

Acad8 Cas9-KO Strategy

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Project Overview

Project Name

Acad8

Project type

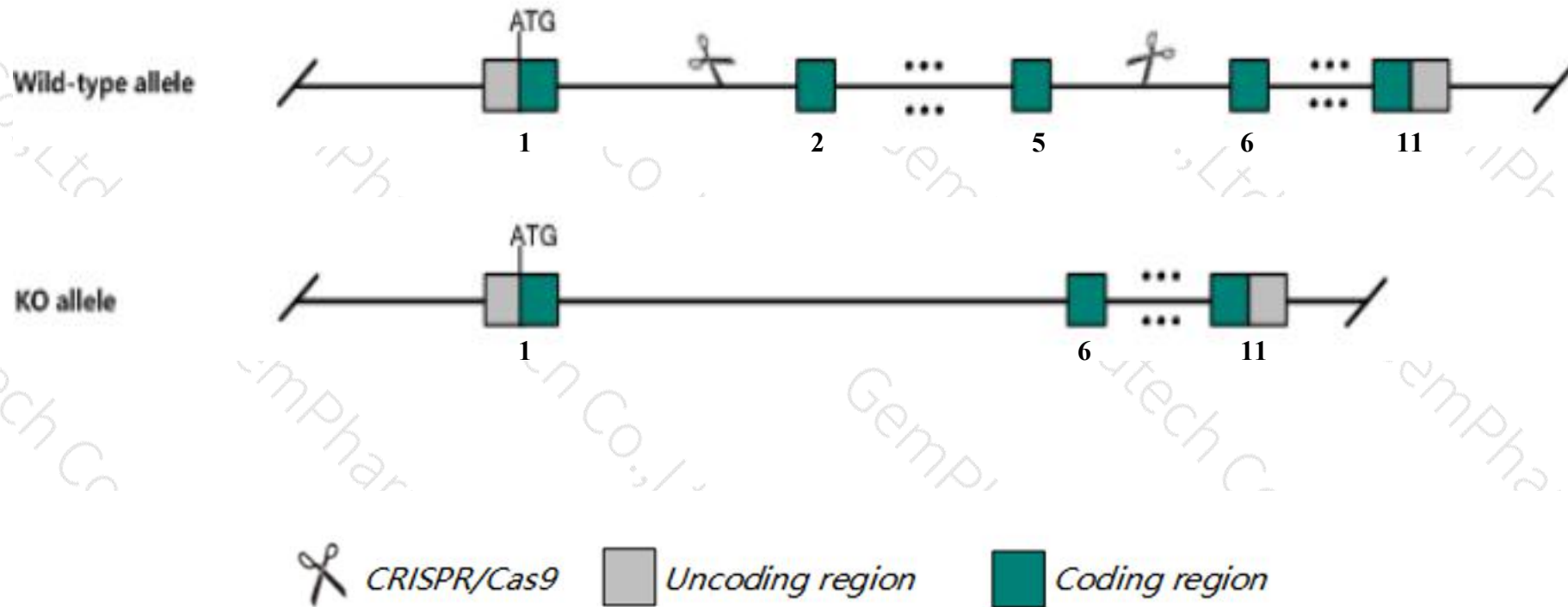
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Acad8* gene. The schematic diagram is as follows:



- The *Acad8* gene has 8 transcripts. According to the structure of *Acad8* gene, exon2-exon5 of *Acad8-201* (ENSMUST00000060513.7) transcript is recommended as the knockout region. The region contains 458bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Acad8* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for an ENU-induced allele exhibit cold intolerance at young age with a progressive hepatic steatosis and abnormal mitochondria.
- The knockout region is near to the N-terminal of *Thyn1* gene, this strategy may influence the regulatory function of the N-terminal of *Thyn1* gene.
- Transcript *Acad8-207* may not be affected.
- The *Acad8* gene is located on the Chr9. 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)

Acad8 acyl-Coenzyme A dehydrogenase family, member 8 [*Mus musculus* (house mouse)]

Gene ID: 66948, updated on 13-Mar-2020

Summary

- Official Symbol** Acad8 provided by [MGI](#)
- Official Full Name** acyl-Coenzyme A dehydrogenase family, member 8 provided by [MGI](#)
- Primary source** [MGI:MGI:1914198](#)
- See related** [Ensembl:ENSMUSG00000031969](#)
- 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** A1786953; 2310016C19Rik
- Expression** Ubiquitous expression in kidney adult (RPKM 8.3), genital fat pad adult (RPKM 7.1) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 9; 9 A4

See Acad8 in [Genome Data Viewer](#)

Exon count: 11

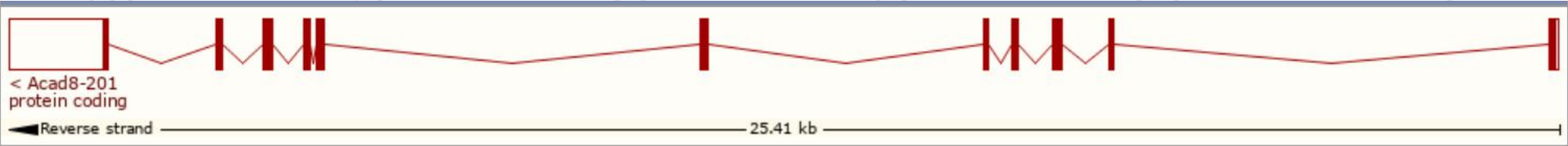
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	9	NC_000075.6 (26974138..26999571, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	9	NC_000075.5 (26781723..26807134, complement)

Transcript information (Ensembl)

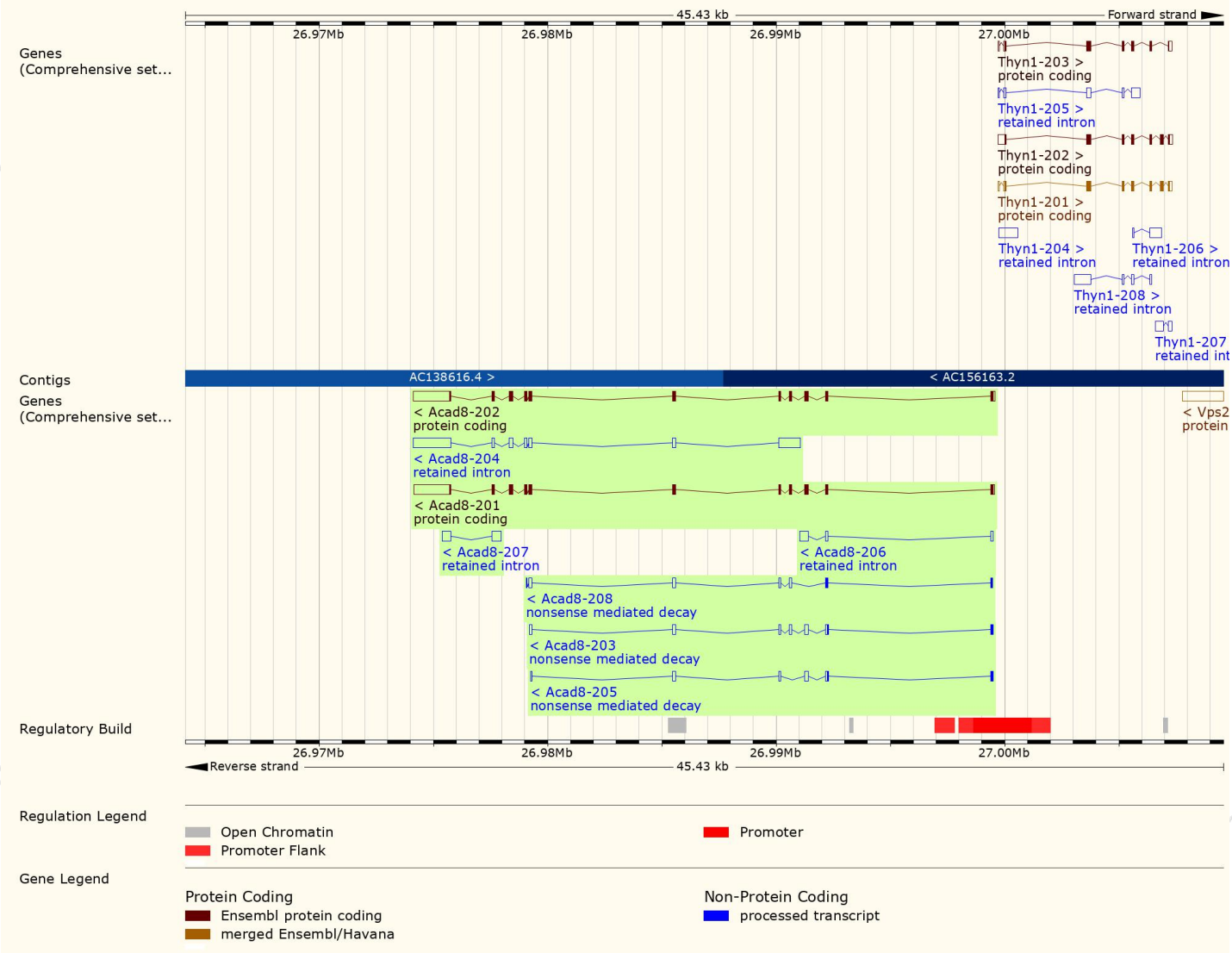
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Acad8-201	ENSMUST00000060513.7	2859	413aa	Protein coding	CCDS40567	A0A0R4J0P1	TSL:1 GENCODE basic APPRIS P2
Acad8-202	ENSMUST00000120367.7	2885	413aa	Protein coding	-	D3YTT4	TSL:5 GENCODE basic APPRIS ALT2
Acad8-203	ENSMUST00000128923.7	852	49aa	Nonsense mediated decay	-	D6RDD5	TSL:5
Acad8-205	ENSMUST00000132293.1	679	49aa	Nonsense mediated decay	-	D6RDD5	TSL:3
Acad8-208	ENSMUST00000215693.1	661	66aa	Nonsense mediated decay	-	A0A1L1SUG2	CDS 5' incomplete TSL:5
Acad8-204	ENSMUST00000129490.7	3188	No protein	Retained intron	-	-	TSL:5
Acad8-207	ENSMUST00000151075.1	785	No protein	Retained intron	-	-	TSL:1
Acad8-206	ENSMUST00000138102.1	600	No protein	Retained intron	-	-	TSL:2

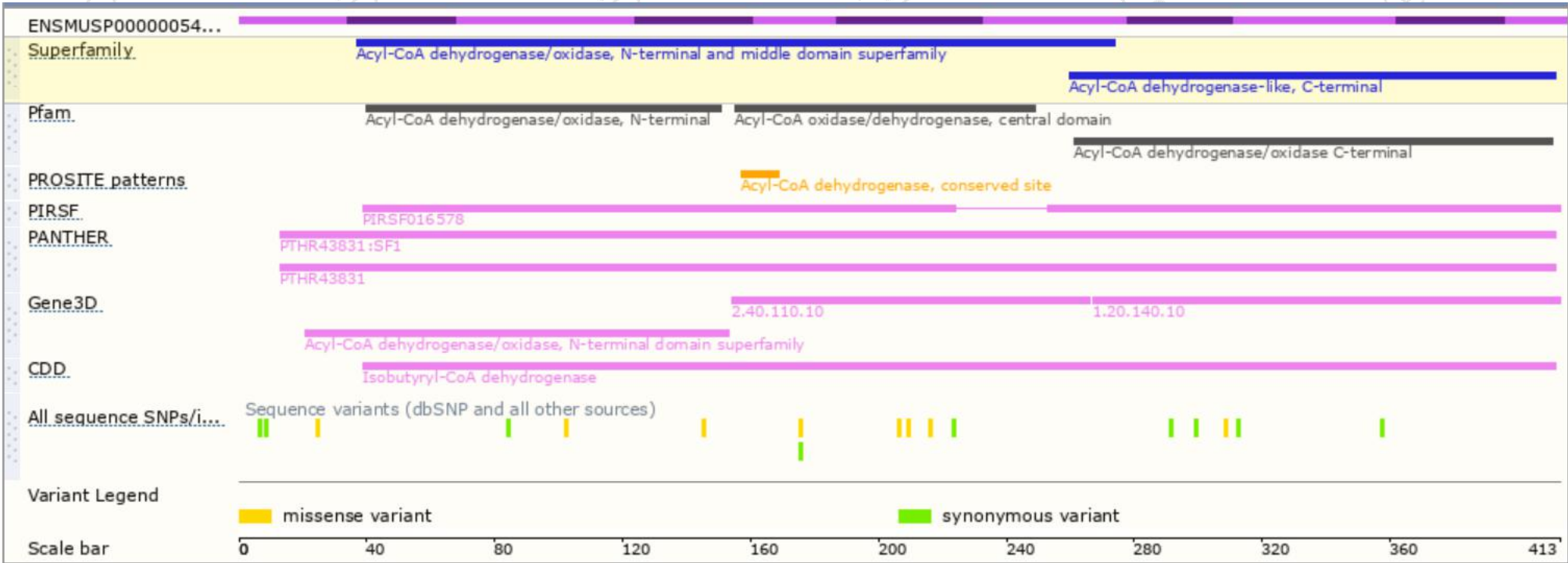
The strategy is based on the design of *Acad8-201* transcript,The transcription is shown below



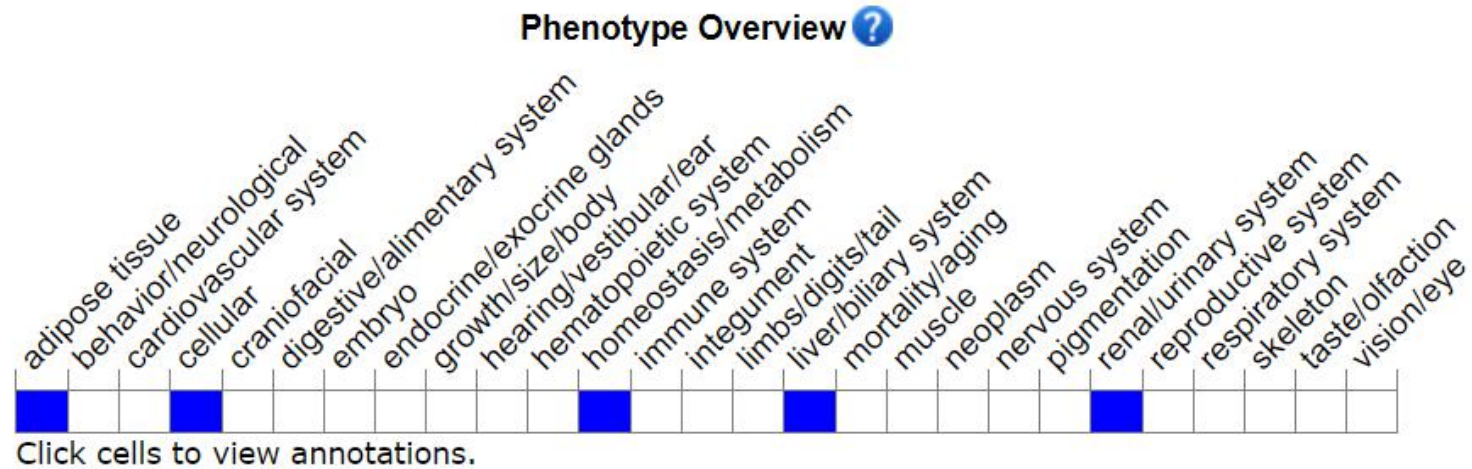
Genomic location distribution



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/>).

Mice homozygous for an ENU-induced allele exhibit cold intolerance at young age with a progressive hepatic steatosis and abnormal mitochondria.

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

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