

***Prdm16* Cas9-KO Strategy**

Designer:

Daohua Xu

Reviewer:

Huimin Su

Design Date:

2019-9-28

Project Overview

Project Name

Prdm16

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prdm16* gene. The schematic diagram is as follows:



- The *Prdm16* gene has 13 transcripts. According to the structure of *Prdm16* gene, exon2 of *Prdm16-201* (ENSMUST00000030902.12) transcript is recommended as the knockout region. The region contains 350bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prdm16* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mutant mice exhibit a cleft secondary palate, whitening of brown adipose tissue in older or fed a high-fat diet, and impaired adaptive thermogenesis.
- The *Prdm16* 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)

Prdm16 PR domain containing 16 [Mus musculus (house mouse)]

Gene ID: 70673, updated on 26-Feb-2019

Summary



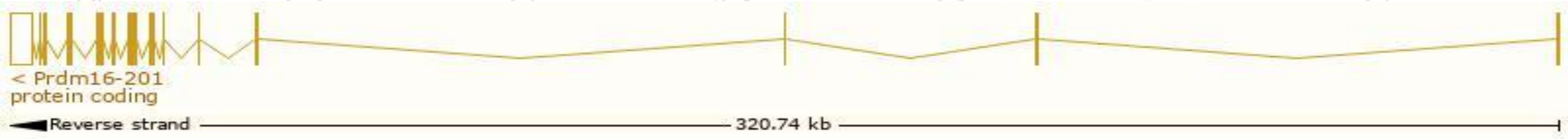
Official Symbol	Prdm16 provided by MGI
Official Full Name	PR domain containing 16 provided by MGI
Primary source	MGI:MGI:1917923
See related	Ensembl:ENSMUSG00000039410
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5730557K01Rik, csp1, mel1
Expression	Broad expression in duodenum adult (RPKM 4.8), lung adult (RPKM 4.0) and 23 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

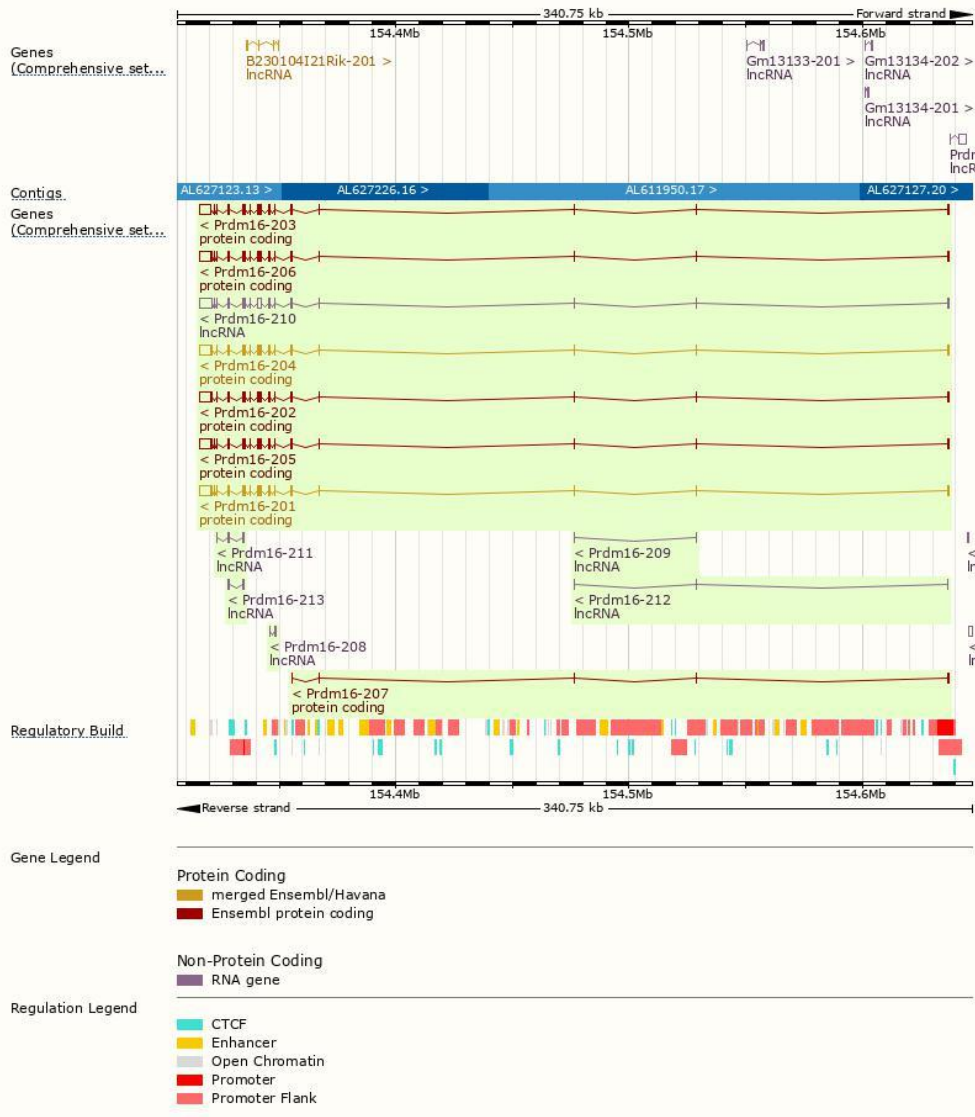
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prdm16-201	ENSMUST00000030902.12	8598	1275aa	Protein coding	CCDS38989	A2A935	TSL:1 GENCODE basic APPRIS P3
Prdm16-205	ENSMUST00000105637.7	8595	1274aa	Protein coding	CCDS71530	A2A931	TSL:1 GENCODE basic APPRIS ALT2
Prdm16-202	ENSMUST00000070313.13	8429	1178aa	Protein coding	CCDS71532	A2A935	TSL:1 GENCODE basic APPRIS ALT2
Prdm16-204	ENSMUST00000105636.7	8426	1177aa	Protein coding	CCDS51400	A2A934	TSL:1 GENCODE basic APPRIS ALT2
Prdm16-206	ENSMUST00000105638.8	8601	1276aa	Protein coding	-	A2A933	TSL:5 GENCODE basic APPRIS ALT2
Prdm16-203	ENSMUST00000097759.8	8544	1257aa	Protein coding	-	A2A930	TSL:5 GENCODE basic APPRIS ALT2
Prdm16-207	ENSMUST00000124771.1	757	214aa	Protein coding	-	A2A929	CDS 3' incomplete TSL:5
Prdm16-210	ENSMUST00000141164.7	8602	No protein	lncRNA	-	-	TSL:5
Prdm16-211	ENSMUST00000145217.7	851	No protein	lncRNA	-	-	TSL:3
Prdm16-212	ENSMUST00000149605.1	615	No protein	lncRNA	-	-	TSL:2
Prdm16-213	ENSMUST00000156069.1	496	No protein	lncRNA	-	-	TSL:2
Prdm16-208	ENSMUST00000131762.1	403	No protein	lncRNA	-	-	TSL:5
Prdm16-209	ENSMUST00000135064.1	402	No protein	lncRNA	-	-	TSL:3

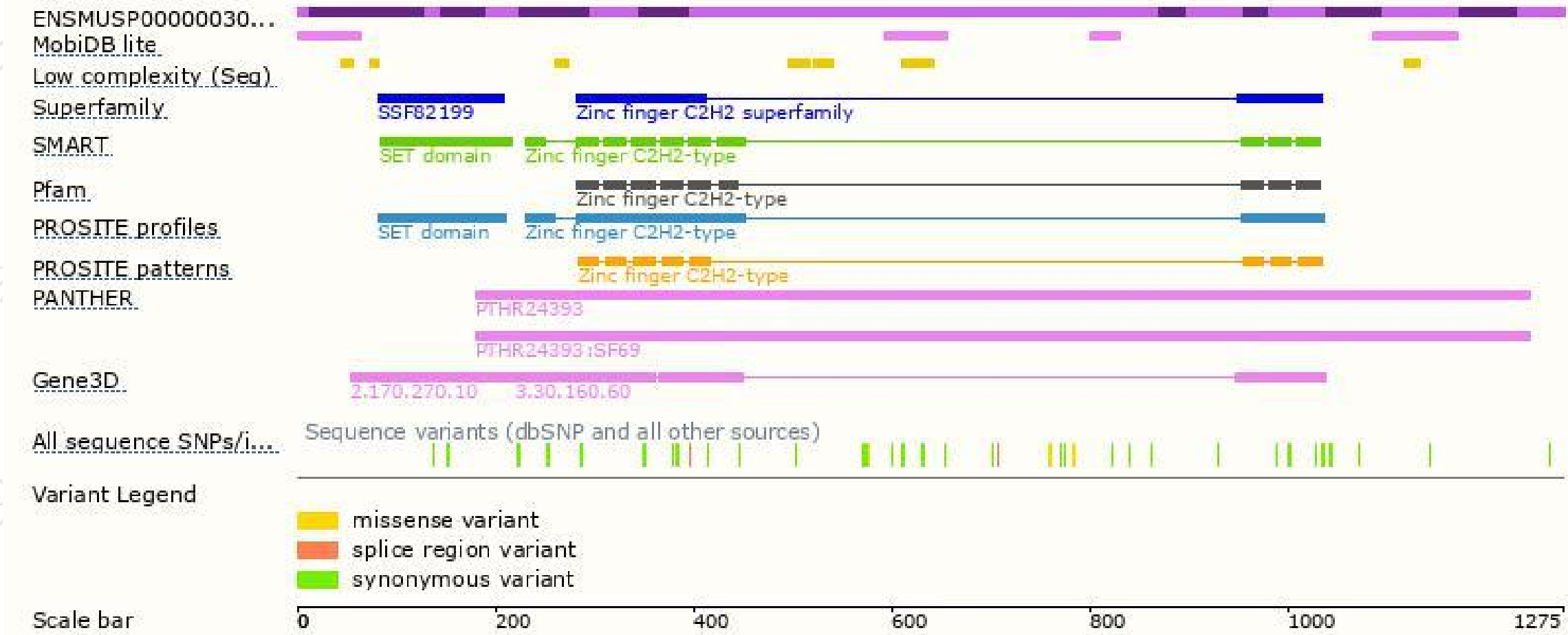
The strategy is based on the design of *Prdm16-201* transcript,The transcription is shown below



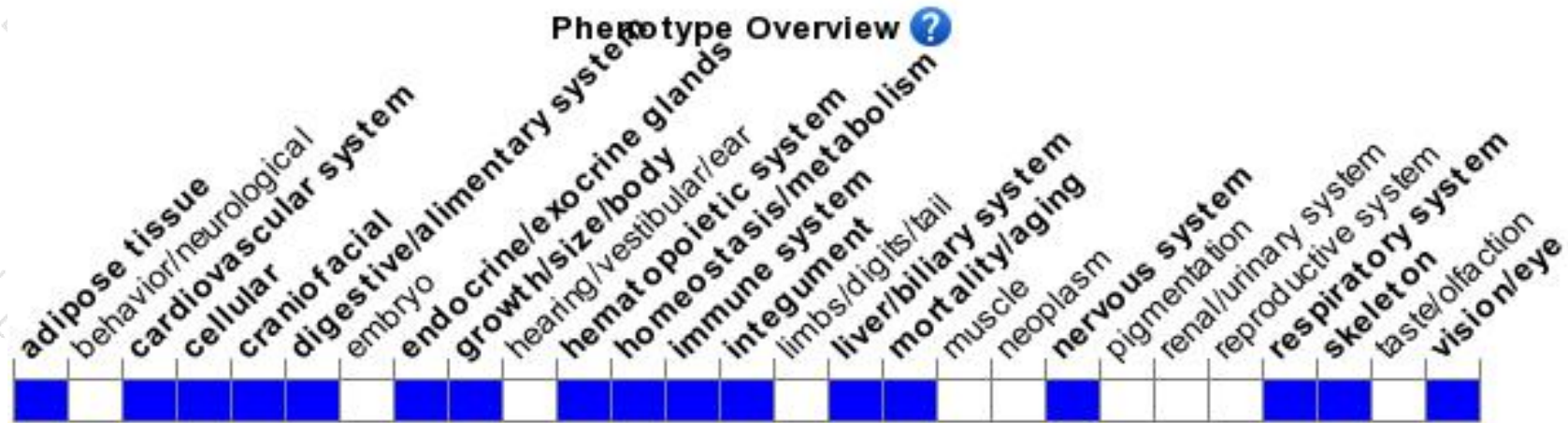
Genomic location distribution



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, Mutant mice exhibit a cleft secondary palate, whitening of brown adipose tissue in older or fed a high-fat diet, and impaired adaptive thermogenesis.

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

Tel: 400-9660890

