

# *Acs13* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Acs13*

**Project type**

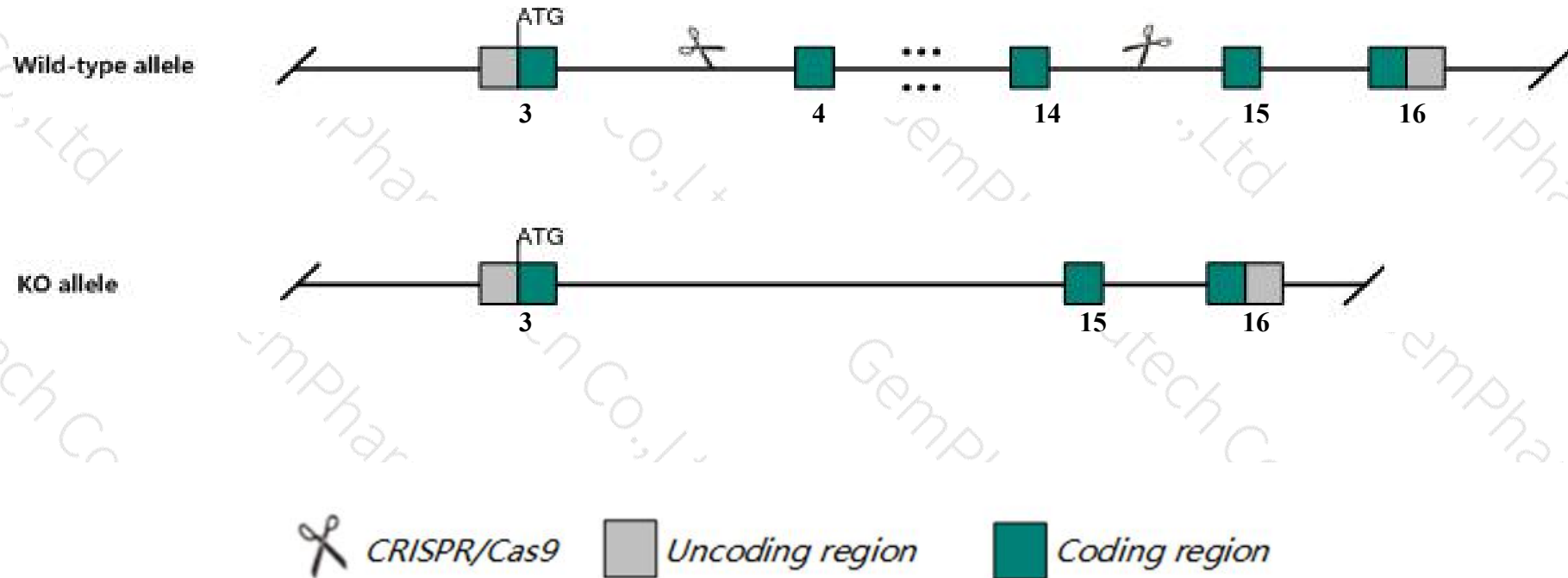
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



- The *Acsf3* gene has 7 transcripts. According to the structure of *Acsf3* gene, exon4-exon14 of *Acsf3-201* (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 *Acsf3* gene. The brief process is as follows: CRISPR/Cas9 system

- 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology 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



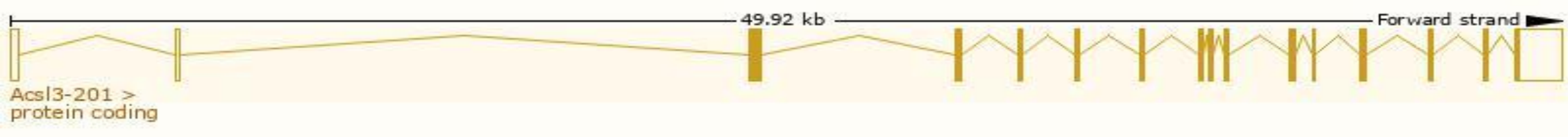
<b>Official Symbol</b>	Acsl3 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	acyl-CoA synthetase long-chain family member 3 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1921455</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000032883</a>
<b>Gene type</b>	protein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

# Transcript information (Ensembl)

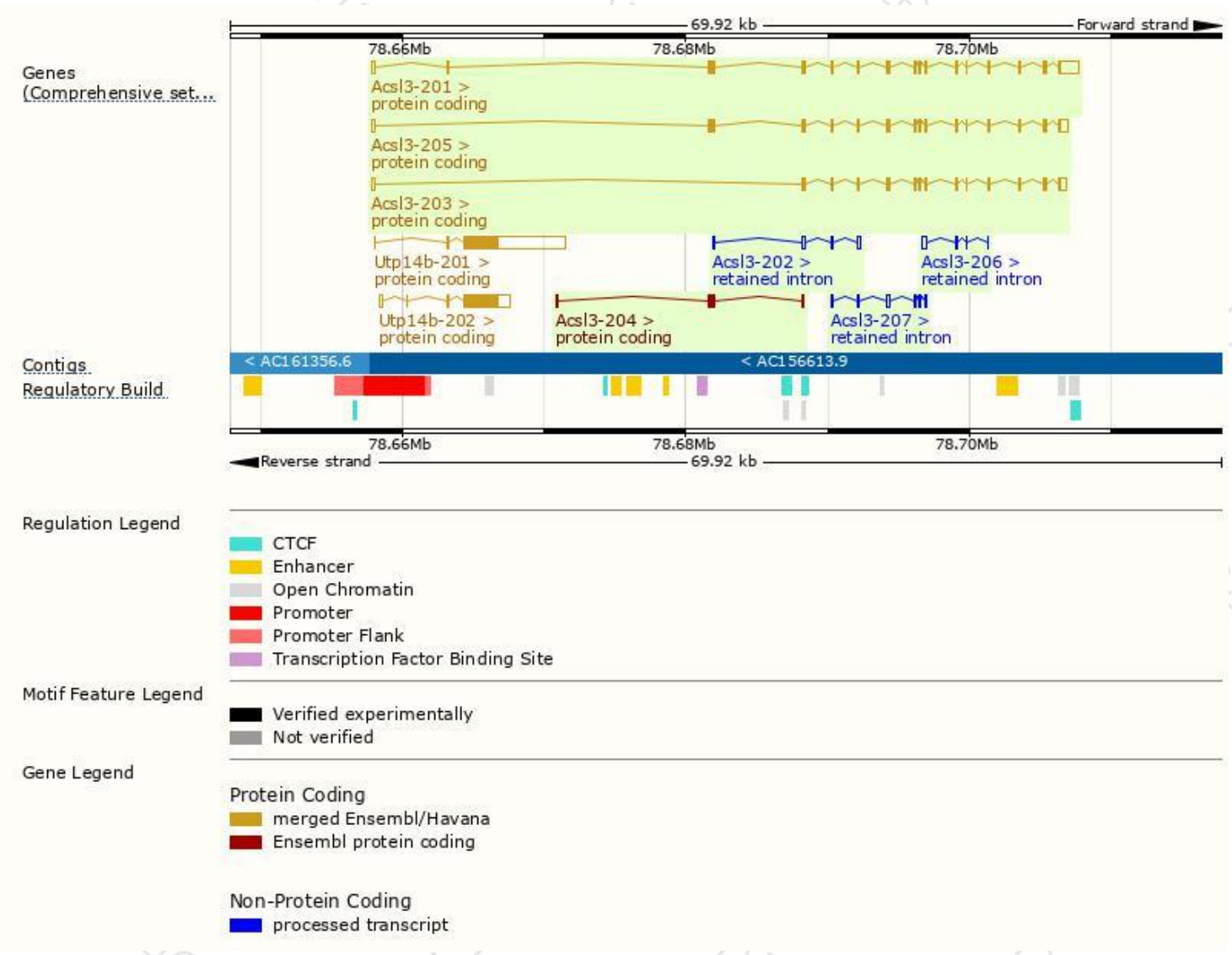
The gene has 7 transcripts,all transcripts are shown below:

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

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

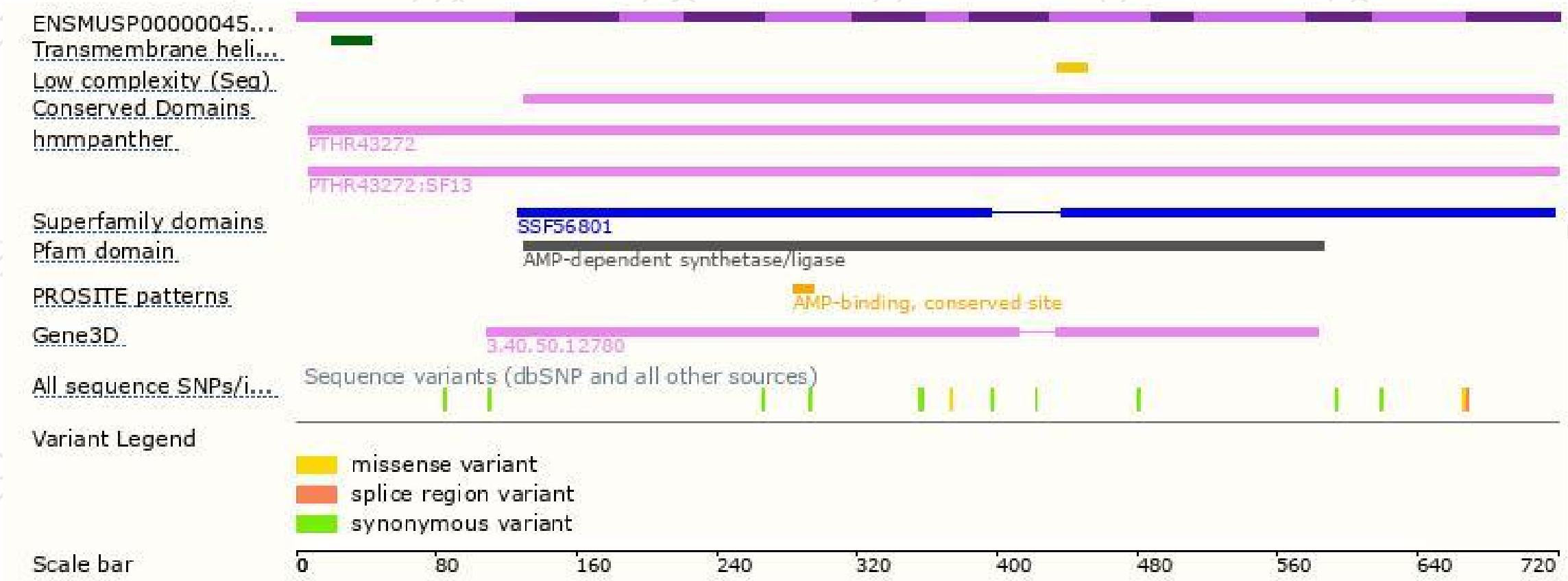


# Genomic location distribution

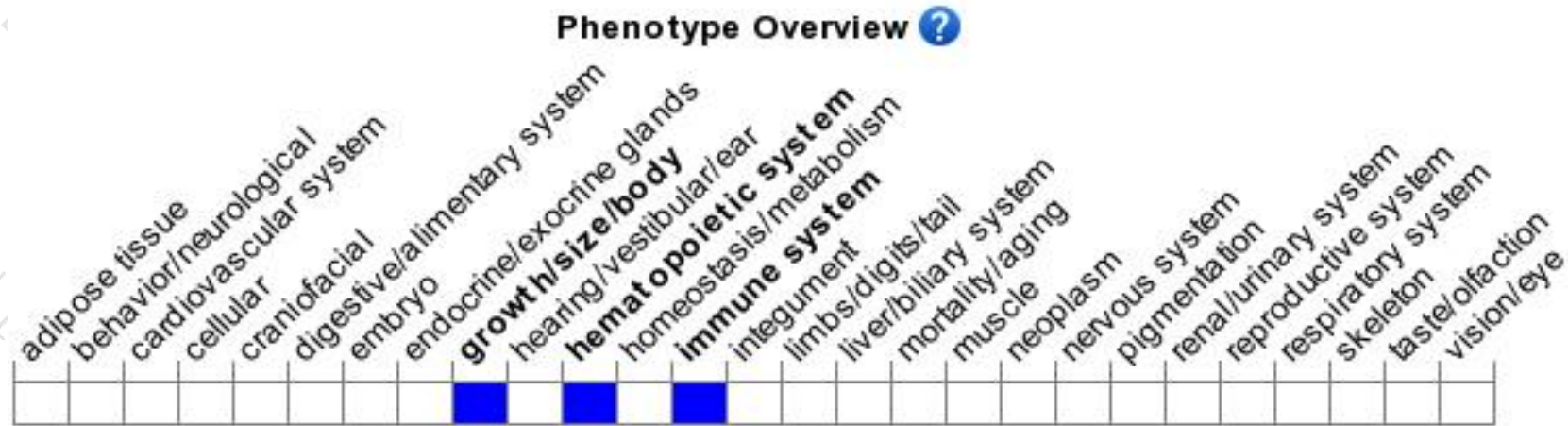




# Protein domain



# 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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