

Plin4 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Plin4

Project type

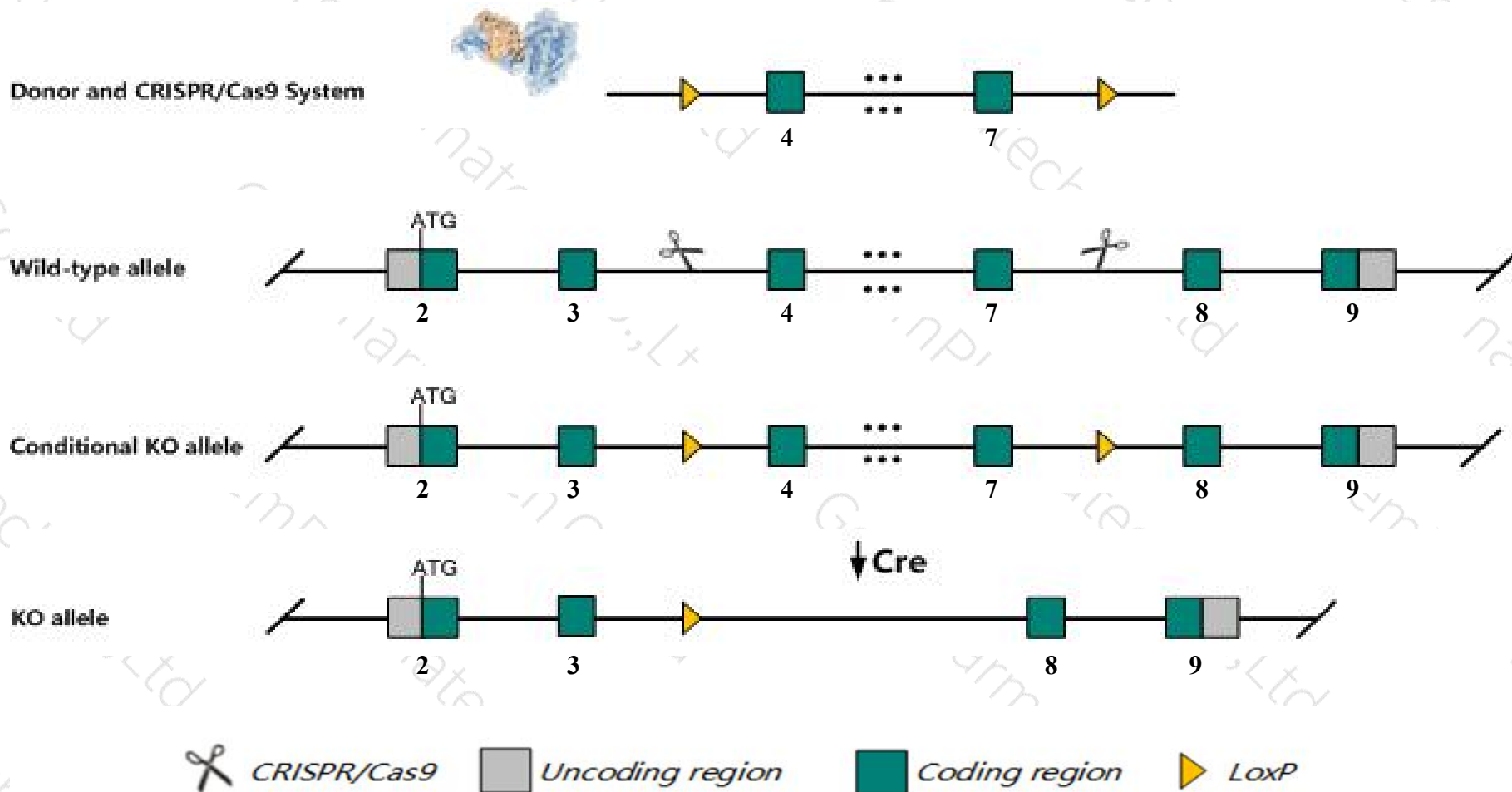
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Plin4* gene. The schematic diagram is as follows:



- The *Plin4* gene has 3 transcripts. According to the structure of *Plin4* gene, exon4-exon7 of *Plin4*-202 (ENSMUST00000190703.6) transcript is recommended as the knockout region. The region contains 3611bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Plin4* gene. The brief process is as follows: CRISPR/Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit decreased triglyceride in the heart and protection from cardiac steatosis induced by prolonged fasting, feeding or genetic obesity.
- The *Plin4* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Plin4 perilipin 4 [Mus musculus (house mouse)]

Gene ID: 57435, updated on 31-Jan-2019

Summary



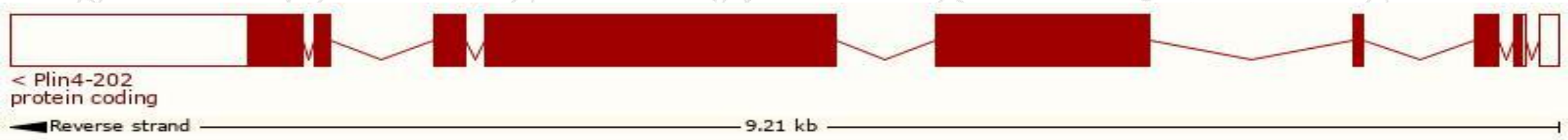
Official Symbol	Plin4 provided by MGI
Official Full Name	perilipin 4 provided by MGI
Primary source	MGI:MGI:1929709
See related	Ensembl:ENSMUSG000000002831
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	S3-12, mKIAA1881
Expression	Biased expression in subcutaneous fat pad adult (RPKM 471.2), genital fat pad adult (RPKM 371.8) and 5 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

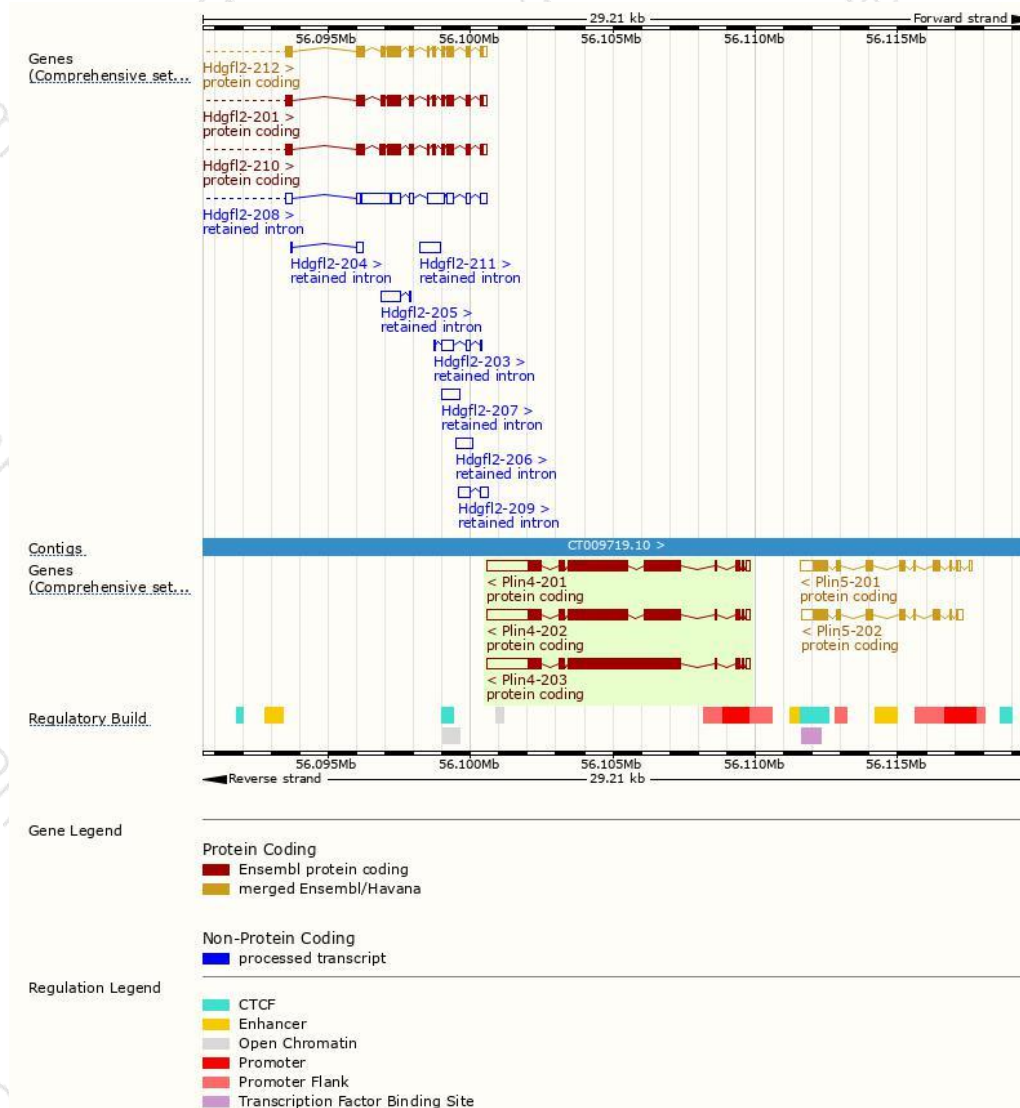
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Plin4-202	ENSMUST00000190703.6	5756	1403aa	Protein coding	CCDS79565	O88492	TSL:1 GENCODE basic APPRIS P2
Plin4-203	ENSMUST00000238734.1	6350	1601aa	Protein coding	-	-	GENCODE basic APPRIS ALT2
Plin4-201	ENSMUST00000002908.7	5755	1403aa	Protein coding	-	O88492	TSL:5 GENCODE basic APPRIS ALT2

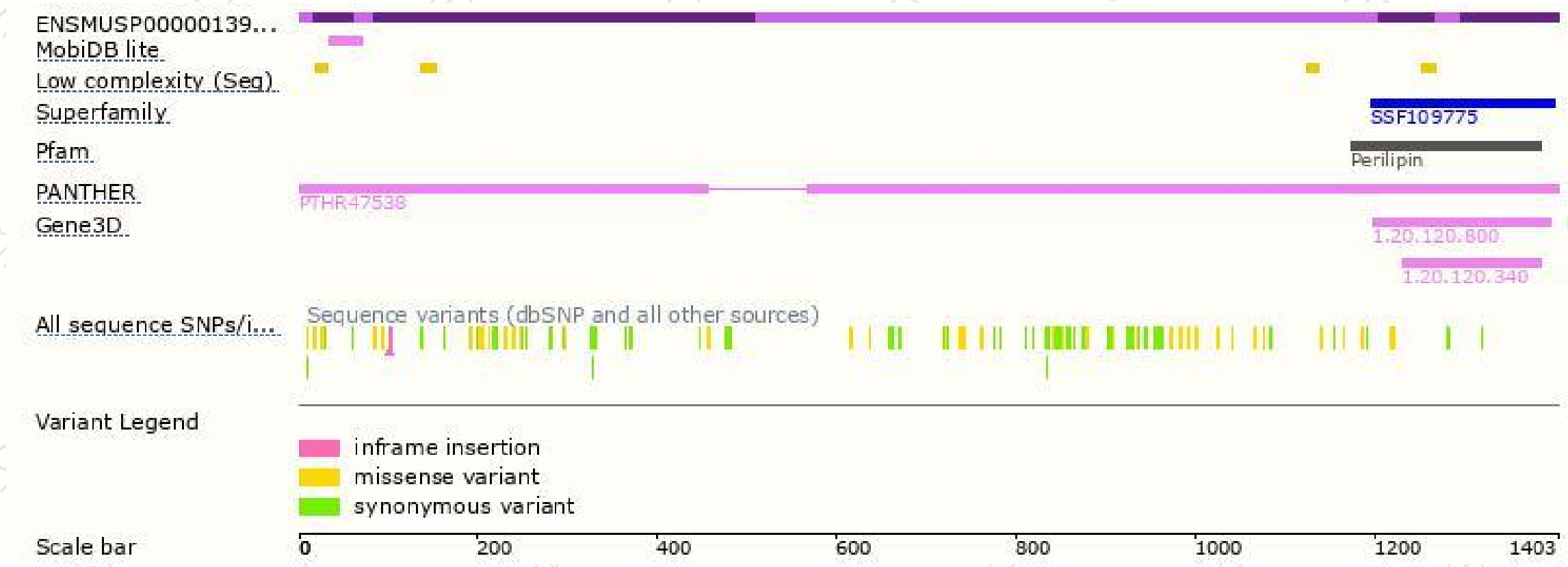
The strategy is based on the design of *Plin4-202* transcript,The transcription is shown below



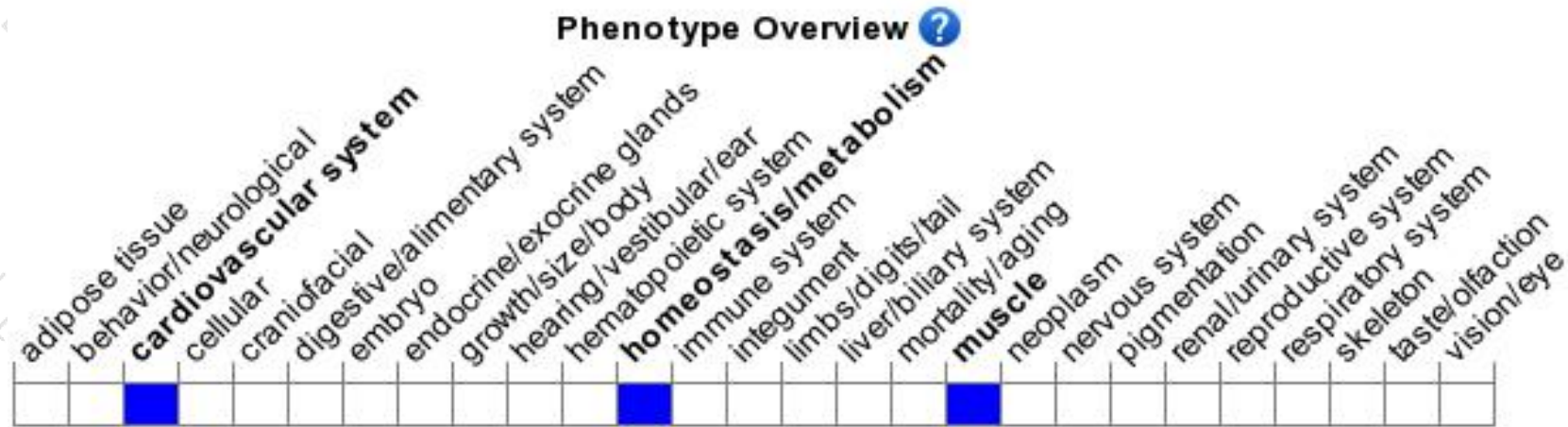
Genomic location distribution



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 knock-out allele exhibit decreased triglyceride in the heart and protection from cardiac steatosis induced by prolonged fasting, feeding or genetic obesity.

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

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