

Plin3 Cas9-KO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

Design Date:

2020-2-14

Project Overview

Project Name

Plin3

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Plin3* gene. The schematic diagram is as follows:



- The *Plin3* gene has 2 transcripts. According to the structure of *Plin3* gene, exon3-exon5 of *Plin3-201* (ENSMUST00000019726.7) transcript is recommended as the knockout region. The region contains 580bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Plin3* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a null mutation display enhanced cold tolerance and increased beige adipocyte formation and thermogenic activity.
- The *Plin3* 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)

Plin3 perilipin 3 [Mus musculus (house mouse)]

Gene ID: 66905, updated on 31-Jan-2019

Summary



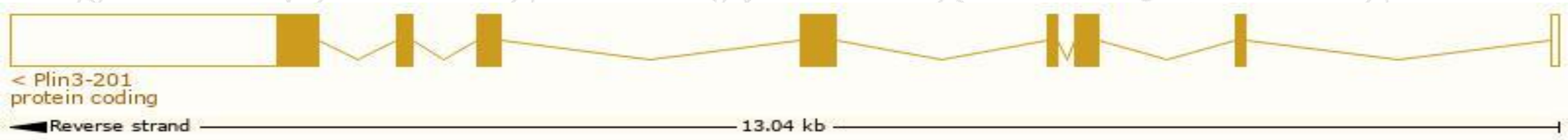
Official Symbol	Plin3 provided by MGI
Official Full Name	perilipin 3 provided by MGI
Primary source	MGI:MGI:1914155
See related	Ensembl:ENSMUSG00000024197
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1300012C15Rik, M6prbp1, Tip47
Expression	Broad expression in small intestine adult (RPKM 176.8), duodenum adult (RPKM 150.8) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

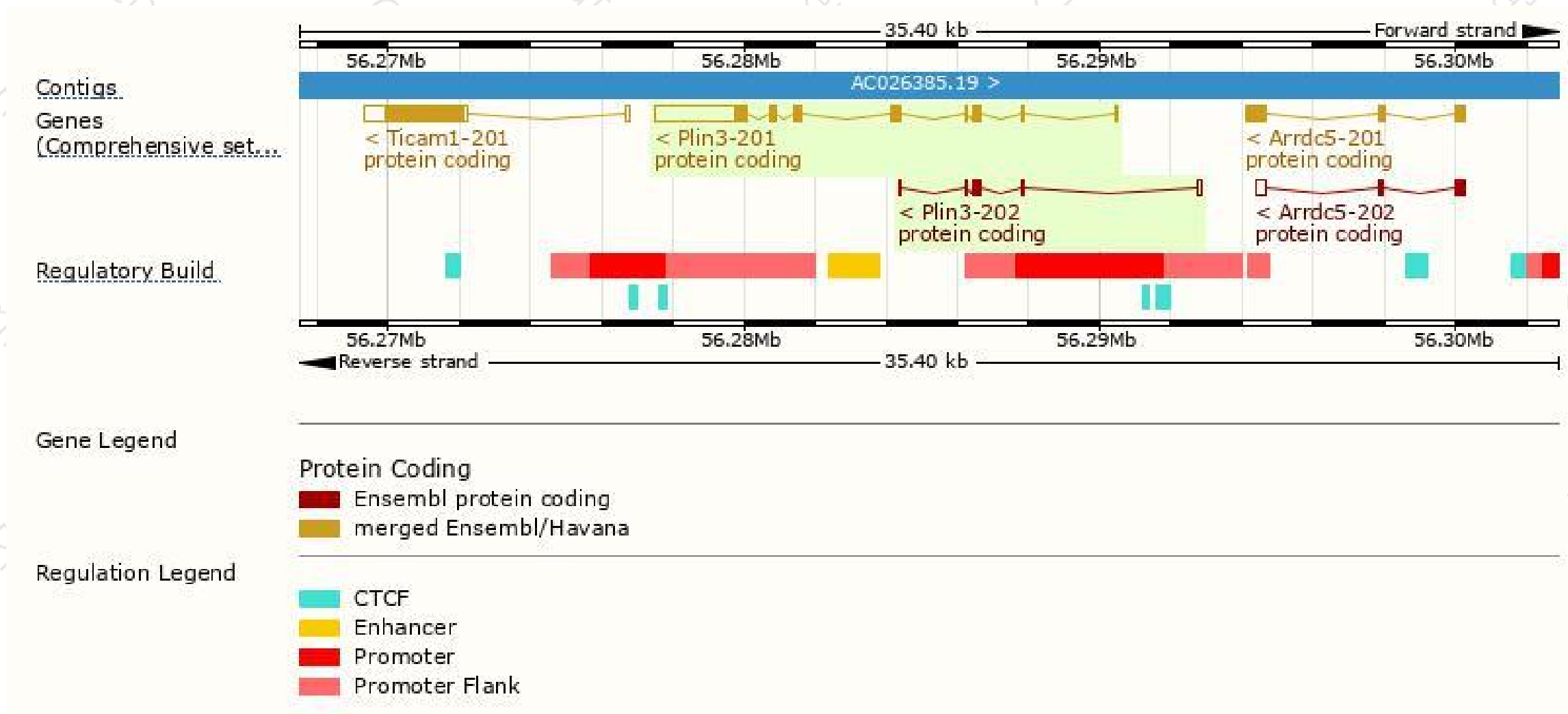
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Plin3-201	ENSMUST00000019726.7	3645	437aa	Protein coding	CCDS28901	Q9DBG5	TSL:1 GENCODE basic APPRIS P1
Plin3-202	ENSMUST00000233070.1	562	134aa	Protein coding	-	A0A3B2WCW2	CDS 3' incomplete

The strategy is based on the design of *Plin3-201* transcript,The transcription is shown below



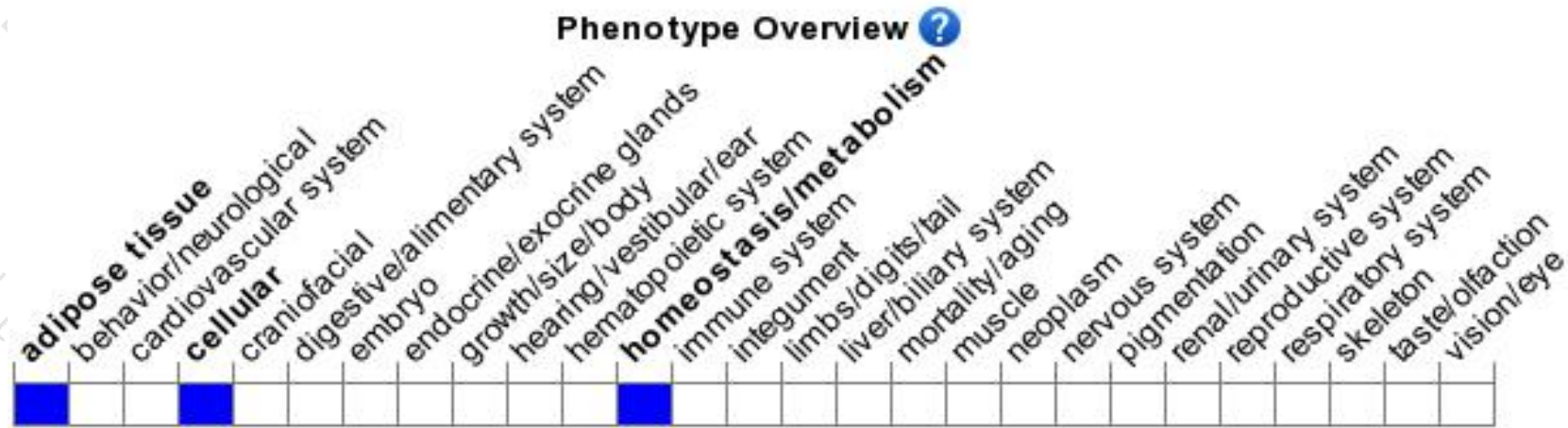
Genomic location distribution



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 enhanced cold tolerance and increased beige adipocyte formation and thermogenic activity.

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

Tel: 400-9660890

