

# ***Acss2 Cas9-KO Strategy***

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**Reviewer:**

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# Project Overview

**Project Name**

*Acss2*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



- 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

- The *Acss2os-201* and *Acss2* genes overlap, and the Exon3 of *Acss2os-201* is knocked out together, 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology 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:ENSMUSG000000027605</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)

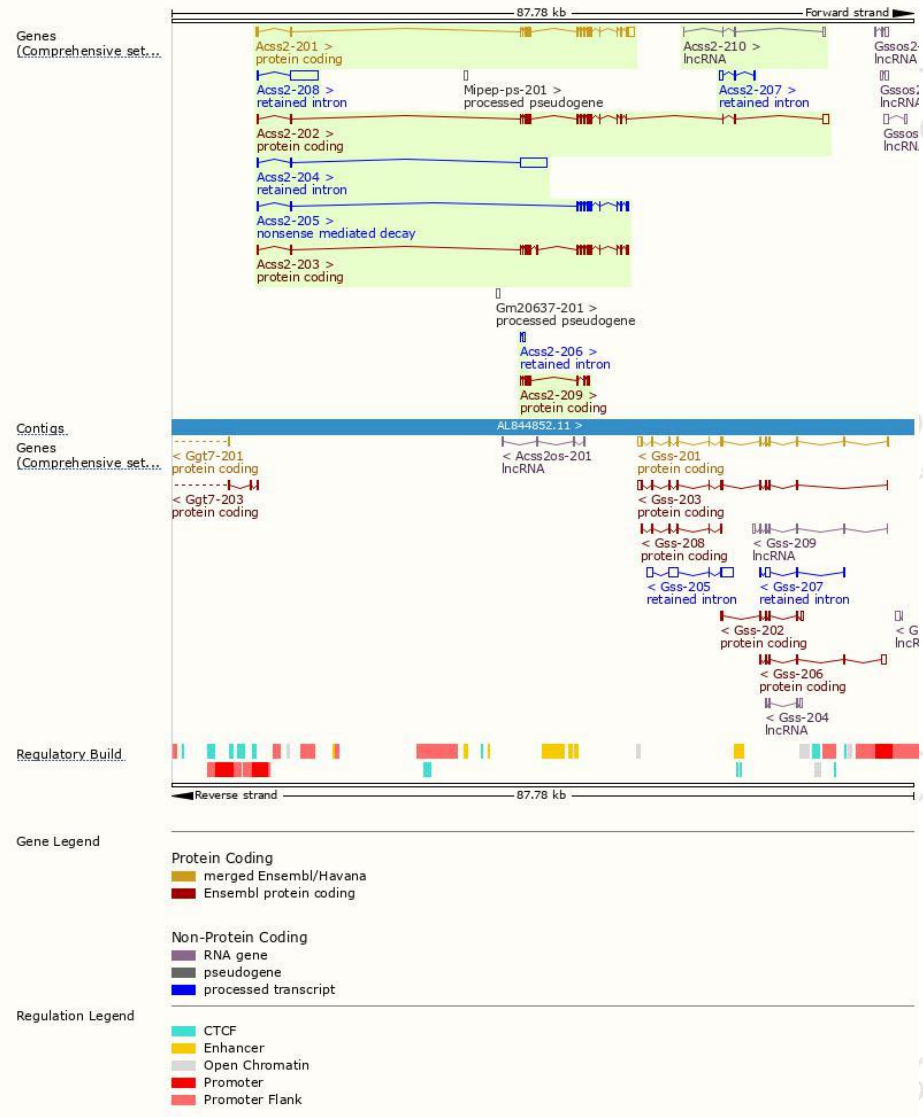
The gene has 10 transcripts, all transcripts are shown below:

| 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 ALT1   |
| 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

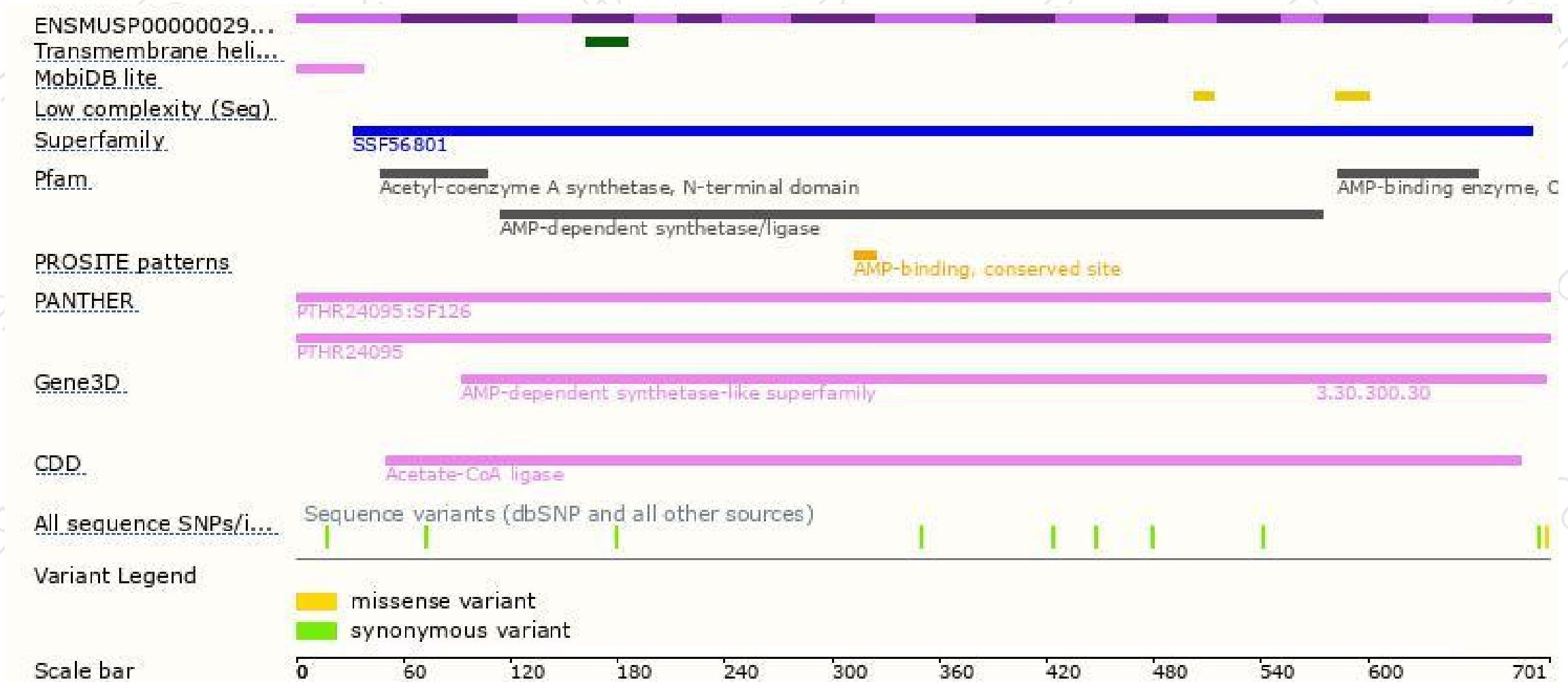


# Genomic location distribution





# Protein domain



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

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