

Acs13 Cas9-CKO Strategy

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Project Overview

Project Name

Acs13

Project type

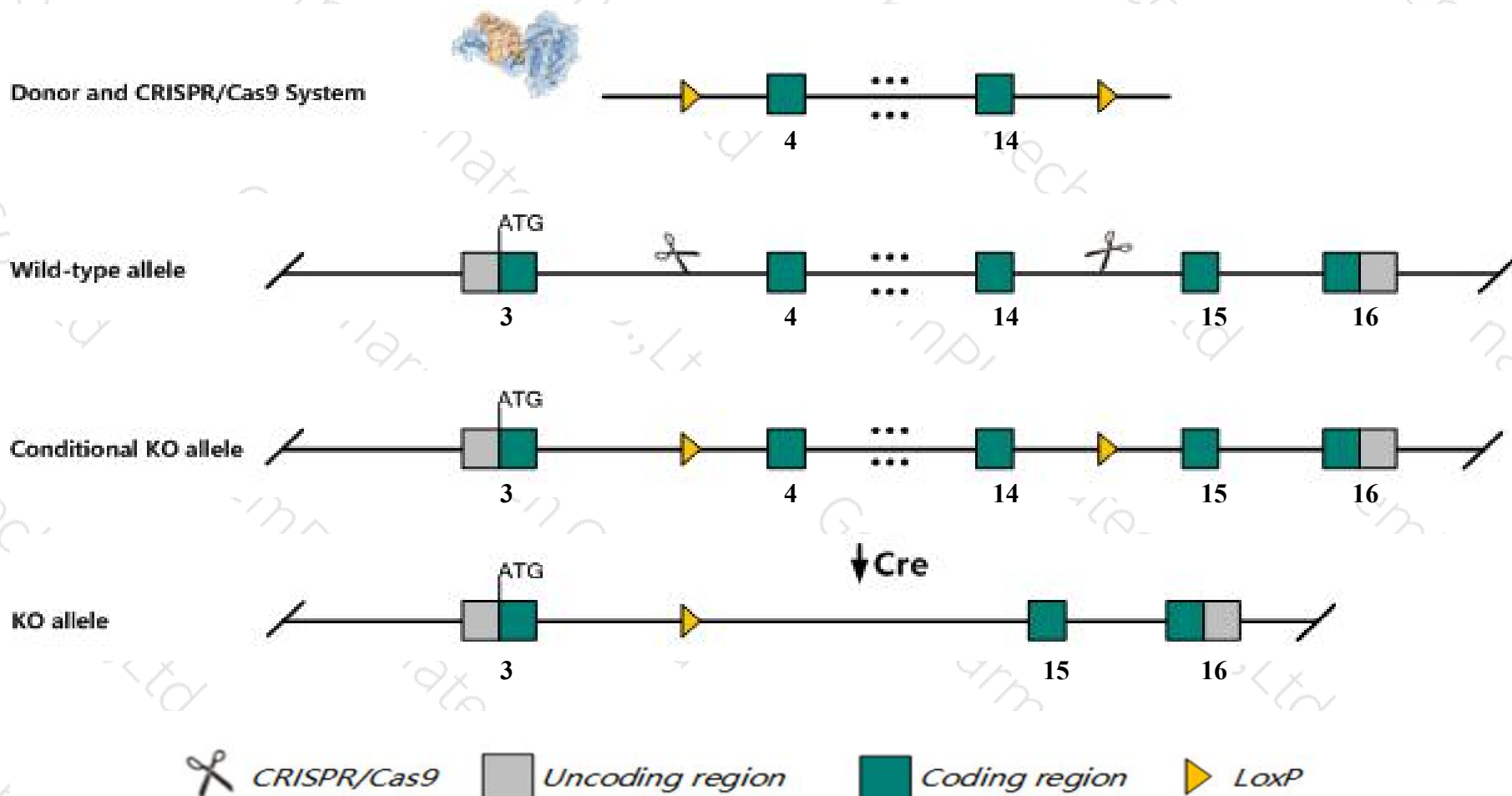
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Acs13* gene. The schematic diagram is as follows:



- The *Acsl3* gene has 7 transcripts. According to the structure of *Acsl3* gene, exon4-exon14 of *Acsl3-201* (ENSMUST00000035779.14) transcript is recommended as the knockout region. The region contains 1469bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Acsl3* 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, Homozygous mice exhibit decreased blood percentages of CD4 T cells and B cells, and a decreased IgG1 response to ovalbumin. Male mutant mice exhibit growth retardation, reduced size and reduced total tissue and lean body mass.
- The *Acsf3* gene is located on the Chr1. 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)

Acsl3 acyl-CoA synthetase long-chain family member 3 [Mus musculus (house mouse)]

Gene ID: 74205, updated on 31-Jan-2019

Summary



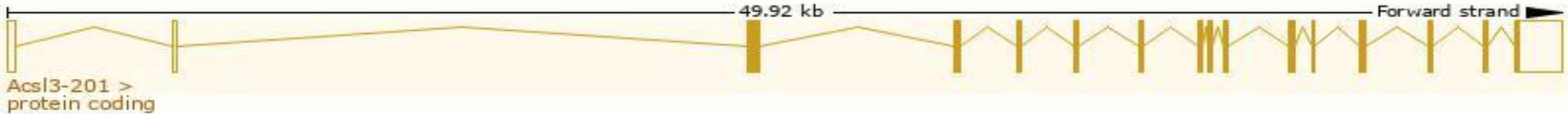
Official Symbol	Acsl3 provided by MGI
Official Full Name	acyl-CoA synthetase long-chain family member 3 provided by MGI
Primary source	MGI:MGI:1921455
See related	Ensembl:ENSMUSG00000032883
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2610510B12Rik, Acs3, C85929, FacI3, Pro2194
Expression	Broad expression in cortex adult (RPKM 21.5), frontal lobe adult (RPKM 18.3) and 25 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

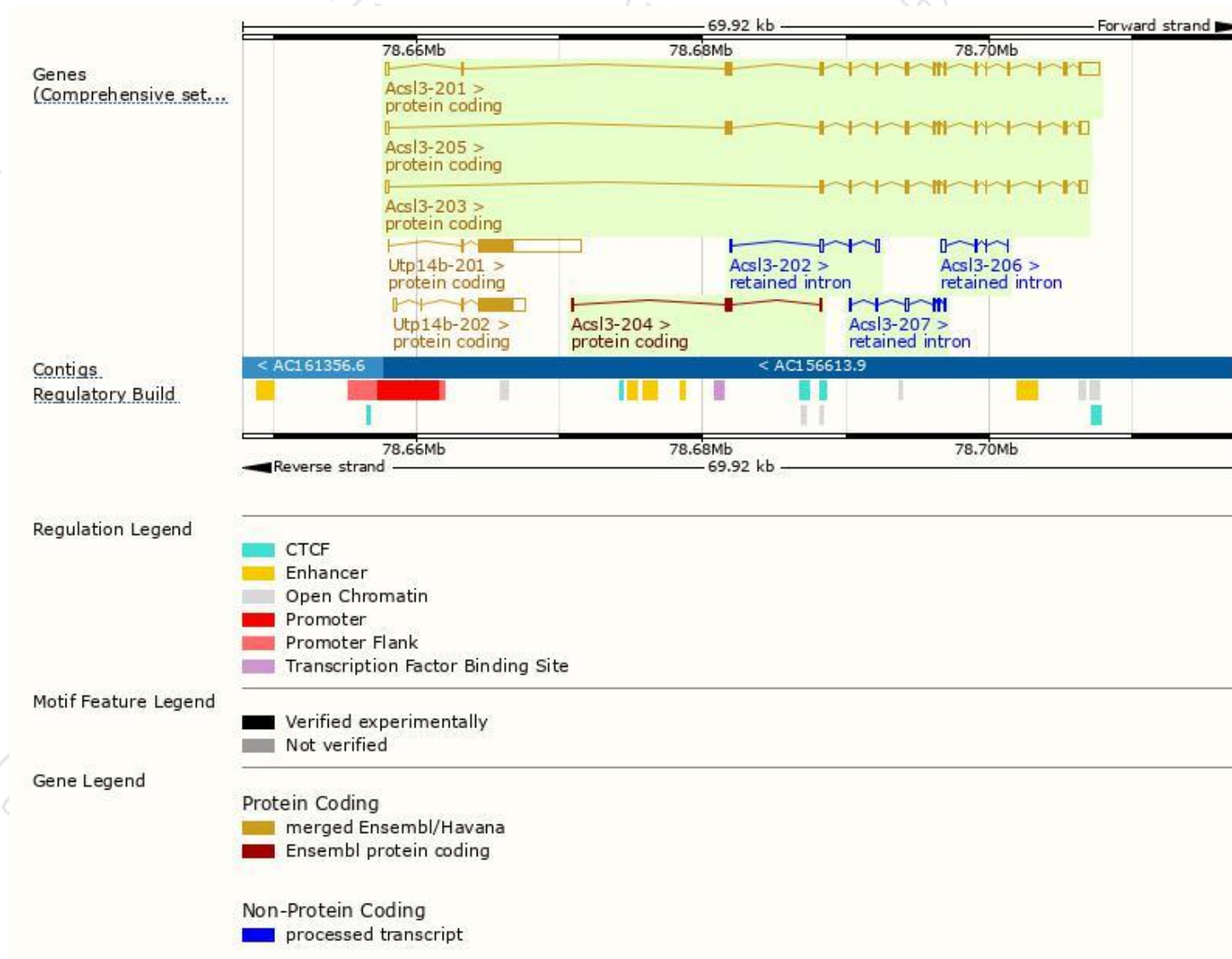
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Acsl3-201	ENSMUST00000035779.14	3950	720aa	Protein coding	CCDS15087	Q9CZW4	TSL:1 GENCODE basic APPRIS P1
Acsl3-205	ENSMUST00000142704.7	2976	720aa	Protein coding	CCDS15087	Q9CZW4	TSL:1 GENCODE basic APPRIS P1
Acsl3-203	ENSMUST00000134566.7	2492	568aa	Protein coding	CCDS48295	E9PUC2	TSL:1 GENCODE basic
Acsl3-204	ENSMUST00000135642.1	502	141aa	Protein coding	-	D3Z4I4	CDS 3' incomplete TSL:3
Acsl3-207	ENSMUST00000154777.1	742	No protein	Retained intron	-	-	TSL:3
Acsl3-206	ENSMUST00000148608.1	643	No protein	Retained intron	-	-	TSL:5
Acsl3-202	ENSMUST00000132997.1	627	No protein	Retained intron	-	-	TSL:1

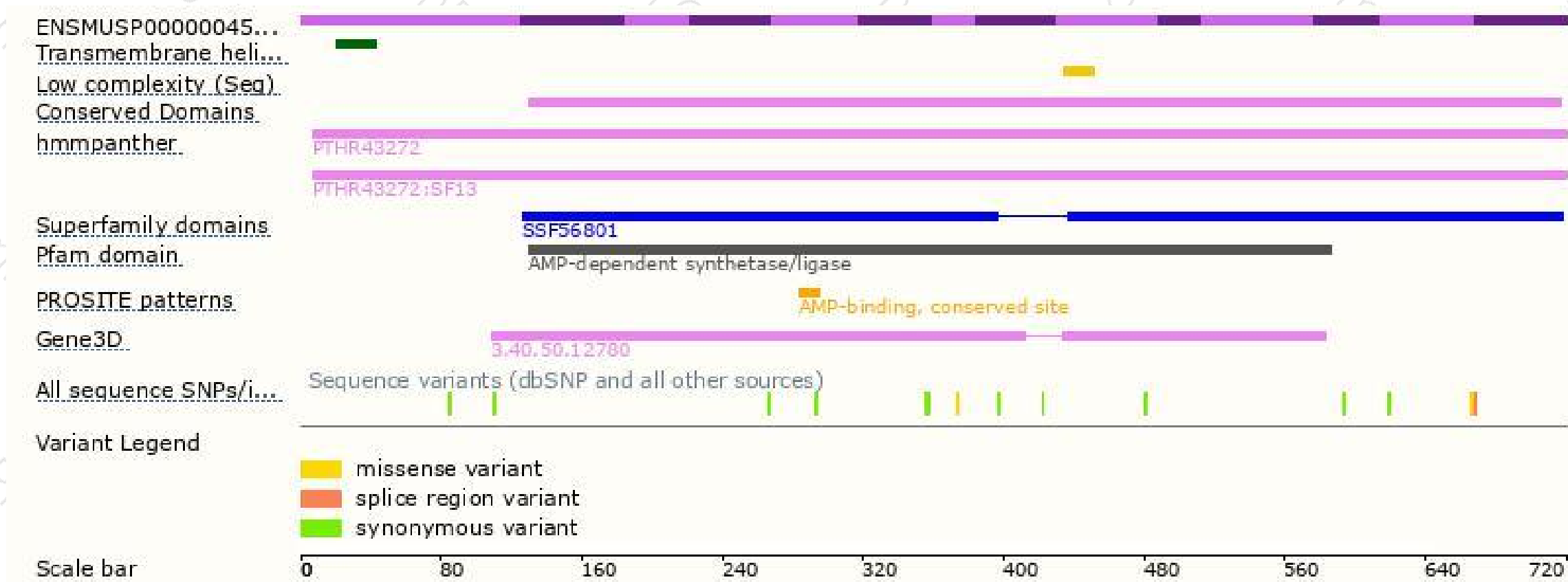
The strategy is based on the design of *Acsl3-201* transcript,The transcription is shown below



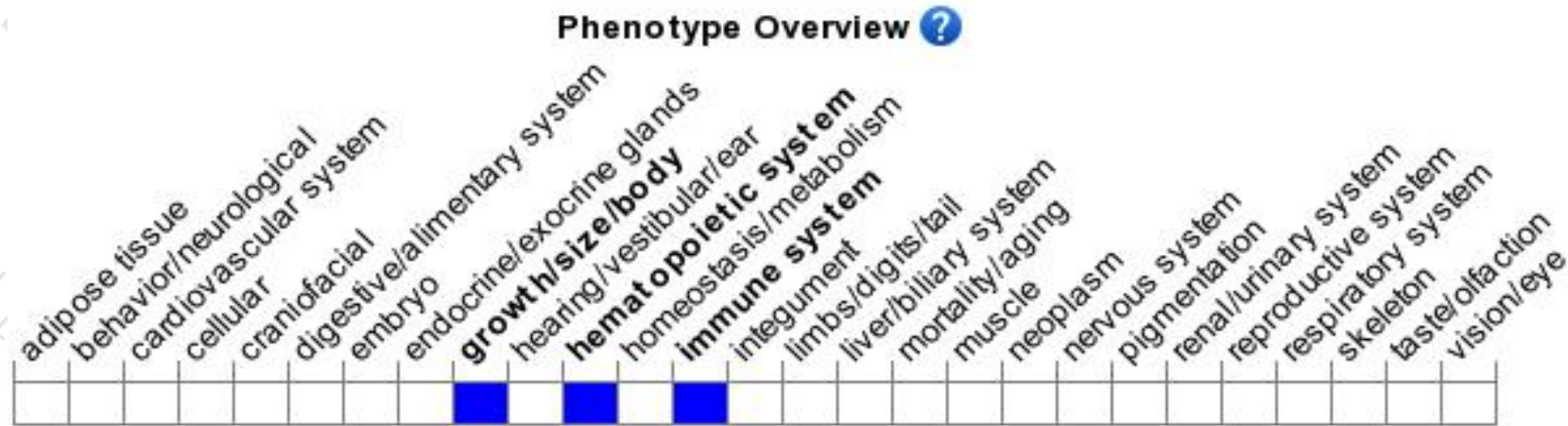
Genomic location distribution



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 mice exhibit decreased blood percentages of CD4 T cells and B cells, and a decreased IgG1 response to ovalbumin. Male mutant mice exhibit growth retardation, reduced size and reduced total tissue and lean body mass.

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

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