

# *Acss2* Cas9-CKO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Acss2*

**Project type**

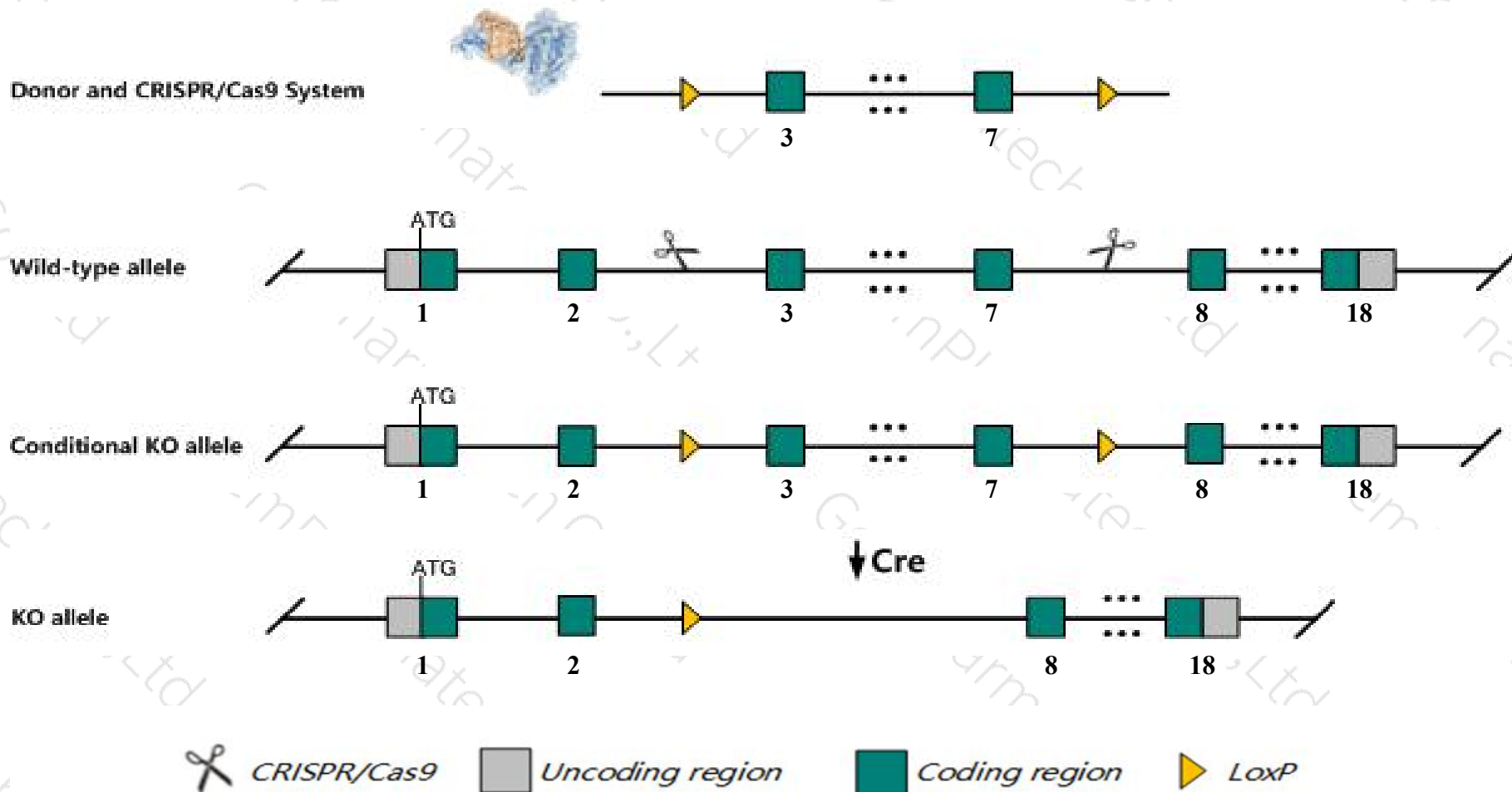
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Acss2* gene. The schematic diagram is as follows:



# Technical routes

- The *Acss2* gene has 10 transcripts. According to the structure of *Acss2* gene, exon3-exon7 of *Acss2-201* (ENSMUST00000029135.14) transcript is recommended as the knockout region. The region contains 460bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Acss2* 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

- The *Acss2os-201* and *Acss2* genes overlap, and the Exon3 of *Acss2os-201* is knocked out together with Cre, and the effect is unknown.
- The *Acss2* 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)

## Acss2 acyl-CoA synthetase short-chain family member 2 [Mus musculus (house mouse)]

Gene ID: 60525, updated on 31-Jan-2019

### Summary



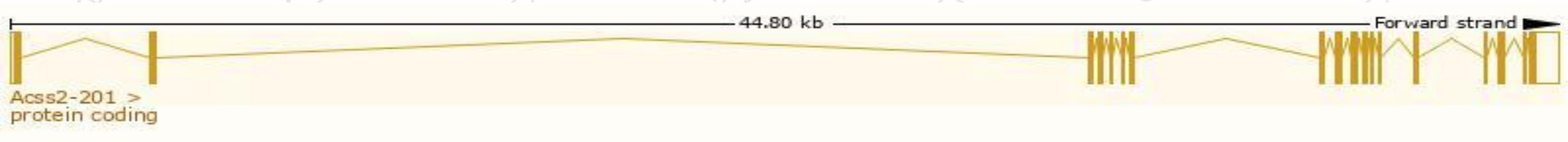
<b>Official Symbol</b>	Acss2 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	acyl-CoA synthetase short-chain family member 2 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1890410</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000027605</a>
<b>Gene type</b>	protein 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>	1110017C11Rik, ACAS, ACS, Acas1, Acas2, AceCS1, Acs1, aceCS
<b>Expression</b>	Broad expression in mammary gland adult (RPKM 107.5), subcutaneous fat pad adult (RPKM 101.3) and 21 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

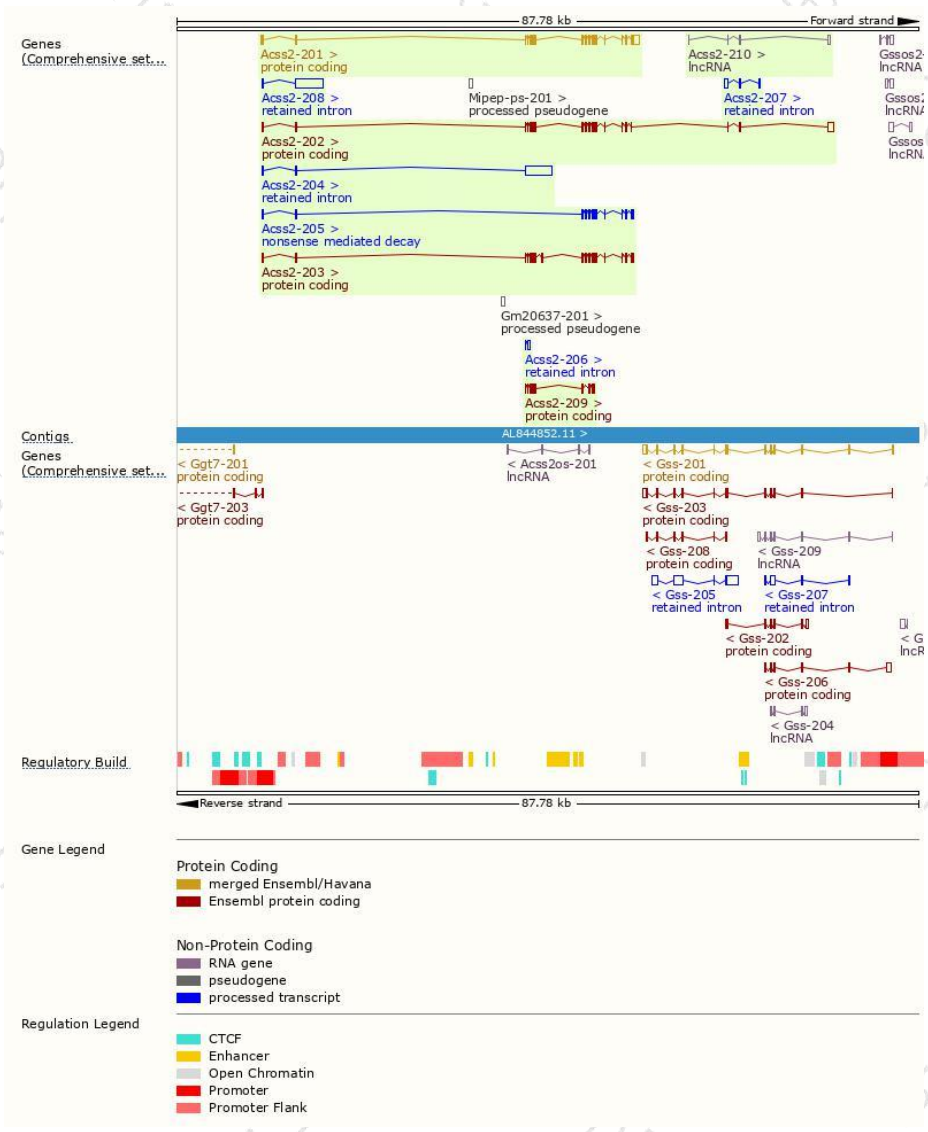
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Acss2-201	<a href="#">ENSMUST00000029135.14</a>	2931	<a href="#">701aa</a>	Protein coding	<a href="#">CCDS16950</a>	<a href="#">Q9QXG4</a>	TSL:1 GENCODE basic APPRIS P2
Acss2-202	<a href="#">ENSMUST00000065973.8</a>	2876	<a href="#">706aa</a>	Protein coding	-	<a href="#">A2AQN5</a>	TSL:1 GENCODE basic
Acss2-203	<a href="#">ENSMUST00000103142.11</a>	2145	<a href="#">714aa</a>	Protein coding	-	<a href="#">A2AQN4</a>	TSL:5 GENCODE basic APPRIS ALT 1
Acss2-209	<a href="#">ENSMUST00000151781.1</a>	879	<a href="#">293aa</a>	Protein coding	-	<a href="#">F7CU63</a>	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Acss2-205	<a href="#">ENSMUST00000133654.2</a>	1646	<a href="#">124aa</a>	Nonsense mediated decay	-	<a href="#">D6RHA7</a>	TSL:5
Acss2-210	<a href="#">ENSMUST00000153975.7</a>	456	No protein	Processed transcript	-	-	TSL:3
Acss2-204	<a href="#">ENSMUST00000131054.1</a>	3609	No protein	Retained intron	-	-	TSL:1
Acss2-208	<a href="#">ENSMUST00000149788.1</a>	3563	No protein	Retained intron	-	-	TSL:1
Acss2-207	<a href="#">ENSMUST00000148870.1</a>	646	No protein	Retained intron	-	-	TSL:3
Acss2-206	<a href="#">ENSMUST00000143169.1</a>	445	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Acss2-201* transcript,The transcription is shown below

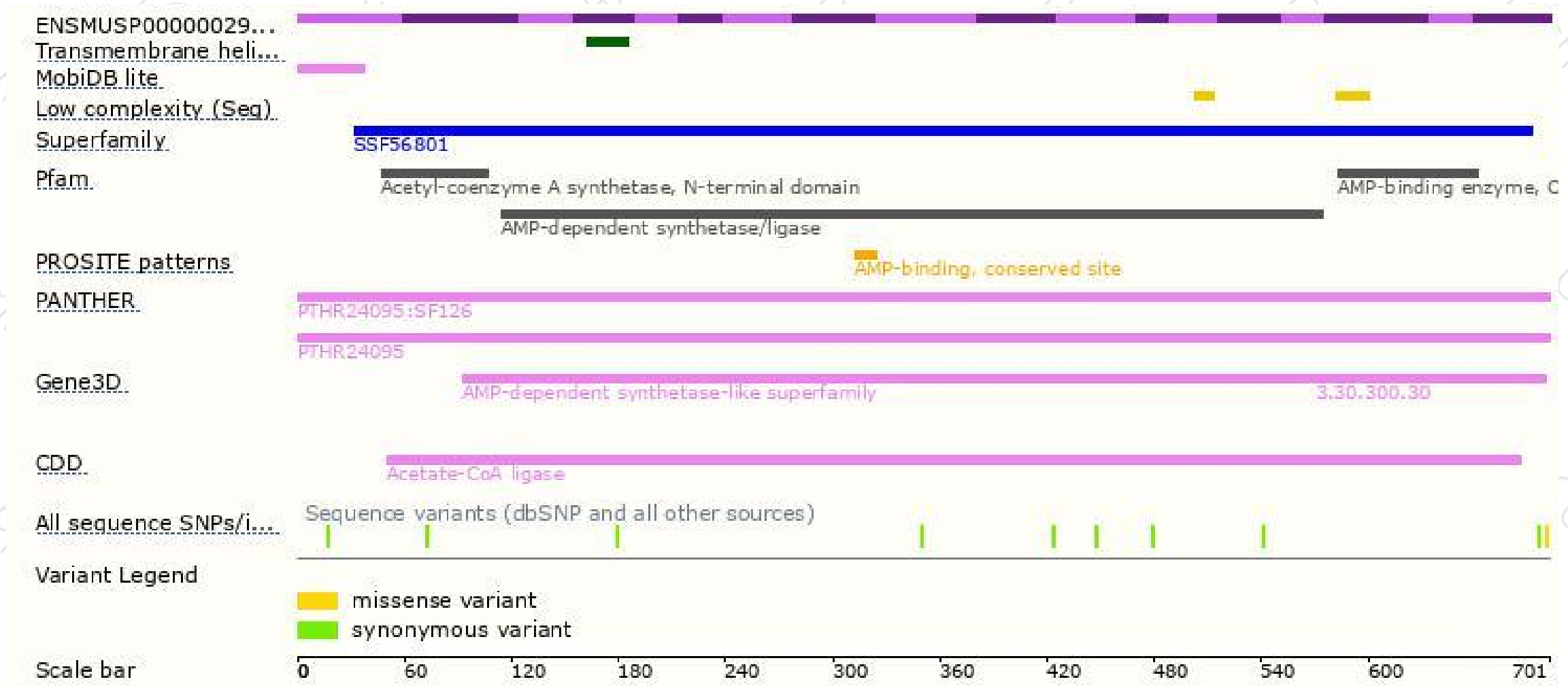


# Genomic location distribution





# Protein domain



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

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