

Acads Cas9-KO Strategy

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Project Overview



Project Name

Acads

Project type

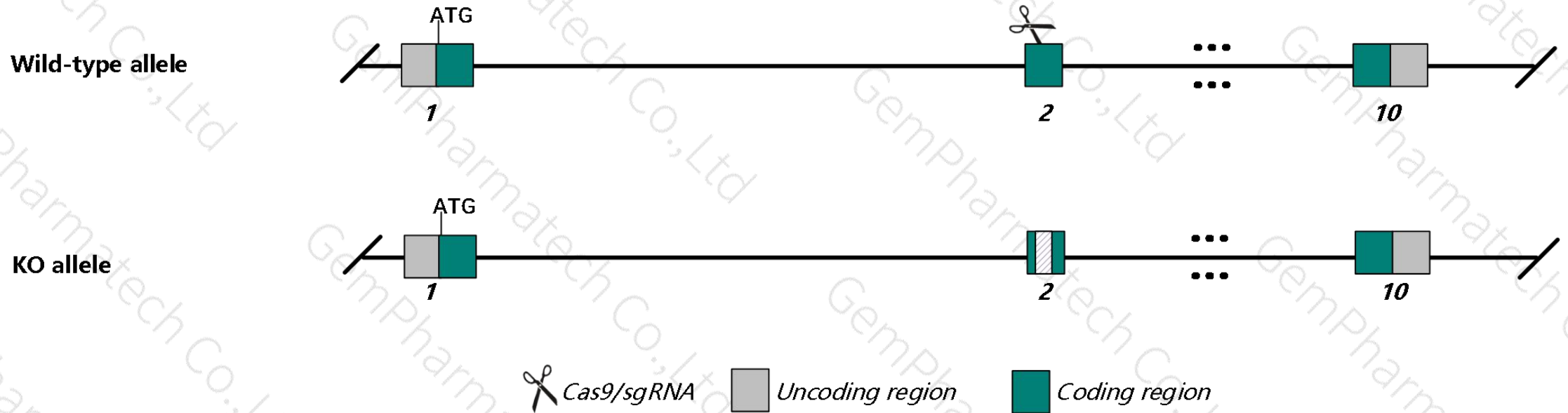
Cas9-KO

Strain background

C57BL/6N

Knockout strategy

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



- In this project we use CRISPR/Cas9 technology to modify *Acads* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6N 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/6N mice.

- According to the existing MGI data, Mice homozygous for disruptions in this gene display organic aciduria and develop hypoglycemia and fatty livers after fasting.
- The *Acads* gene is located on the Chr5. 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)

Acads acyl-Coenzyme A dehydrogenase, short chain [*Mus musculus* (house mouse)]

Gene ID: 11409, updated on 12-Aug-2019

Summary

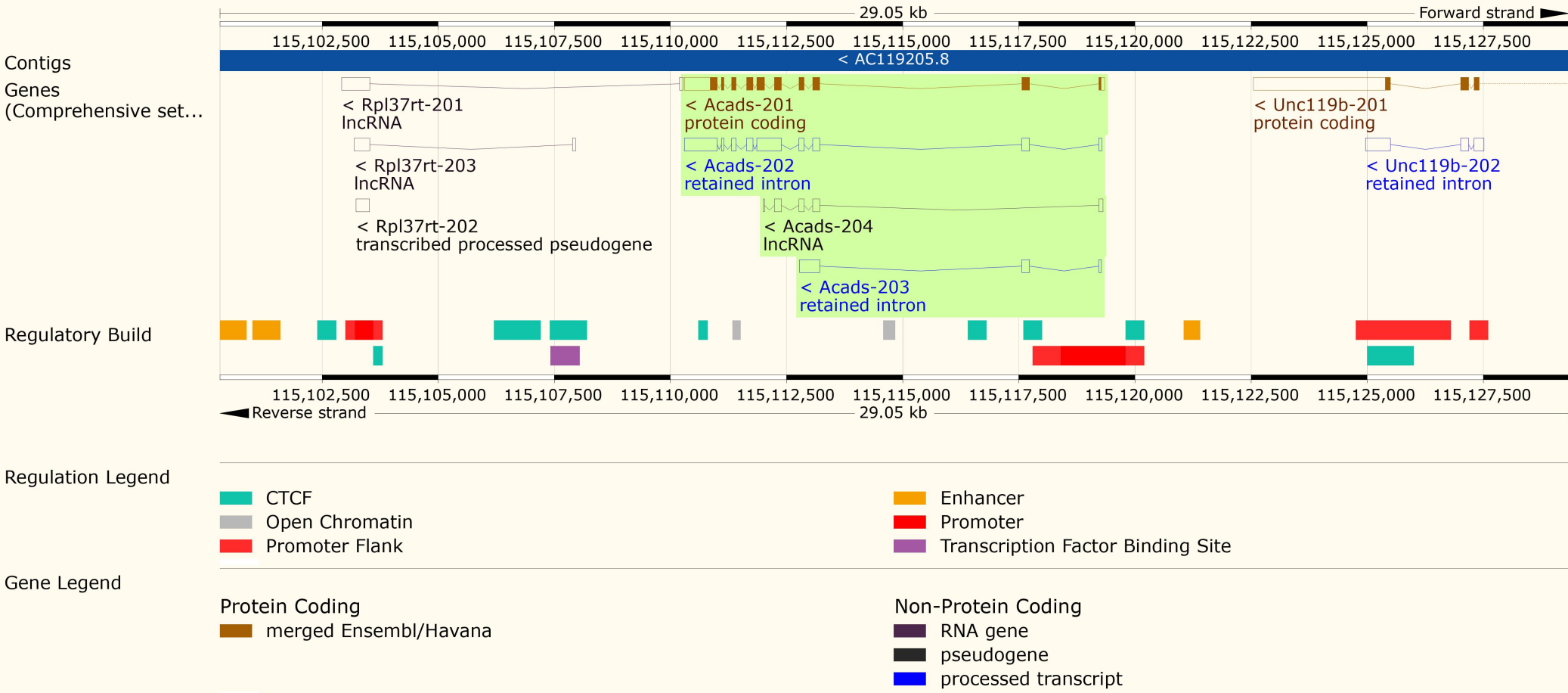
Official Symbol	Acads provided by MGI
Official Full Name	acyl-Coenzyme A dehydrogenase, short chain provided by MGI
Primary source	MGI:MGI:87868
See related	Ensembl:ENSMUSG00000029545
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Bcd1; SCAD; Bcd-1; Hdlq8; AI196007
Summary	This gene encodes a homotetrameric mitochondrial flavoprotein and is a member of the acyl-CoA dehydrogenase family. Members of this family catalyze the first step of fatty acid beta-oxidation, forming a C2-C3 trans-double bond in a FAD-dependent reaction. As beta-oxidation cycles through its four steps, each member of the Acyl-CoA dehydrogenase family works at an optimum fatty acid chain-length. This enzyme has its optimum at C(four)-CoA. In mice, deficiency of this gene has been linked to cold sensitivity and increased high-density lipoprotein levels. [provided by RefSeq, Nov 2012]
Expression	Broad expression in colon adult (RPKM 134.5), adrenal adult (RPKM 130.8) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

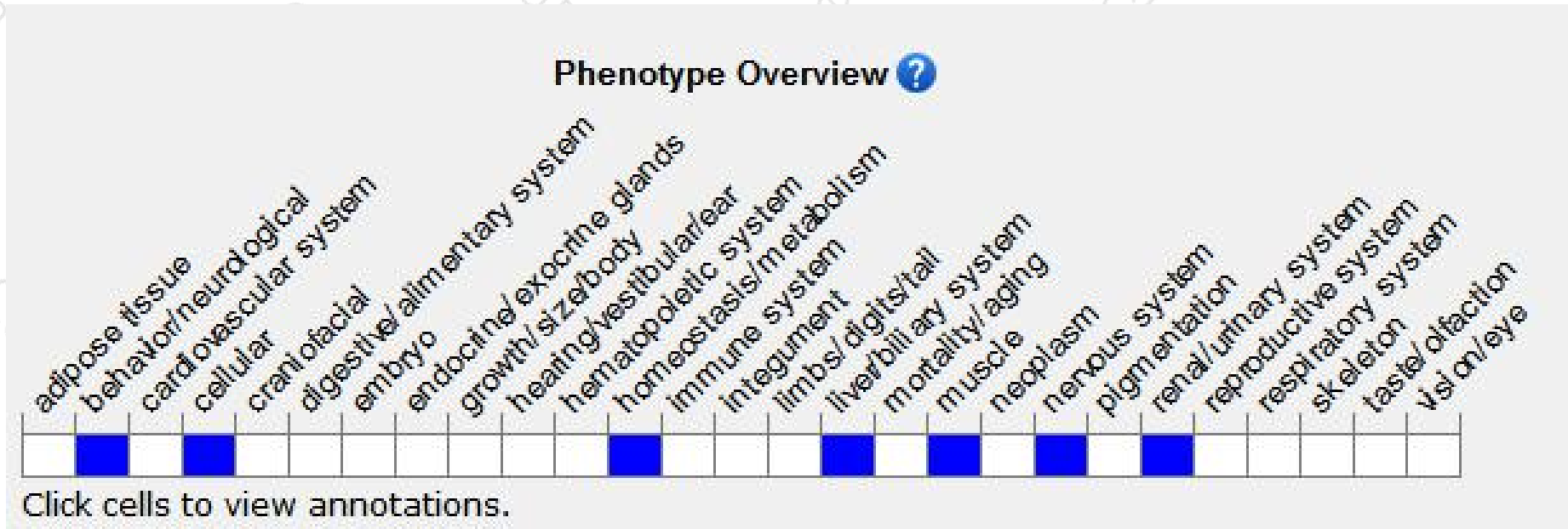
The gene has 4 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Acads-201	ENSMUST00000031524.10	1870	412aa	Protein coding	CCDS19579	Q07417	TSL:1 GENCODE basic APPRIS P1
Acads-202	ENSMUST00000131726.7	2023	No protein	Retained intron	-	-	TSL:2
Acads-203	ENSMUST00000141142.1	645	No protein	Retained intron	-	-	TSL:2
Acads-204	ENSMUST00000153374.1	532	No protein	lncRNA	-	-	TSL:3

Genomic location distribution



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, Mice homozygous for disruptions in this gene display organic aciduria and develop hypoglycemia and fatty livers after fasting.

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

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