

Acs14 Cas9-CKO Strategy

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Project Overview

Project Name

Acsl4

Project type

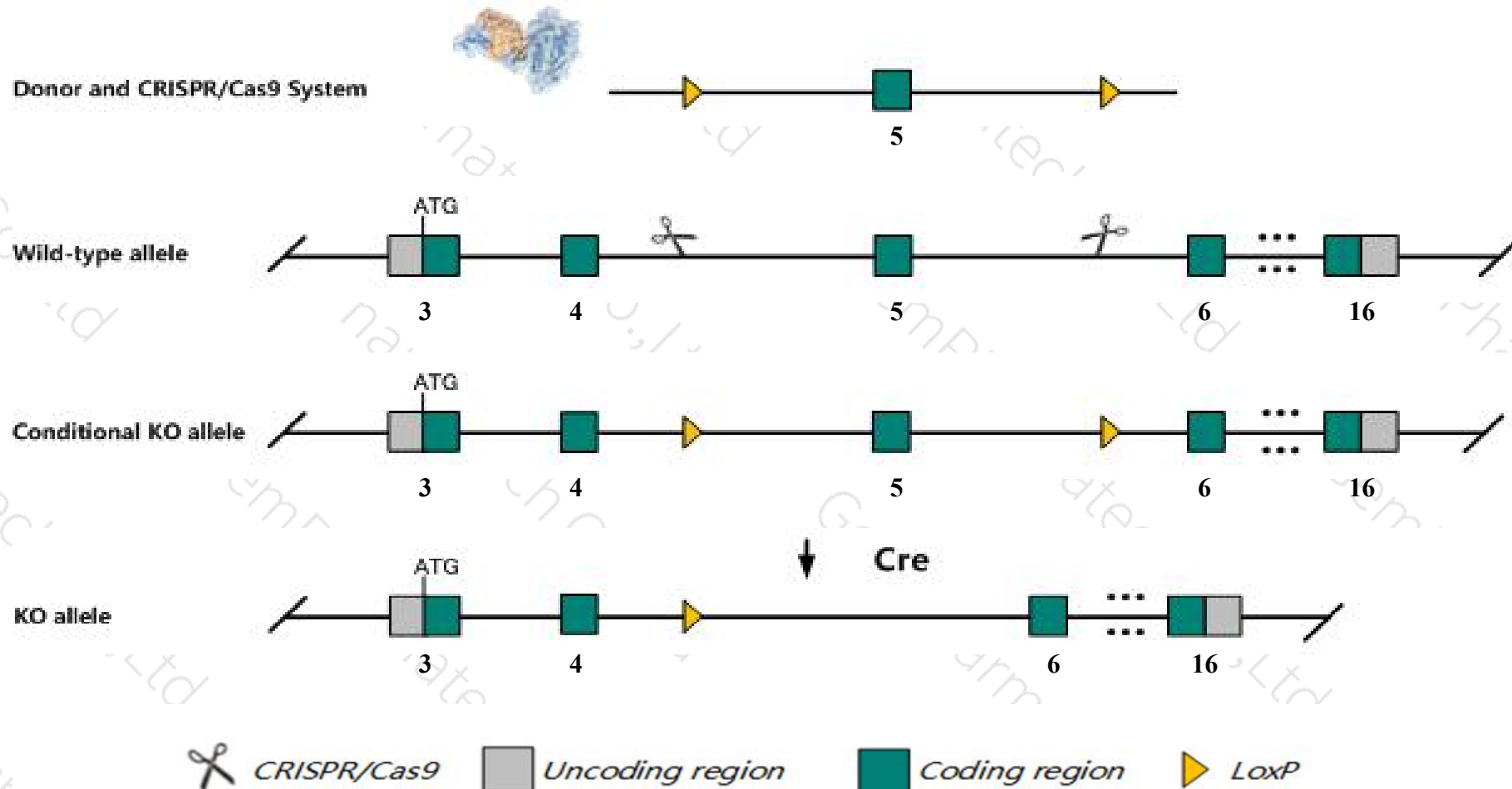
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Acs14* gene. The schematic diagram is as follows:



- The *Acsf4* gene has 5 transcripts. According to the structure of *Acsf4* gene, exon5 of *Acsf4-201* (ENSMUST00000033634.4) transcript is recommended as the knockout region. The region contains 110bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Acsf4* 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, female heterozygotes for a targeted null mutation exhibit accumulation of prostaglandins in the uterus, reduced fertility with few and small litters, and very low transmission of the mutant allele.
- The *Acs14* gene is located on the ChrX. 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)

Acs14 acyl-CoA synthetase long-chain family member 4 [Mus musculus (house mouse)]

Gene ID: 50790, updated on 13-Mar-2020

Summary



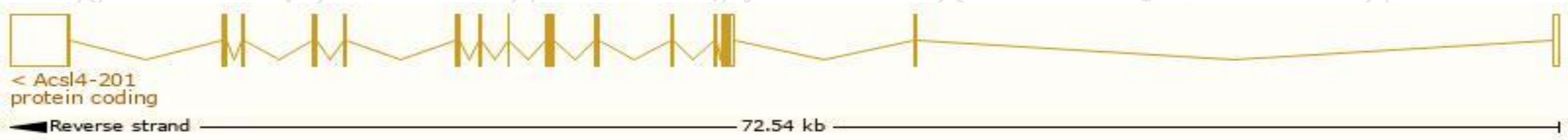
Official Symbol	Acs14 provided by MGI
Official Full Name	acyl-CoA synthetase long-chain family member 4 provided by MGI
Primary source	MGI:MGI:1354713
See related	Ensembl:ENSMUSG00000031278
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9430020A05Rik, ACS4, AU018108, Fac14, Lacs4
Expression	Ubiquitous expression in placenta adult (RPKM 12.0), adrenal adult (RPKM 11.3) and 23 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

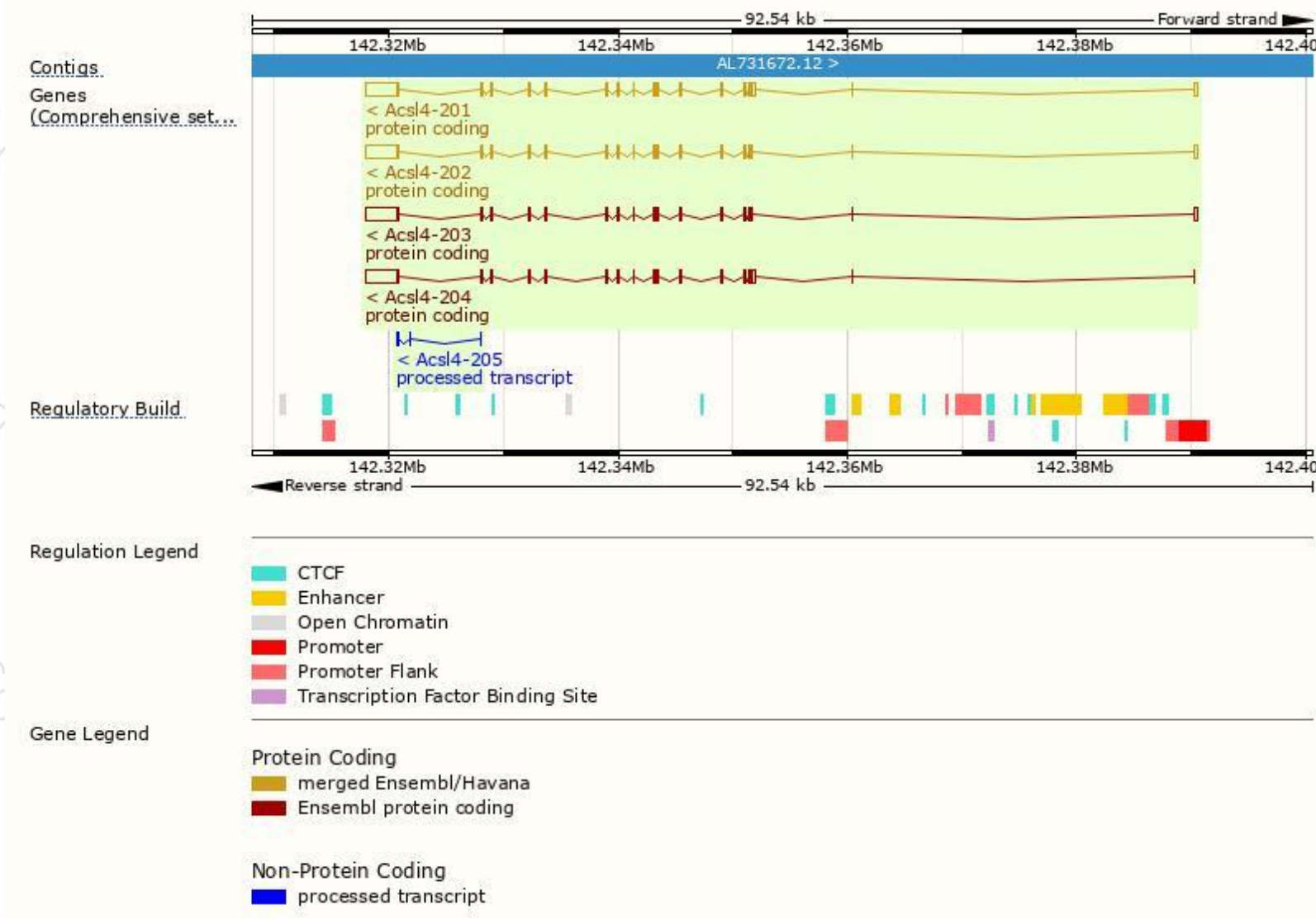
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Acsl4-201	ENSMUST00000033634.4	5280	711aa	Protein coding	CCDS30448	Q9QUJ7	TSL:1 GENCODE basic APPRIS P3
Acsl4-204	ENSMUST00000112907.7	5137	711aa	Protein coding	CCDS30448	Q9QUJ7	TSL:1 GENCODE basic APPRIS P3
Acsl4-203	ENSMUST00000112904.7	4959	670aa	Protein coding	CCDS41156	Q91YN3 Q9QUJ7	TSL:1 GENCODE basic APPRIS ALT1
Acsl4-202	ENSMUST00000112903.7	4956	670aa	Protein coding	CCDS41156	Q91YN3 Q9QUJ7	TSL:1 GENCODE basic APPRIS ALT1
Acsl4-205	ENSMUST00000140520.1	291	No protein	Processed transcript	-	-	TSL:5

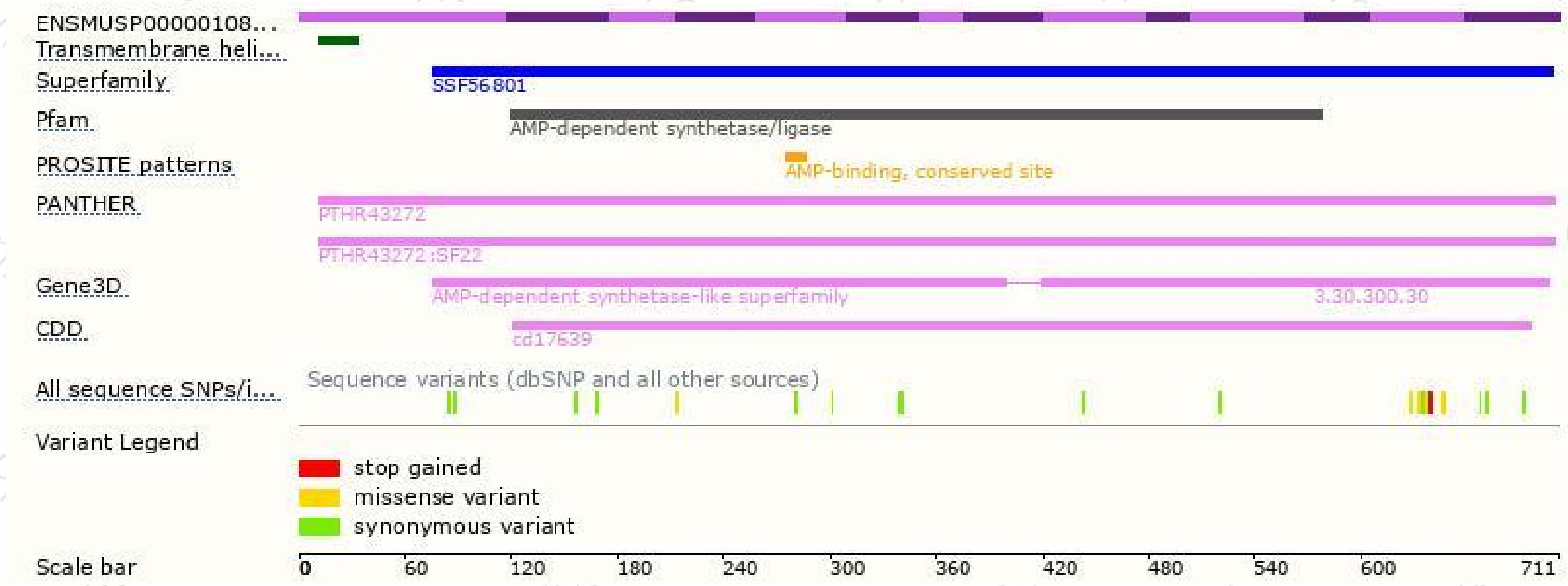
The strategy is based on the design of *Acsl4-201* transcript,the transcription is shown below:



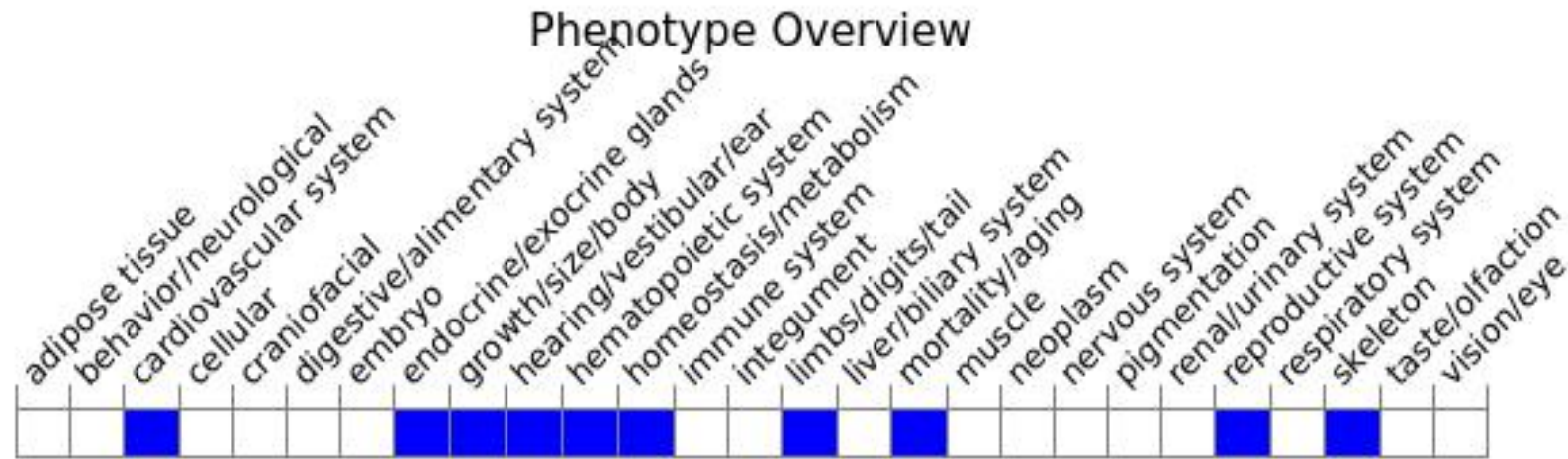
Genomic location distribution



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, female heterozygotes for a targeted null mutation exhibit accumulation of prostaglandins in the uterus, reduced fertility with few and small litters, and very low transmission of the mutant allele.

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

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