

***Adamtsl2* Cas9-CKO Strategy**

Designer: Huan Fan

Reviewer: Huan Wang

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Project Overview

Project Name

Adamtsl2

Project type

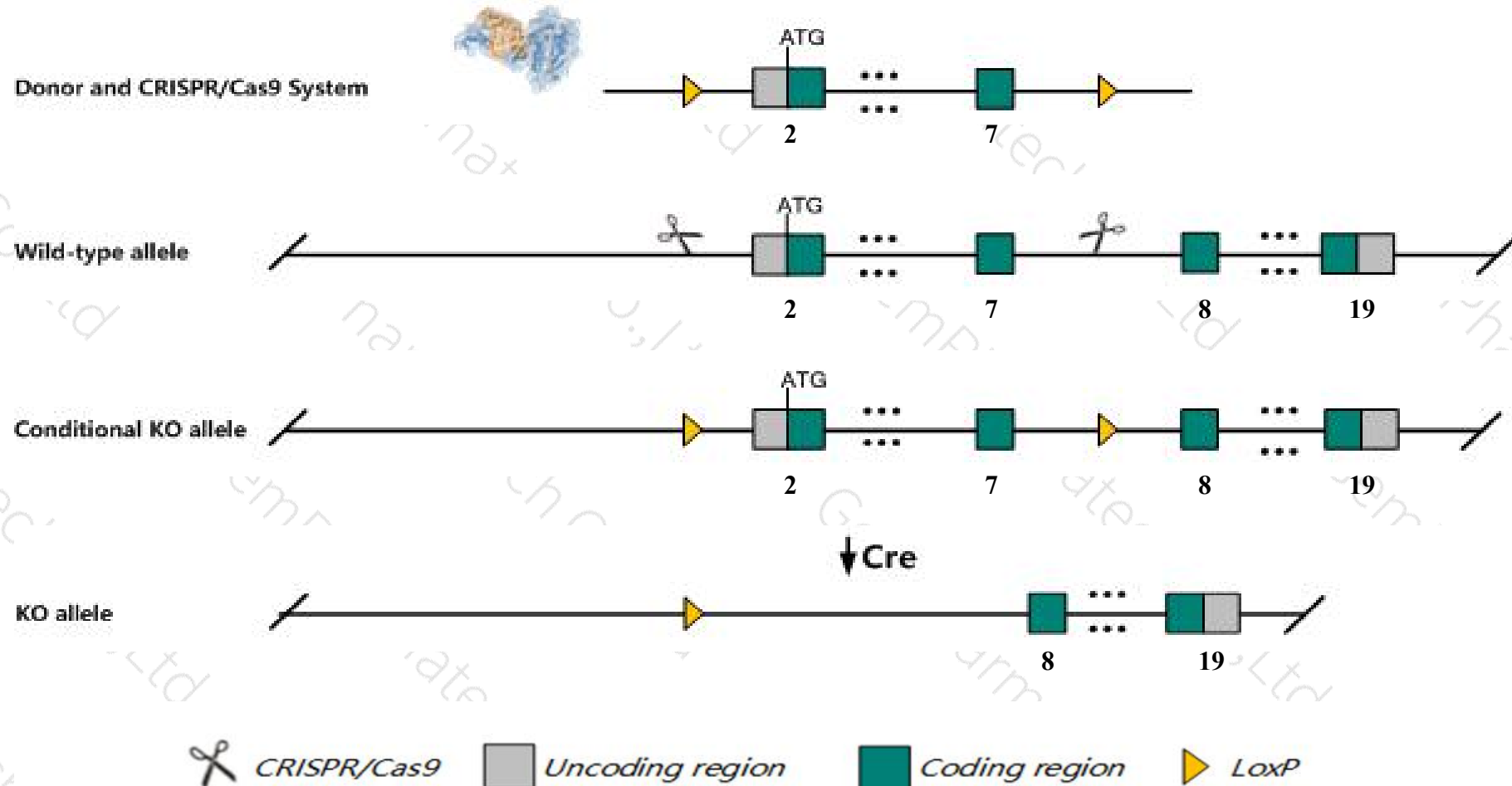
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adamtsl2* gene. The schematic diagram is as follows:



- The *Adamtsl2* gene has 5 transcripts. According to the structure of *Adamtsl2* gene, exon2-exon7 of *Adamtsl2-201* (ENSMUST00000091233.6) 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 *Adamtsl2* 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.

Notice

- According to the existing MGI data, homozygous null mice die shortly after birth, are cyanotic and exhibit respiratory distress. severe bronchial epithelial dysplasia with abnormal glycogen-rich inclusions in the bronchial epithelium is observed.
- The *Adamtsl2* gene is located on the Chr2. 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)

Adamtsl2 ADAMTS-like 2 [Mus musculus (house mouse)]

Gene ID: 77794, updated on 13-Mar-2020

Summary



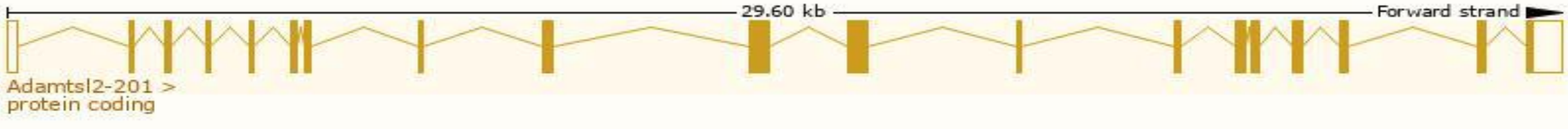
Official Symbol	Adamtsl2 provided by MGI
Official Full Name	ADAMTS-like 2 provided by MGI
Primary source	MGI:MGI:1925044
See related	Ensembl:ENSMUSG00000036040
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A930008K15Rik, tcp-1
Expression	Broad expression in lung adult (RPKM 24.7), spleen adult (RPKM 14.5) and 15 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

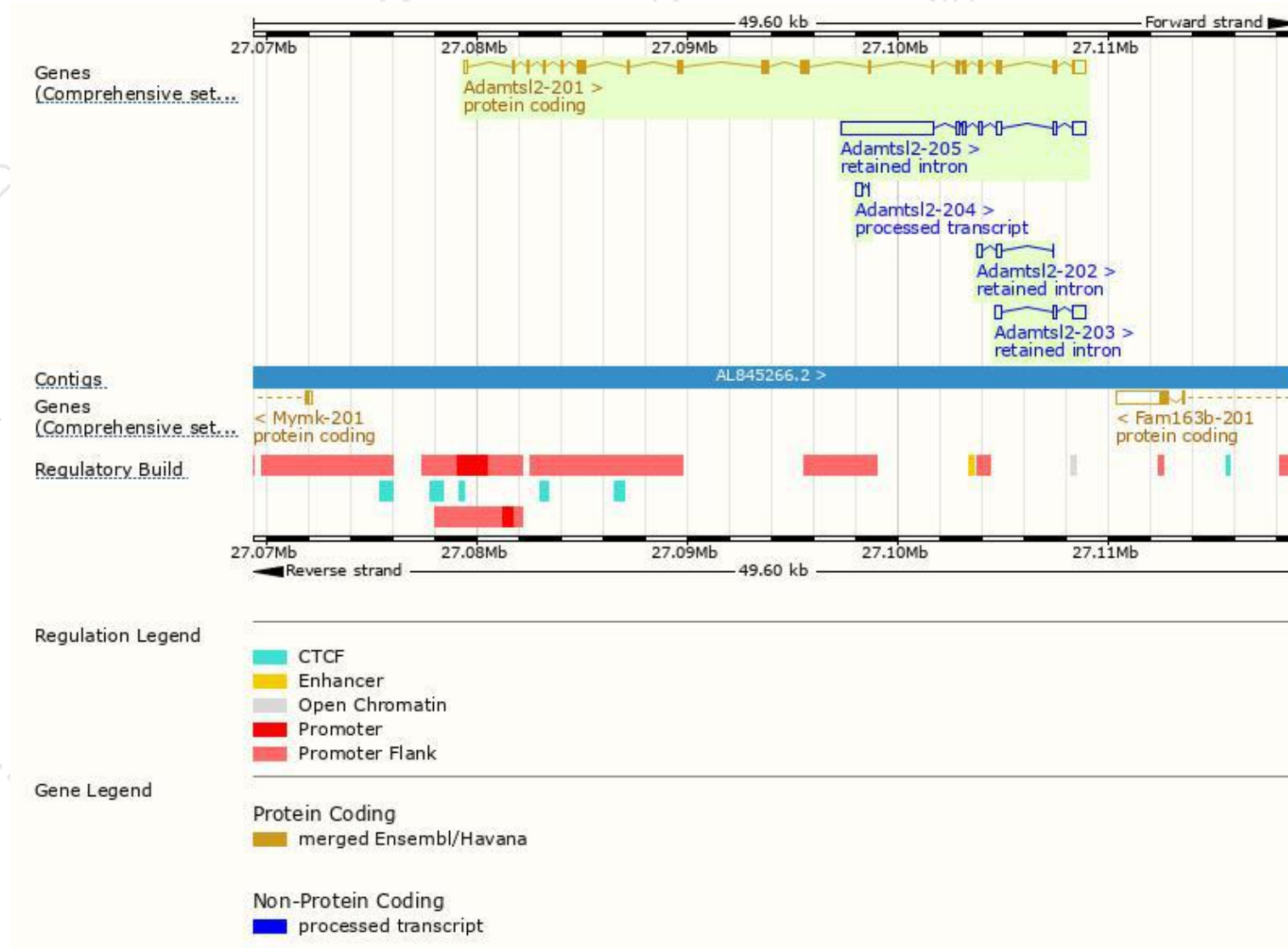
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adamtsl2-201	ENSMUST00000091233.6	3612	957aa	Protein coding	CCDS15824	A1A5B7 Q7TSK7	TSL:1 GENCODE basic APPRIS P1
Adamtsl2-204	ENSMUST00000143246.1	350	No protein	Processed transcript	-	-	TSL:3
Adamtsl2-205	ENSMUST00000169787.7	5956	No protein	Retained intron	-	-	TSL:1
Adamtsl2-203	ENSMUST00000139633.1	1069	No protein	Retained intron	-	-	TSL:1
Adamtsl2-202	ENSMUST00000130600.1	442	No protein	Retained intron	-	-	TSL:5

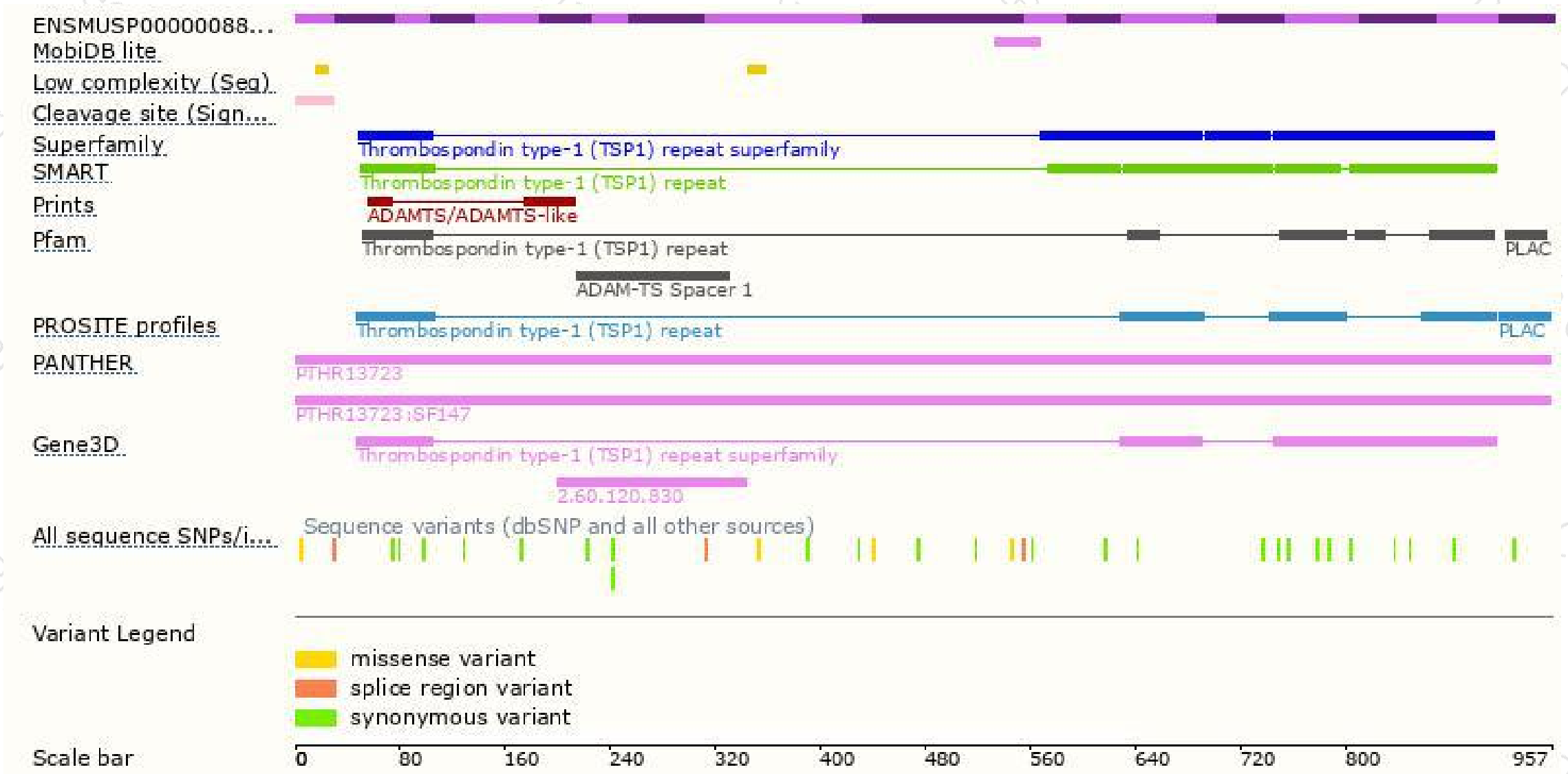
The strategy is based on the design of *Adamtsl2-201* transcript,the transcription is shown below:



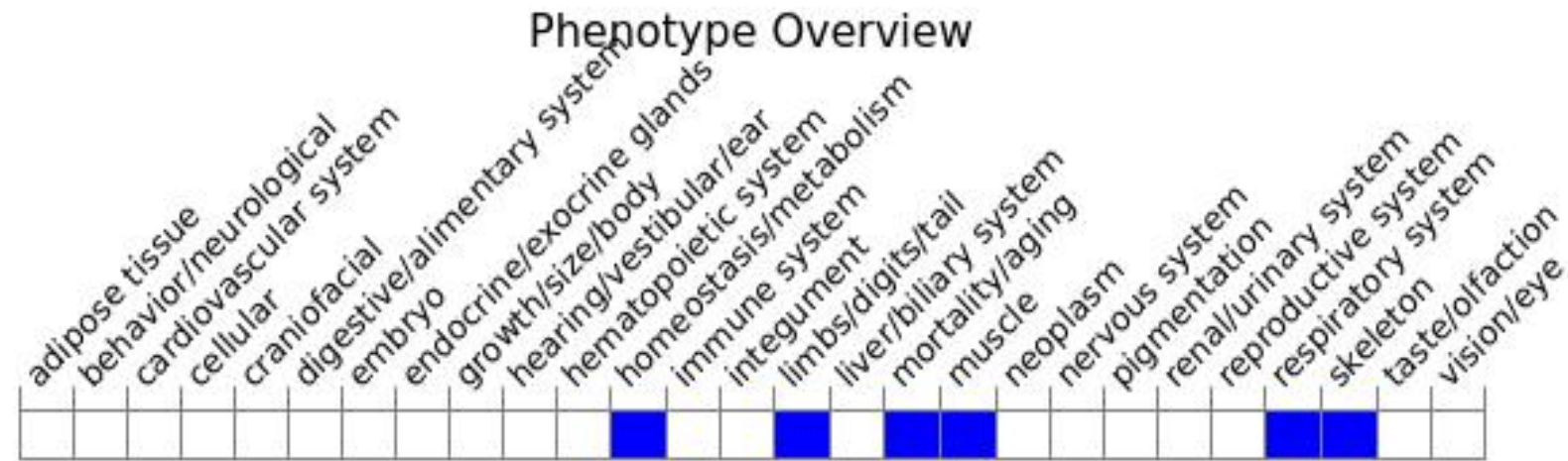
Genomic location distribution



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 null mice die shortly after birth, are cyanotic and exhibit respiratory distress. Severe bronchial epithelial dysplasia with abnormal glycogen-rich inclusions in the bronchial epithelium is observed.

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

Tel: 400-9660890

