

Gpam Cas9-CKO Strategy

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Design Date: 2020-2-11

Project Overview



Project Name

Gpam

Project type

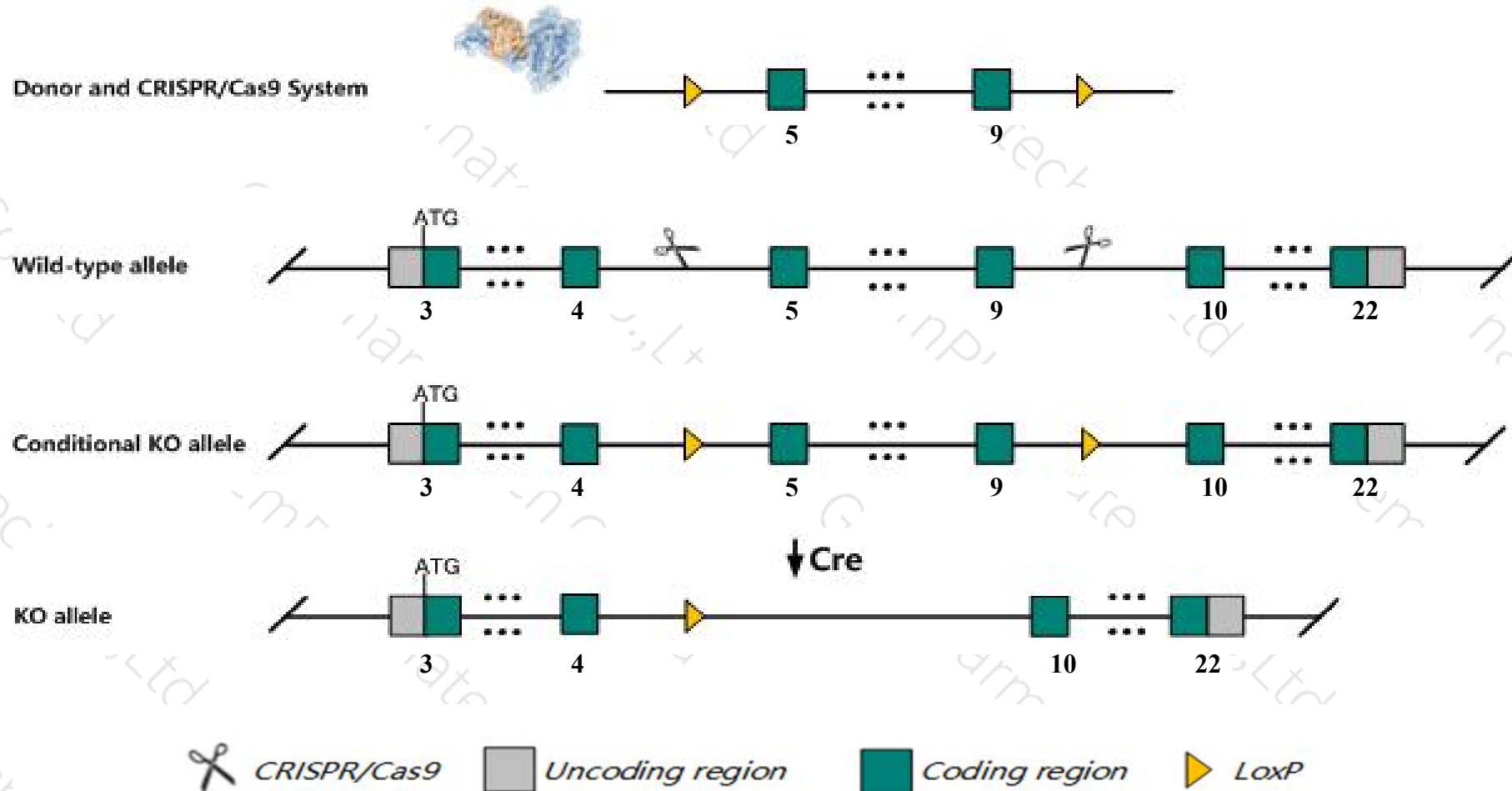
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Gpam* gene has 5 transcripts. According to the structure of *Gpam* gene, exon5-exon9 of *Gpam-202* (ENSMUST00000235957.1) transcript is recommended as the knockout region. The region contains 569bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gpam* 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 mutant mice weighed less than controls and showed reduced triacylglycerol levels in the liver and plasma. The glycerolipid fatty acid composition is also disrupted in mutant mice.
- The *Gpam* gene is located on the Chr19. 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)

Gpam glycerol-3-phosphate acyltransferase, mitochondrial [*Mus musculus* (house mouse)]

Gene ID: 14732, updated on 24-Oct-2019

Summary

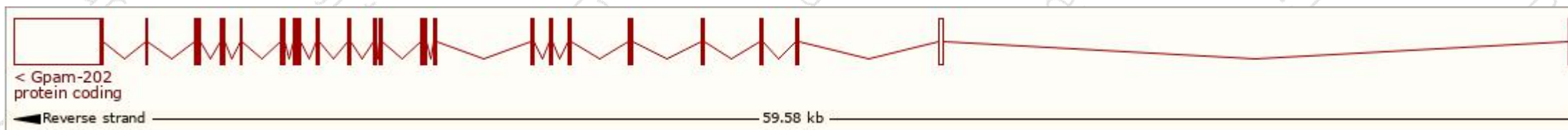
Official Symbol	Gpam provided by MGI
Official Full Name	glycerol-3-phosphate acyltransferase, mitochondrial provided by MGI
Primary source	MGI:MGI:109162
See related	Ensembl:ENSMUSG00000024978
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	P90; GPAT; GPAT1; GPAT-1
Expression	Broad expression in adrenal adult (RPKM 73.0), subcutaneous fat pad adult (RPKM 64.9) and 23 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

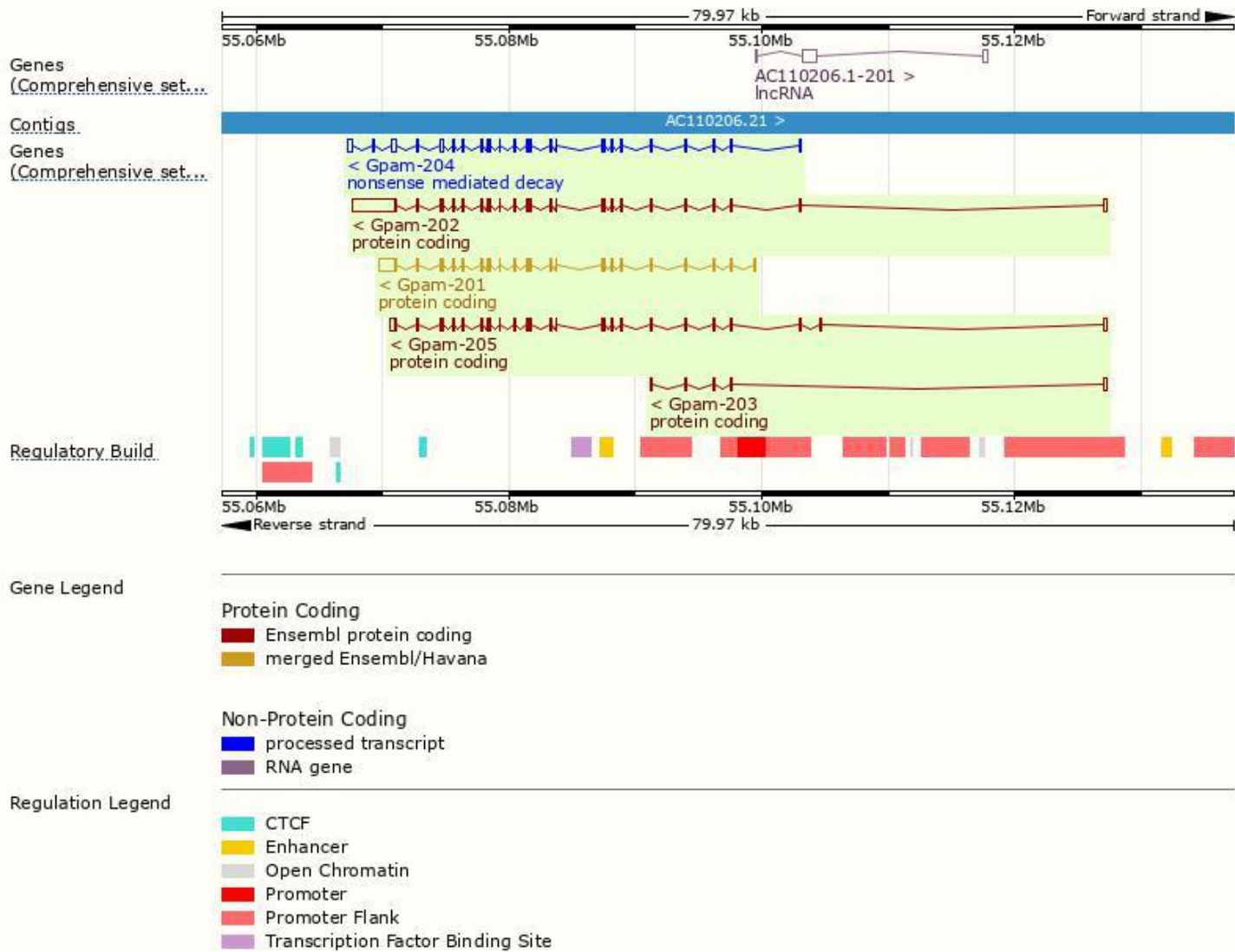
The gene has 5 transcripts, all transcripts are shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Gpam-201	ENSMUST00000061856.5	3832	827aa	Protein coding	CCDS29906	Q61586	TSL:1 GENCODE basic APPRIS P1
Gpam-202	ENSMUST00000235957.1	6172	827aa	Protein coding	CCDS29906	Q61586	GENCODE basic APPRIS P1
Gpam-203	ENSMUST00000236422.1	628	124aa	Protein coding	-	A0A494BAR5	CDS 3' incomplete
Gpam-204	ENSMUST00000236859.1	3304	681aa	Nonsense mediated decay	-	A0A494BA32	-
Gpam-205	ENSMUST00000237146.1	3206	827aa	Protein coding	CCDS29906	Q61586	GENCODE basic APPRIS P1

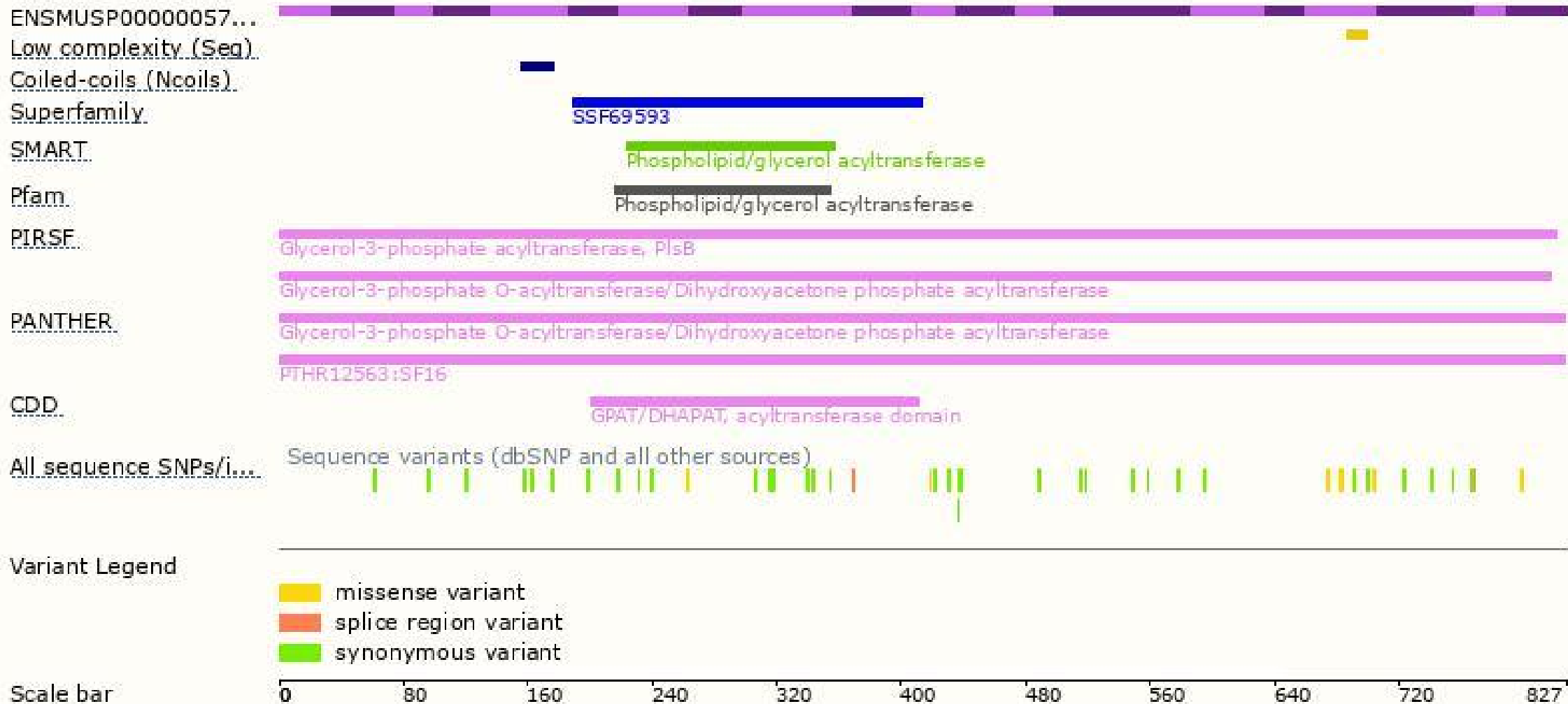
The strategy is based on the design of *Gpam-202* transcript, The transcription is shown below



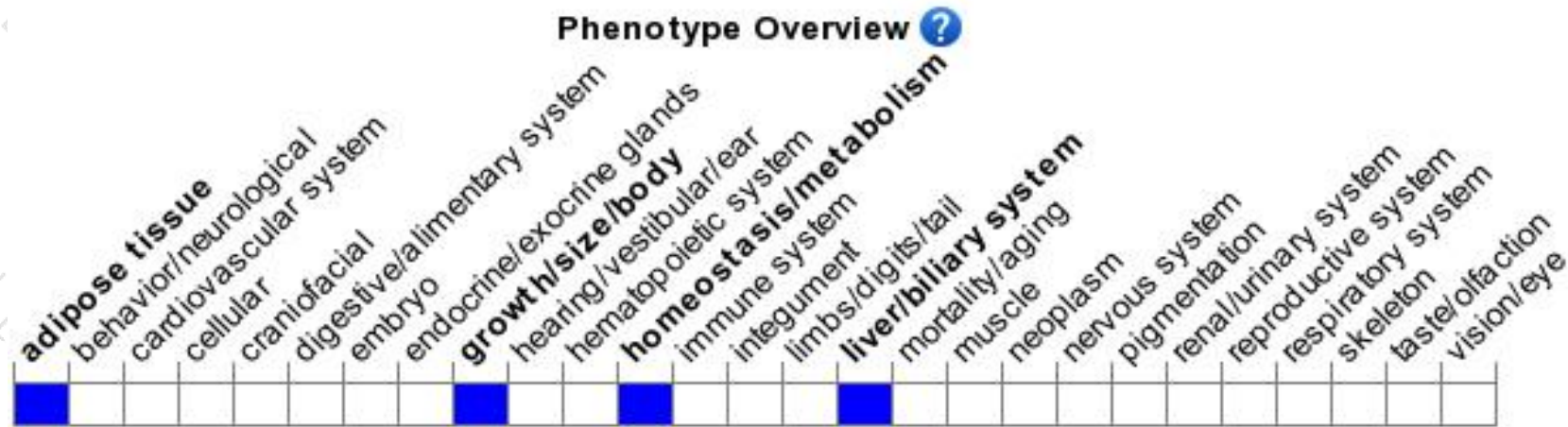
Genomic location distribution



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, Homozygous mutant mice weighed less than controls and showed reduced triacylglycerol levels in the liver and plasma. The glycerolipid fatty acid composition is also disrupted in mutant mice.

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

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