

Usp16 Cas9-KO Strategy

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Project Overview

Project Name

Usp16

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp16* gene. The schematic diagram is as follows:



Technical routes

- The *Usp16* gene has 11 transcripts. According to the structure of *Usp16* gene, exon3-exon4 of *Usp16-201*(ENSMUST00000026710.11) transcript is recommended as the knockout region. The region contains 280bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Usp16* 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, mice homozygous for a transgenic gene disruption exhibit embryonic lethality at E6.
- The *Usp16* gene is located on the Chr16. 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)

Usp16 ubiquitin specific peptidase 16 [Mus musculus (house mouse)]

Gene ID: 74112, updated on 13-Mar-2020

Summary



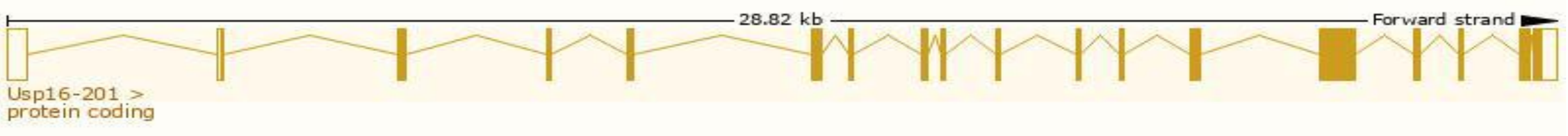
Official Symbol	Usp16 provided by MGI
Official Full Name	ubiquitin specific peptidase 16 provided by MGI
Primary source	MGI:MGI:1921362
See related	Ensembl:ENSMUSG00000025616
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1200004E02Rik, 2810483I07Rik, 6330514E22Rik, UBPM
Expression	Ubiquitous expression in testis adult (RPKM 10.7), CNS E11.5 (RPKM 8.0) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

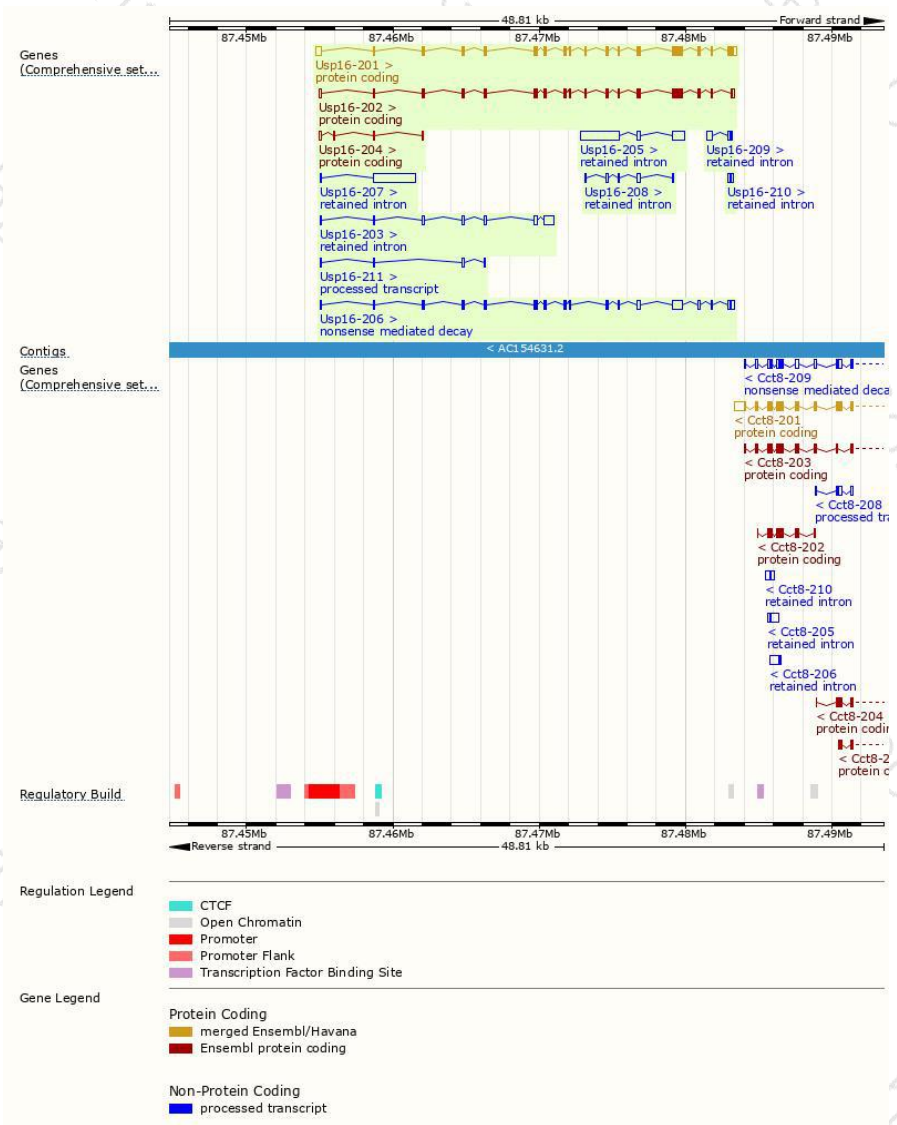
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Usp16-201	ENSMUST00000026710.11	3205	825aa	Protein coding	CCDS28291	Q99LG0	TSL:1 GENCODE basic APPRIS P1
Usp16-202	ENSMUST00000119504.7	2562	754aa	Protein coding	-	D3YVU1	TSL:5 GENCODE basic
Usp16-204	ENSMUST00000131356.7	354	48aa	Protein coding	-	D3Z6E6	CDS 3' incomplete TSL:3
Usp16-206	ENSMUST00000144759.7	2561	334aa	Nonsense mediated decay	-	D6RHO6	TSL:5
Usp16-211	ENSMUST00000177538.1	354	No protein	Processed transcript	-	-	TSL:3
Usp16-205	ENSMUST00000135399.7	3582	No protein	Retained intron	-	-	TSL:1
Usp16-207	ENSMUST00000144886.1	3002	No protein	Retained intron	-	-	TSL:1
Usp16-203	ENSMUST00000131206.7	1405	No protein	Retained intron	-	-	TSL:1
Usp16-209	ENSMUST00000149656.1	594	No protein	Retained intron	-	-	TSL:2
Usp16-208	ENSMUST00000146386.1	502	No protein	Retained intron	-	-	TSL:2
Usp16-210	ENSMUST00000177275.1	358	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Usp16-201* transcript,the transcription is shown below:



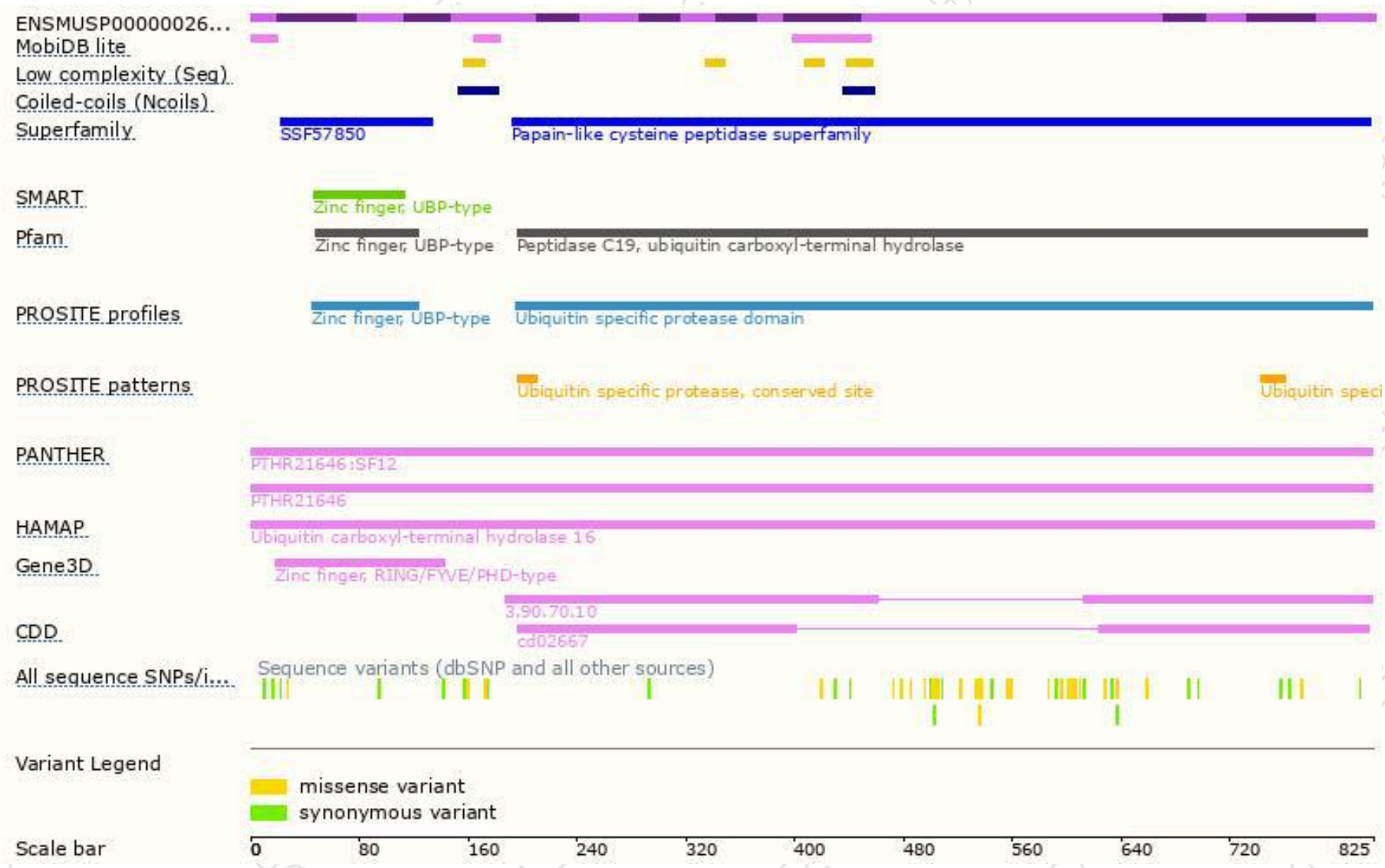
Genomic location distribution



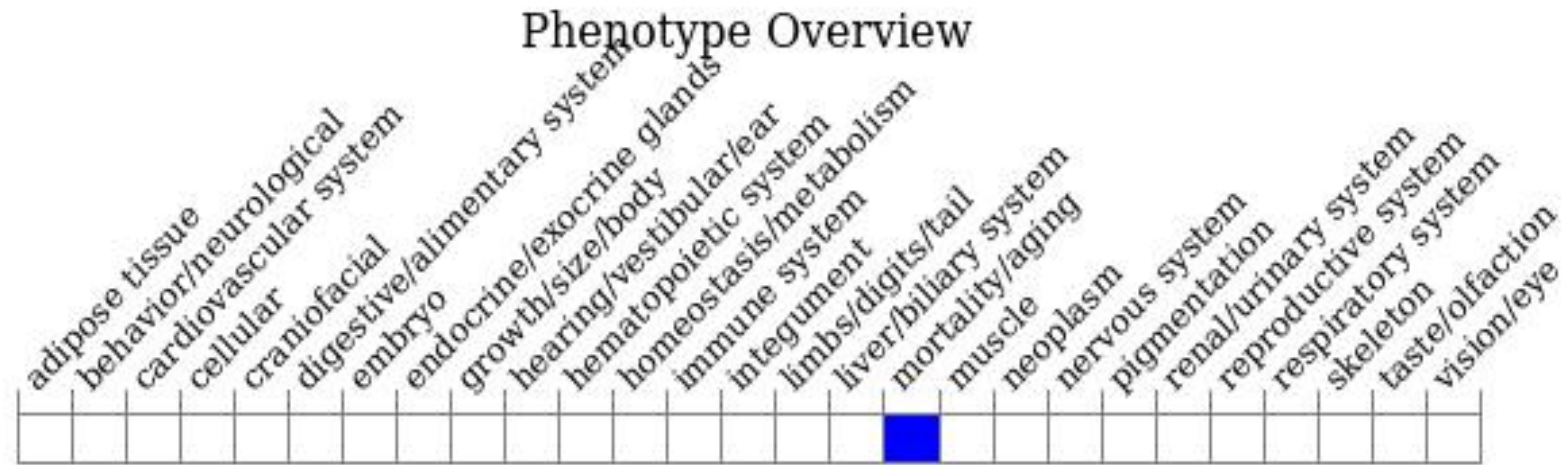
Protein domain



集萃药康
GemPharmatech



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 transgenic gene disruption exhibit embryonic lethality at E6.

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

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