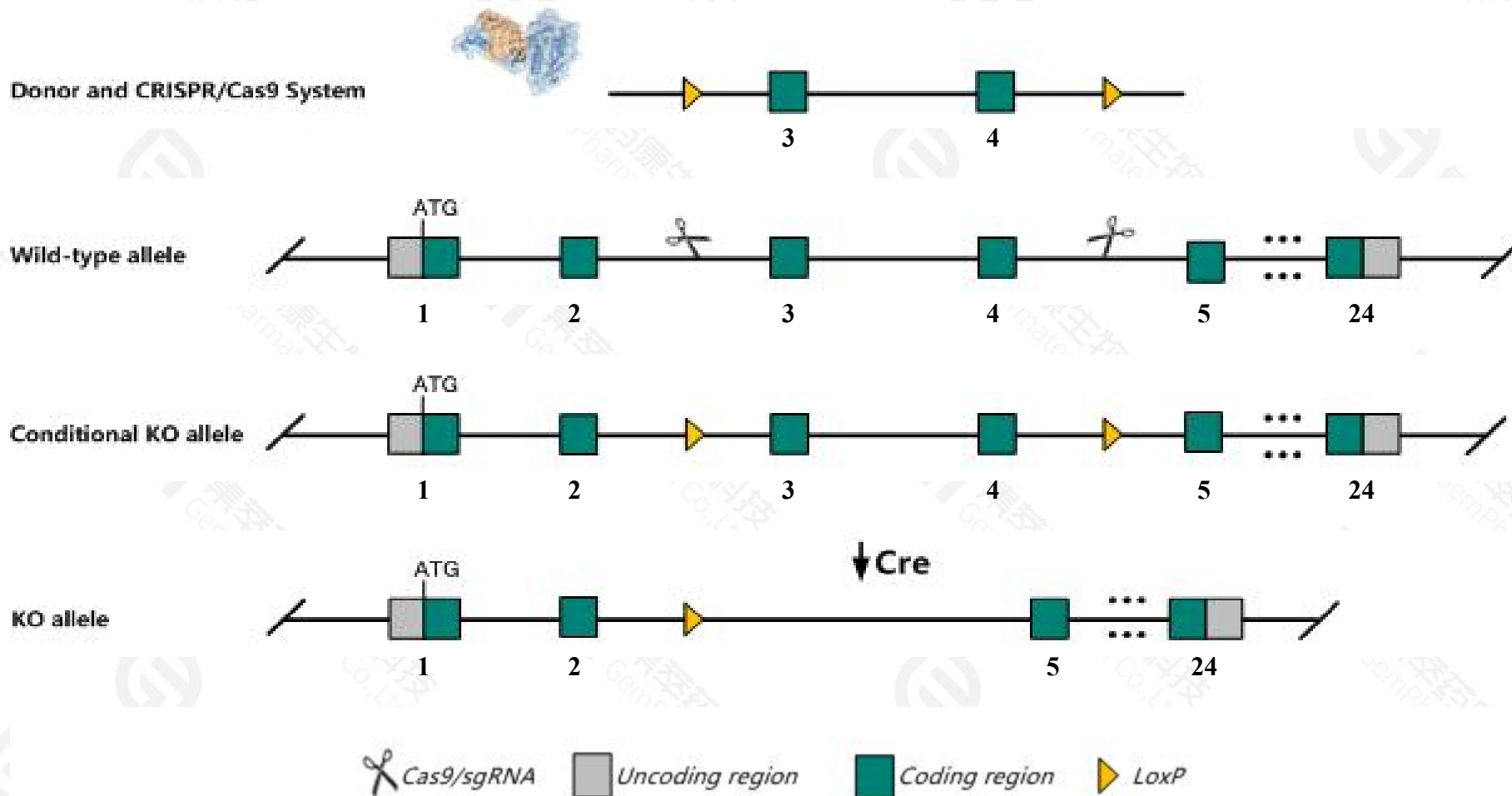
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Eml4* gene. The schematic diagram is as follows:



- The *Eml4* gene has 6 transcripts. According to the structure of *Eml4* gene, exon3-exon4 of *Eml4*-202(ENSMUST00000096766.12) transcript is recommended as the knockout region. The region contains 304bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Eml4* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor was constructed. Cas9, sgRNA 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 was 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.

- The *Eml4* gene is located on the Chr17. 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)

Eml4 echinoderm microtubule associated protein like 4 [Mus musculus (house mouse)]

Gene ID: 78798, updated on 17-Feb-2021

Summary



Official Symbol Eml4 provided by [MGI](#)

Official Full Name echinoderm microtubule associated protein like 4 provided by [MGI](#)

Primary source [MGI:MGI:1926048](#)

See related [Ensembl:ENSMUSG00000032624](#)

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 4930443C24Rik, AI644019

Expression Ubiquitous expression in CNS E11.5 (RPKM 20.0), CNS E14 (RPKM 14.6) and 28 other tissues [See more](#)

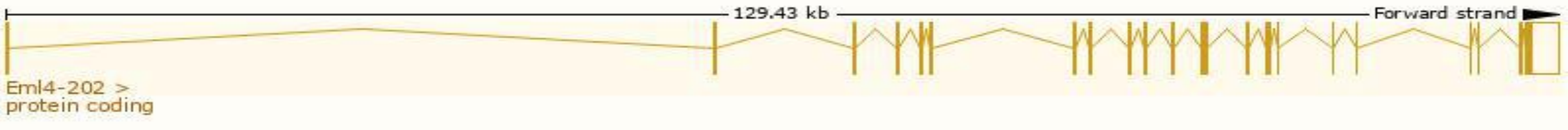
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

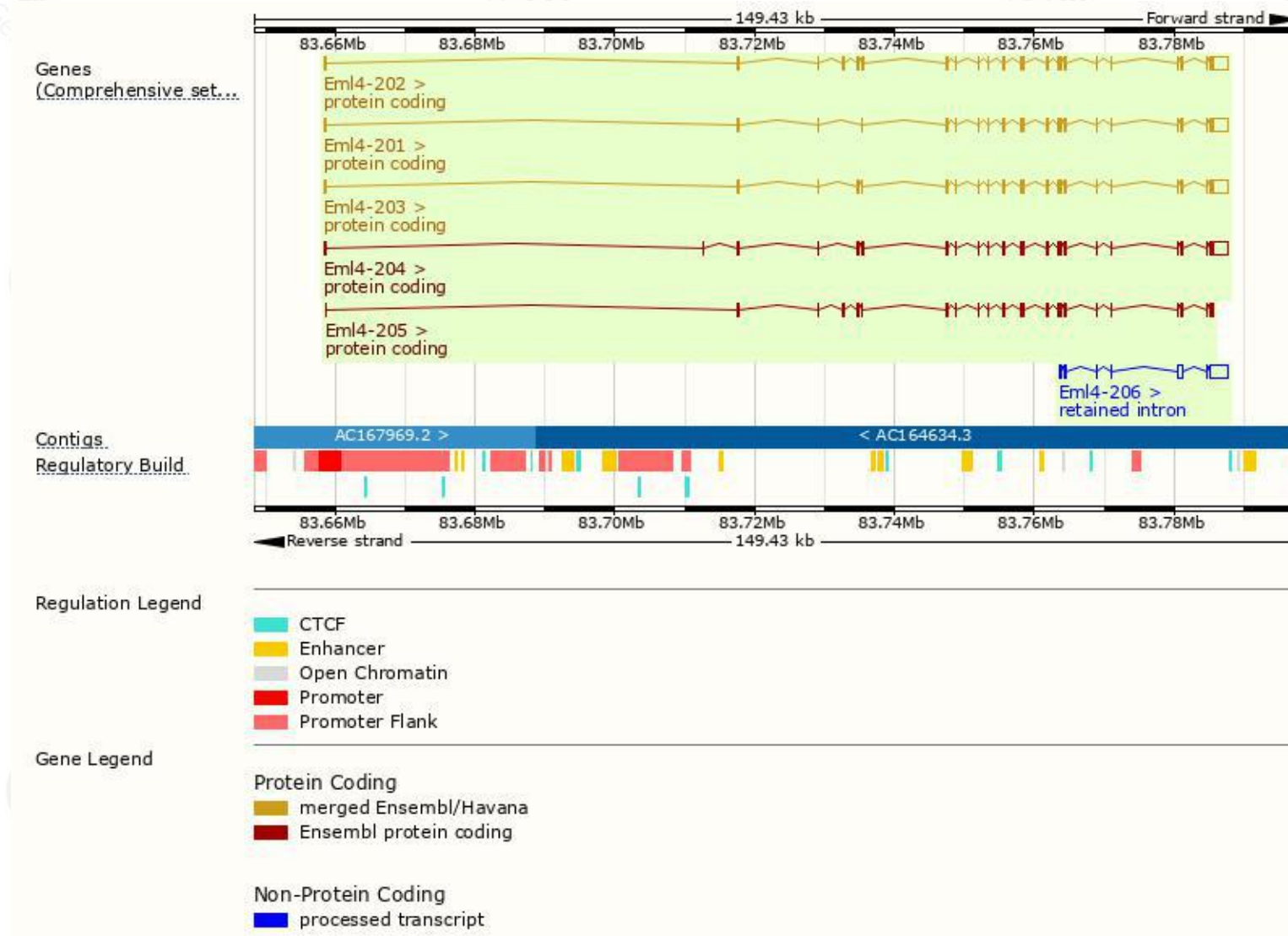
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Eml4-202	ENSMUST00000096766.12	5441	988aa	Protein coding	CCDS50192		TSL:1 , GENCODE basic , APPRIS ALT2 ,
Eml4-203	ENSMUST00000112363.10	5081	919aa	Protein coding	CCDS50193		TSL:1 , GENCODE basic , APPRIS ALT2 ,
Eml4-201	ENSMUST00000049503.10	5052	876aa	Protein coding	CCDS37708		TSL:1 , GENCODE basic , APPRIS P3 ,
Eml4-204	ENSMUST00000234460.2	5286	941aa	Protein coding	-		GENCODE basic , APPRIS ALT2 ,
Eml4-205	ENSMUST00000234584.2	2934	977aa	Protein coding	-		GENCODE basic , APPRIS ALT2 ,
Eml4-206	ENSMUST00000235121.2	3814	No protein	Retained intron	-		

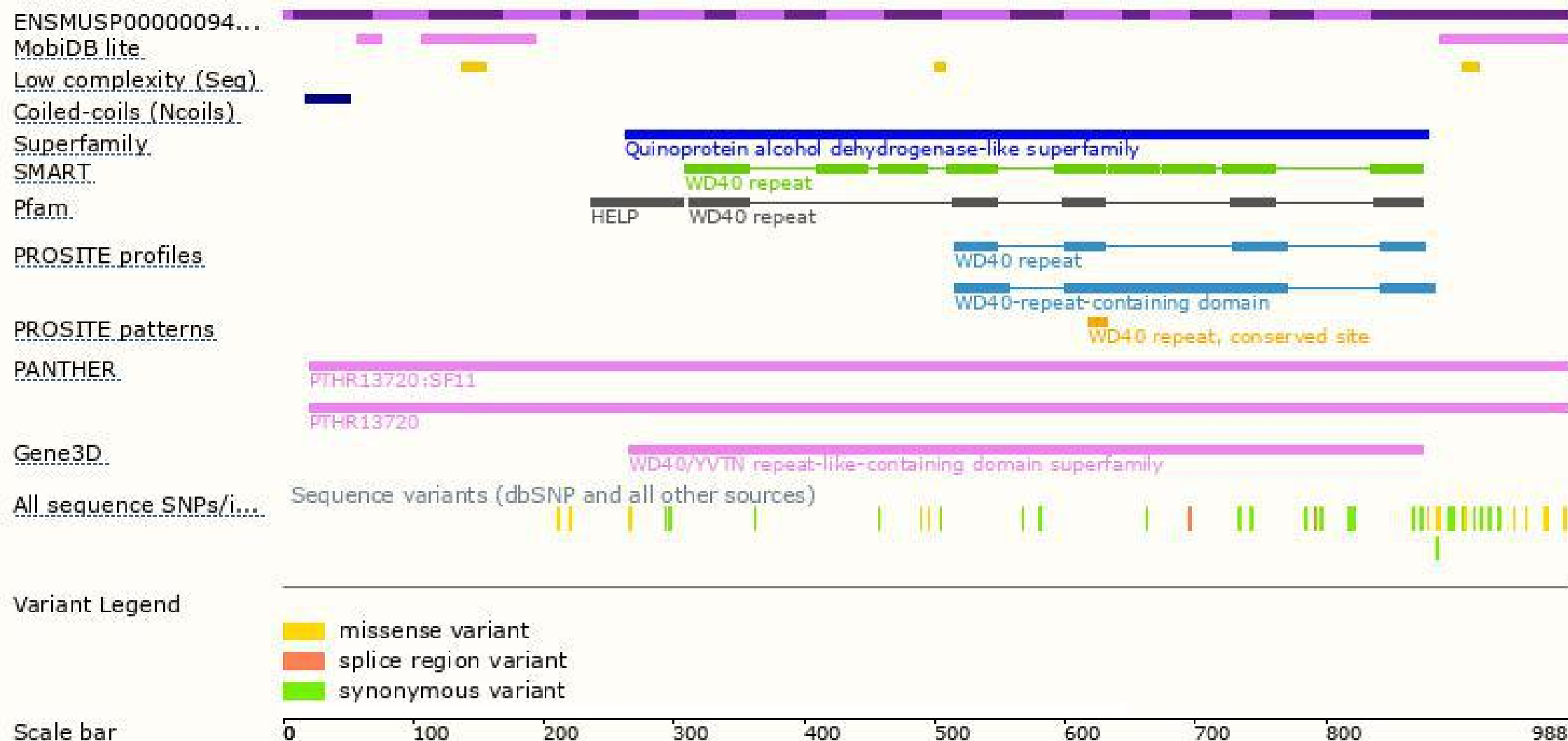
The strategy is based on the design of *Eml4-202* transcript,the transcription is shown below:



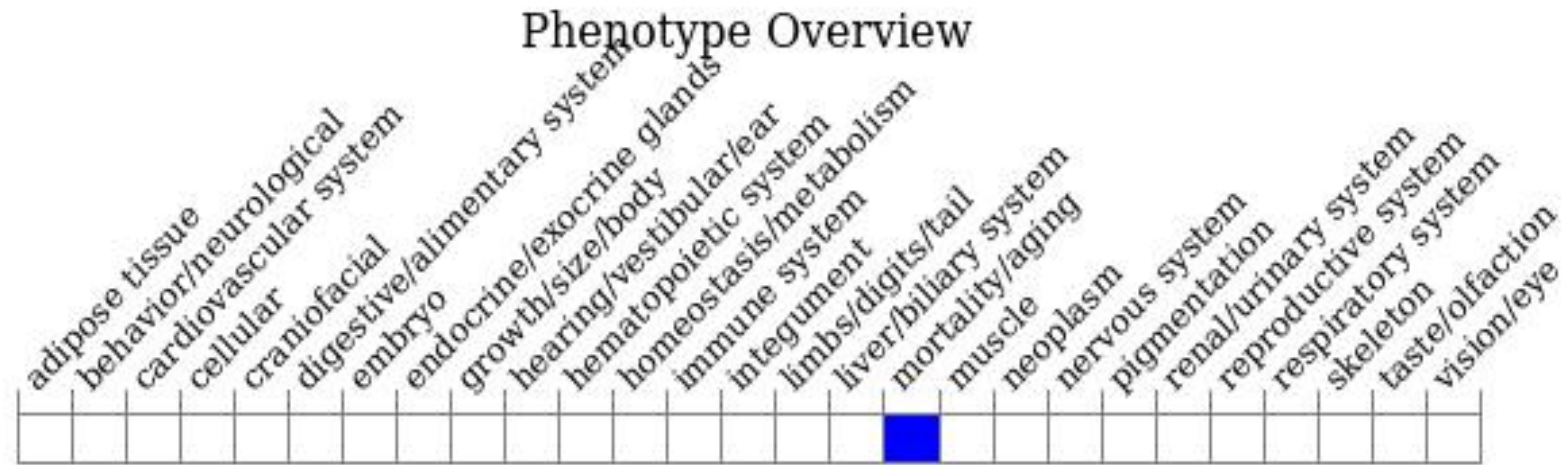
Genomic location distribution



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/>).

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

Tel: 025-5864 1534

