

***Lclat1* Cas9-KO Strategy**

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Design Date: 2018-11-19

Project Overview

Project Name

Lclat1

Project type

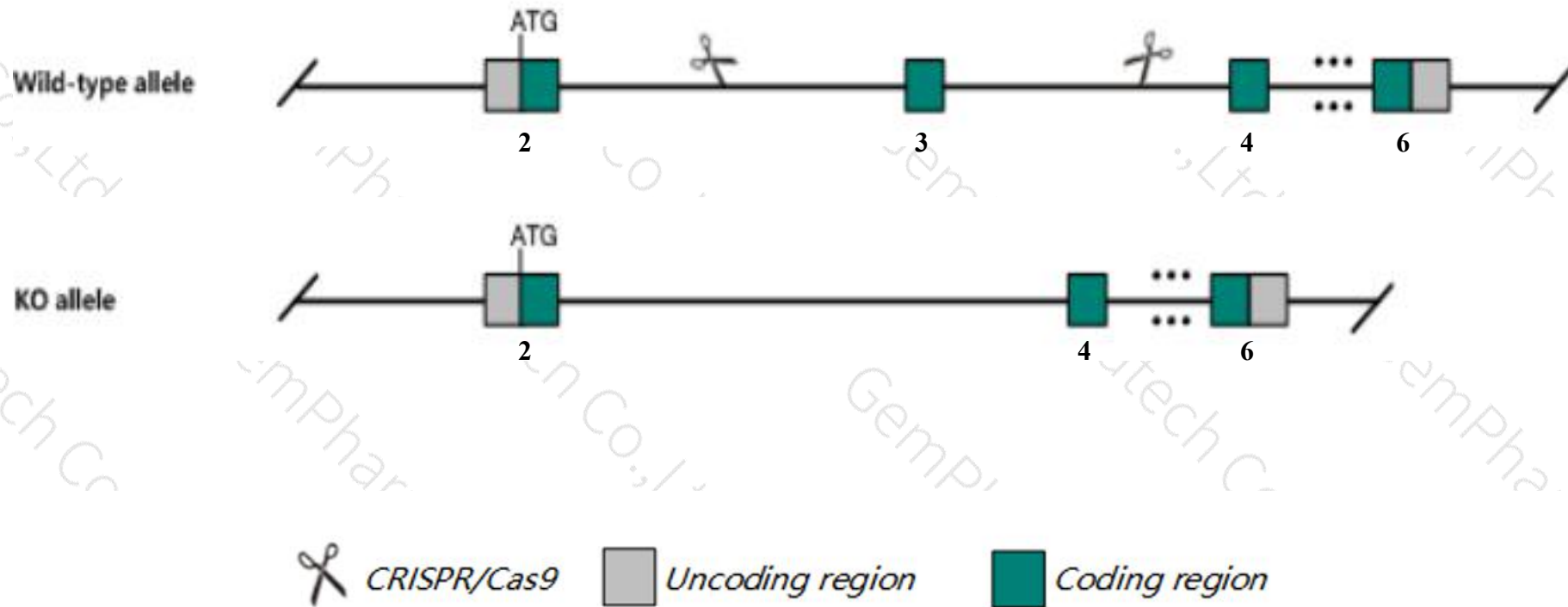
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lclat1* gene. The schematic diagram is as follows:



- The *Lclat1* gene has 6 transcripts. According to the structure of *Lclat1* gene, exon3 of *Lclat1*-201(ENSMUST00000067545.7) transcript is recommended as the knockout region. The region contains 199bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Lclat1* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, male mice homozygous for a knock-out allele and fed a high fat diet exhibit resistance to diet induced obesity, decreased total body fat, increased insulin sensitivity, polyphagia, hyperactivity, increased energy expenditure, and increased fatty acid oxidation.
- The *Lclat1* gene is located on the Chr17. 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)

Lclat1 lysocardiolipin acyltransferase 1 [Mus musculus (house mouse)]

Gene ID: 225010, updated on 19-Feb-2019

Summary



Official Symbol	Lclat1 provided by MGI
Official Full Name	lysocardiolipin acyltransferase 1 provided by MGI
Primary source	MGI:MGI:2684937
See related	Ensembl:ENSMUSG00000054469
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	1-AGPAT 8, Al181996, Agpat8, Alcat1, Gm91, Lycat
Expression	Ubiquitous expression in heart adult (RPKM 10.0), large intestine adult (RPKM 5.4) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

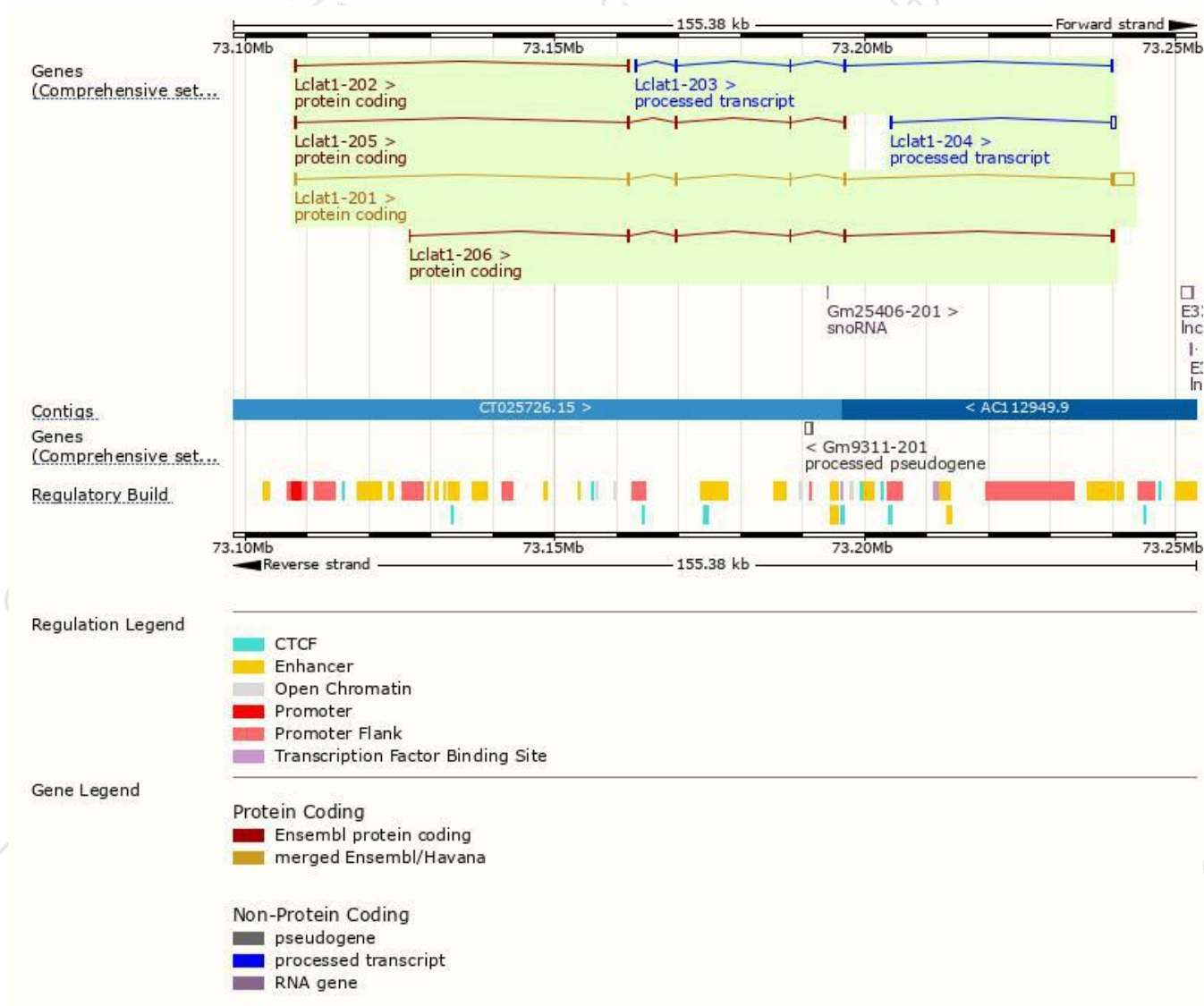
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lclat1-201	ENSMUST00000067545.7	4467	376aa	Protein coding	CCDS37689	B0V2Q7 Q3UN02	TSL:1 GENCODE basic APPRIS P1
Lclat1-206	ENSMUST00000232703.1	1275	355aa	Protein coding	-	A0A3B2WDB3	CDS 3' incomplete
Lclat1-205	ENSMUST00000149064.8	784	203aa	Protein coding	-	B0V2Q9	CDS 3' incomplete TSL:2
Lclat1-202	ENSMUST00000130574.3	330	55aa	Protein coding	-	B0V2Q8	CDS 3' incomplete TSL:2
Lclat1-204	ENSMUST00000134149.1	795	No protein	lncRNA	-	-	TSL:2
Lclat1-203	ENSMUST00000131335.1	726	No protein	lncRNA	-	-	TSL:3

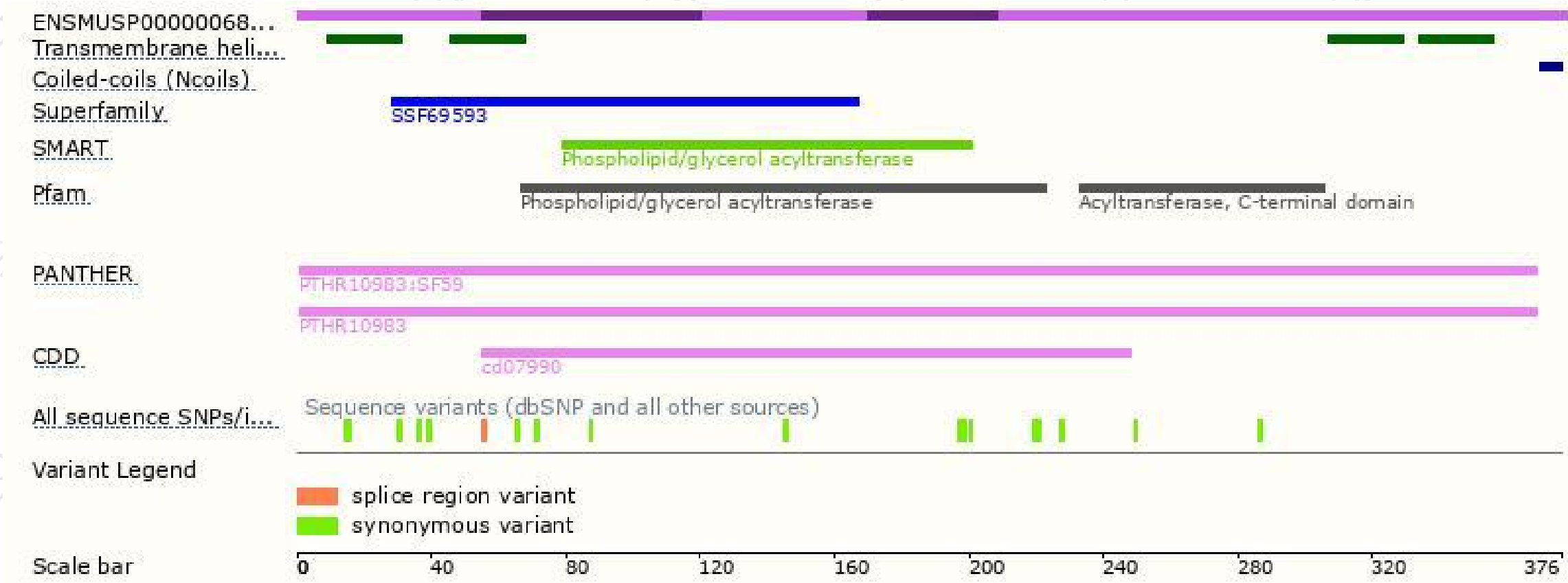
The strategy is based on the design of *Lclat1-201* transcript,the transcription is shown below:



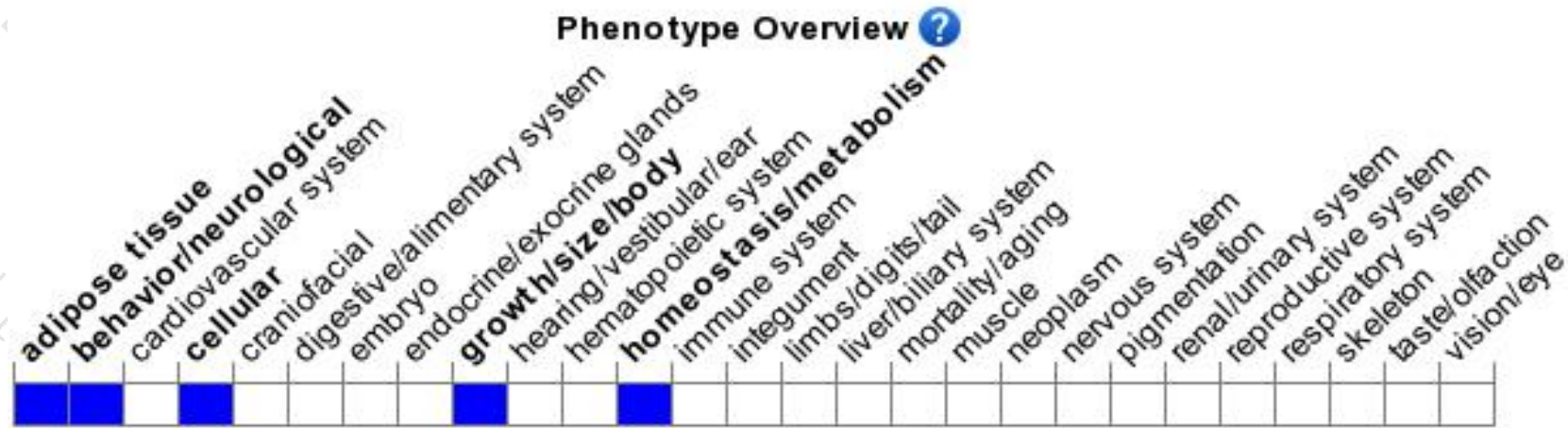
Genomic location distribution



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/>).

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

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