Acot11 Cas9-KO Strategy

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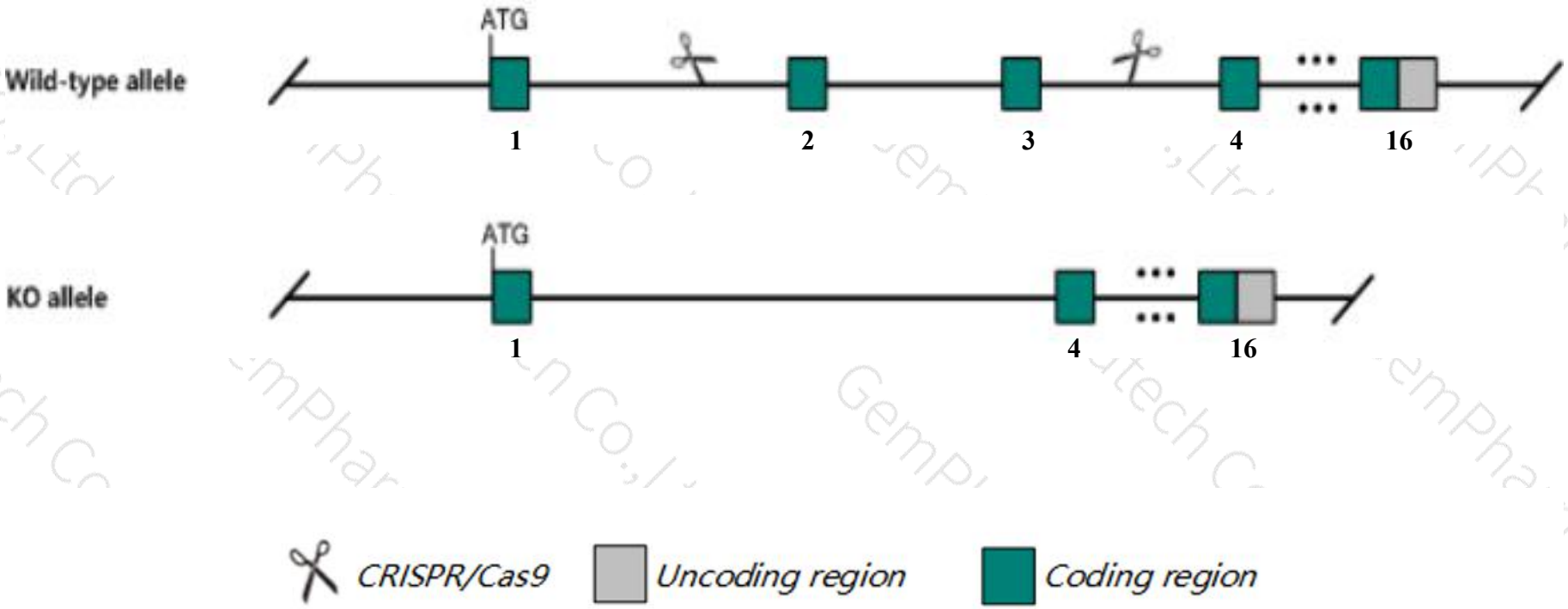
Project Overview

Project Name	***Acot11***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Acot11* gene. The schematic diagram is as follows:



Technical routes

➢ The *Acot11* gene has 7 transcripts. According to the structure of *Acot11* gene, exon2-exon3 of *Acot11-201* (ENSMUST00000065253.12) transcript is recommended as the knockout region.The region contains 284bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Acot11* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mice homozygous for a null mutation display resistance to high fat diet induced obesity, inflammation and hepatic steatosis, increased energy expenditure, increased brown adipose tissue amount, and increased food intake.

- The *Acot11* gene is located on the Chr4. 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）

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Acot11 acyl-CoA thioesterase 11 [Mus musculus (house mouse)]

Gene ID: 329910, updated on 13-Mar-2020

Summary

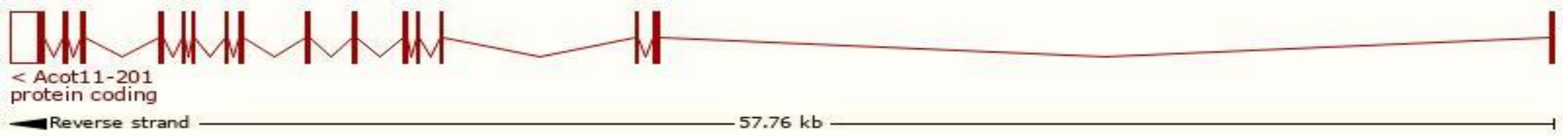
Official Symbol	Acot11 provided by MGI
Official Full Name	acyl-CoA thioesterase 11 provided by MGI
Primary source	MGI:MGI:1913736
See related	Ensembl:ENSMUSG00000034853
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110020M10Rik, 2010309H15Rik, AW060409, BFIT, BFIT1, Thea, Them1, mKIAA0707
Expression	Broad expression in small intestine adult (RPKM 28.1), large intestine adult (RPKM 26.5) and 20 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

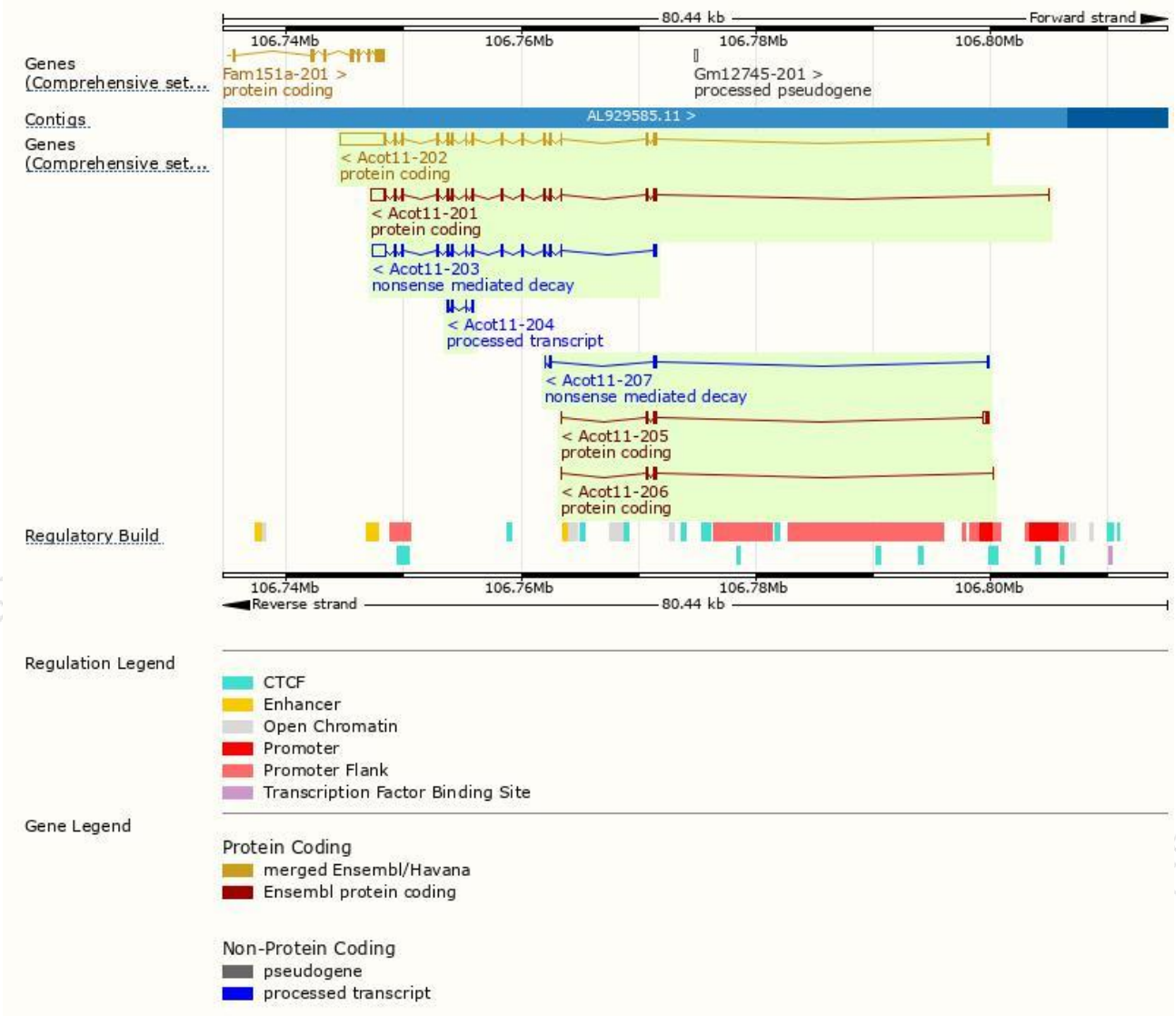
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Acot11-202	ENSMUST00000102762.9	5689	594aa	Protein coding	CCDS18426	Q543P6 Q8VHQ9	TSL:1 GENCODE basic APPRIS P3
Acot11-201	ENSMUST00000065253.12	2939	614aa	Protein coding	CCDS84764	A2AVR6	TSL:1 GENCODE basic APPRIS ALT2
Acot11-205	ENSMUST00000145061.7	596	107aa	Protein coding	-	E0CXP8	CDS 3' incomplete TSL:5
Acot11-206	ENSMUST00000148688.1	330	92aa	Protein coding	-	E0CYA0	CDS 3' incomplete TSL:5
Acot11-203	ENSMUST00000140541.7	2620	76aa	Nonsense mediated decay	-	F6SS52	CDS 5' incomplete TSL:5
Acot11-207	ENSMUST00000156567.1	575	89aa	Nonsense mediated decay	-	E0CYS0	TSL:5
Acot11-204	ENSMUST00000144809.1	401	No protein	Processed transcript	-	-	TSL:5

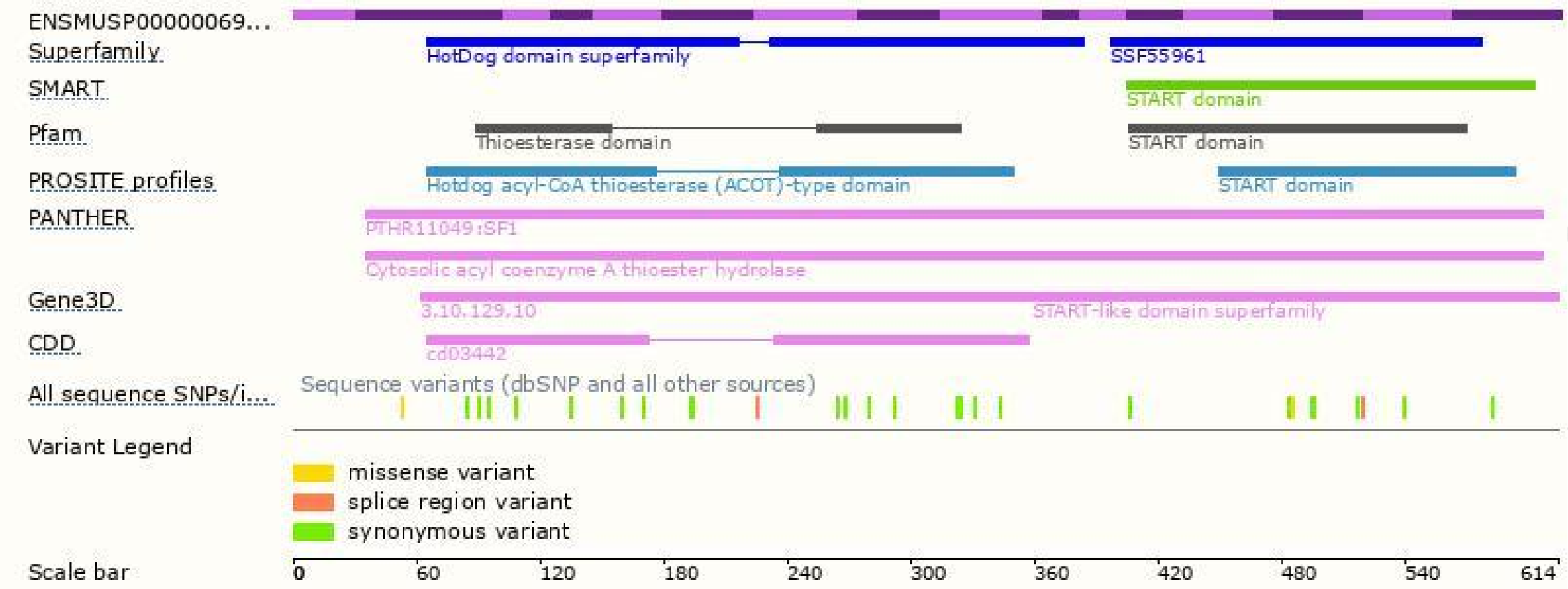
The strategy is based on the design of *Acot11-201* transcript,The transcription is shown below



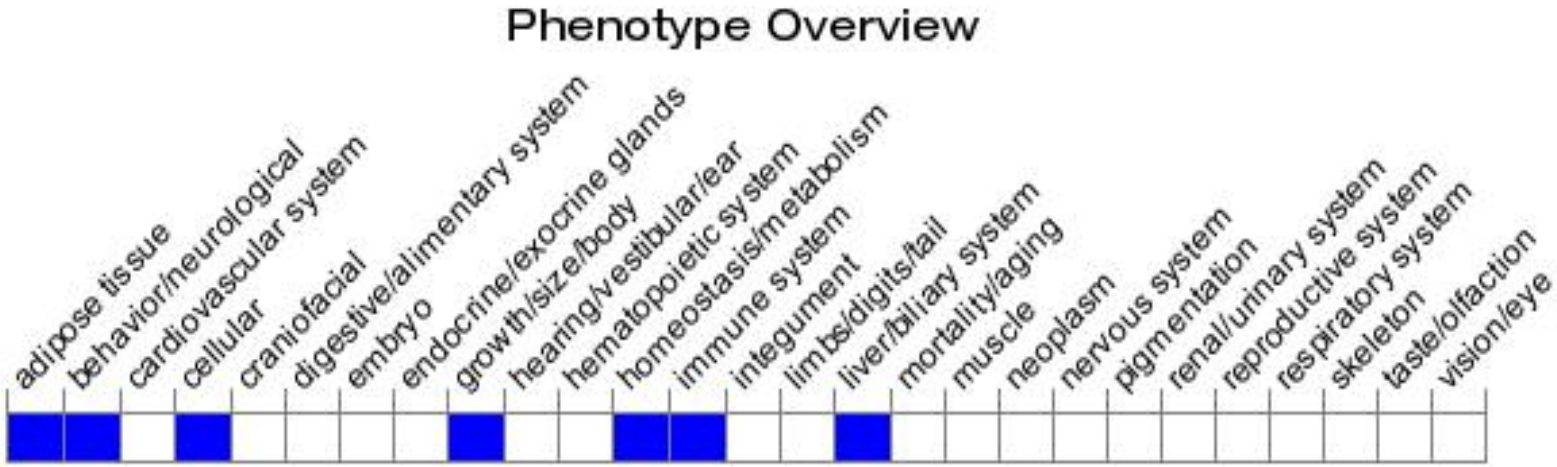
Genomic location distribution



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,Mice homozygous for a null mutation display resistance to high fat diet induced obesity, inflammation and hepatic steatosis, increased energy expenditure, increased brown adipose tissue amount, and increased food intake.

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

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