

Usp47 Cas9-KO Strategy

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Project Overview

Project Name

Usp47

Project type

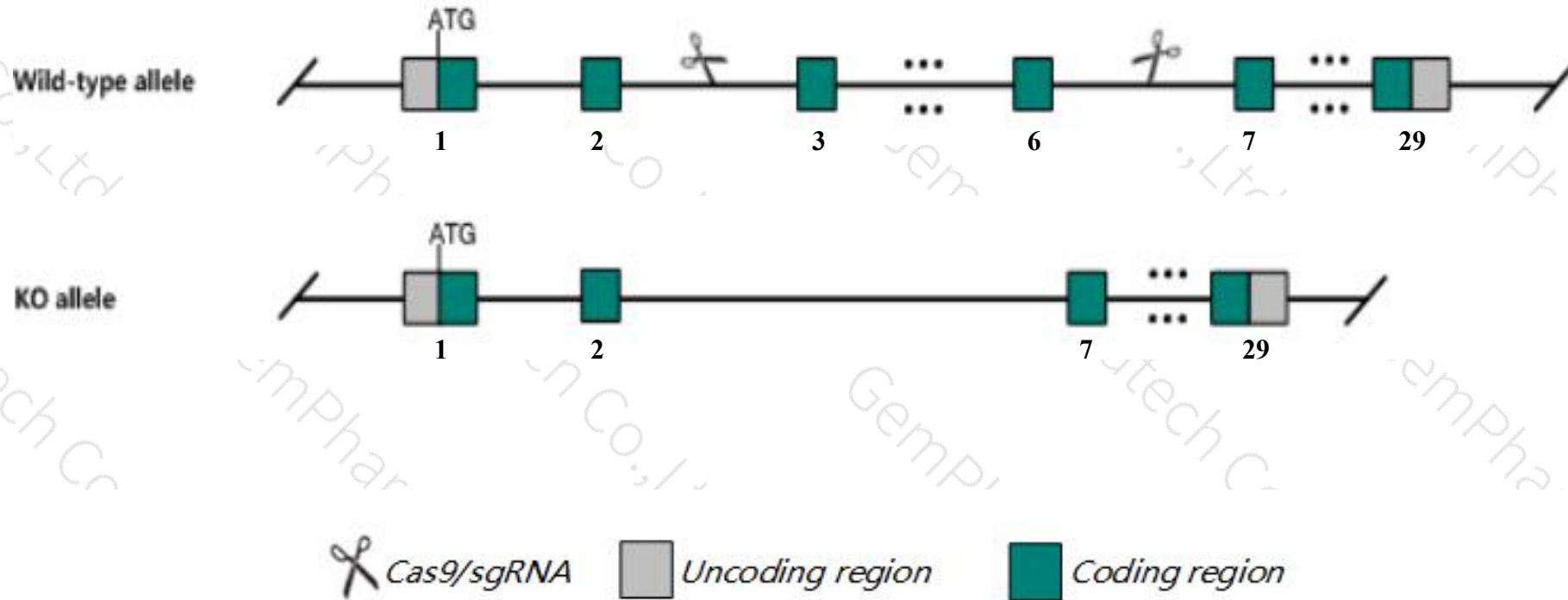
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp47* gene. The schematic diagram is as follows:



- The *Usp47* gene has 6 transcripts. According to the structure of *Usp47* gene, exon3-exon6 of *Usp47*-202(ENSMUST00000210309.1) transcript is recommended as the knockout region. The region contains 554bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Usp47* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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, mouse embryonic fibroblasts from mice homozygous for a gene trap allele exhibit increased sensitivity to UV irradiation.
- The *Usp47* gene is located on the Chr7. 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)

Usp47 ubiquitin specific peptidase 47 [Mus musculus (house mouse)]

Gene ID: 74996, updated on 13-Mar-2020

Summary



Official Symbol	Usp47 provided by MGI
Official Full Name	ubiquitin specific peptidase 47 provided by MGI
Primary source	MGI:MGI:1922246
See related	Ensembl:ENSMUSG00000059263
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	4930502N04Rik, A630020C16Rik
Expression	Ubiquitous expression in CNS E11.5 (RPKM 27.4), testis adult (RPKM 27.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

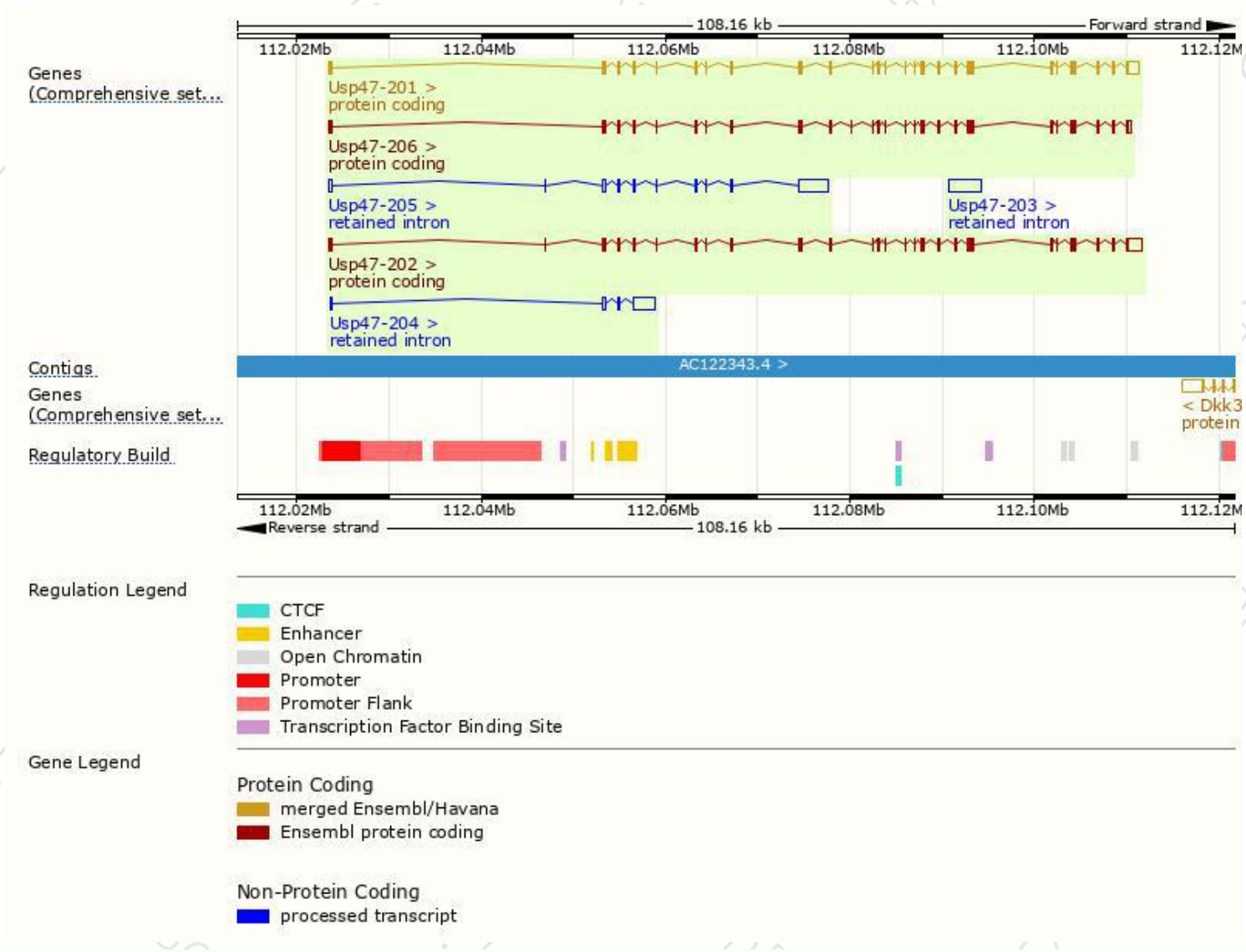
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Usp47-202	ENSMUST00000210309.1	5816	1376aa	Protein coding	CCDS85384	Q8BY87	TSL:1 GENCODE basic APPRIS ALT1
Usp47-201	ENSMUST00000106653.3	5540	1356aa	Protein coding	CCDS40089	Q8BY87	TSL:5 GENCODE basic APPRIS P3
Usp47-206	ENSMUST00000215510.1	4697	1376aa	Protein coding	-	A0A1L1SV73	TSL:5 GENCODE basic
Usp47-205	ENSMUST00000211791.1	4441	No protein	Retained intron	-	-	TSL:1
Usp47-203	ENSMUST00000210526.1	3483	No protein	Retained intron	-	-	TSL:NA
Usp47-204	ENSMUST00000210591.1	2784	No protein	Retained intron	-	-	TSL:2

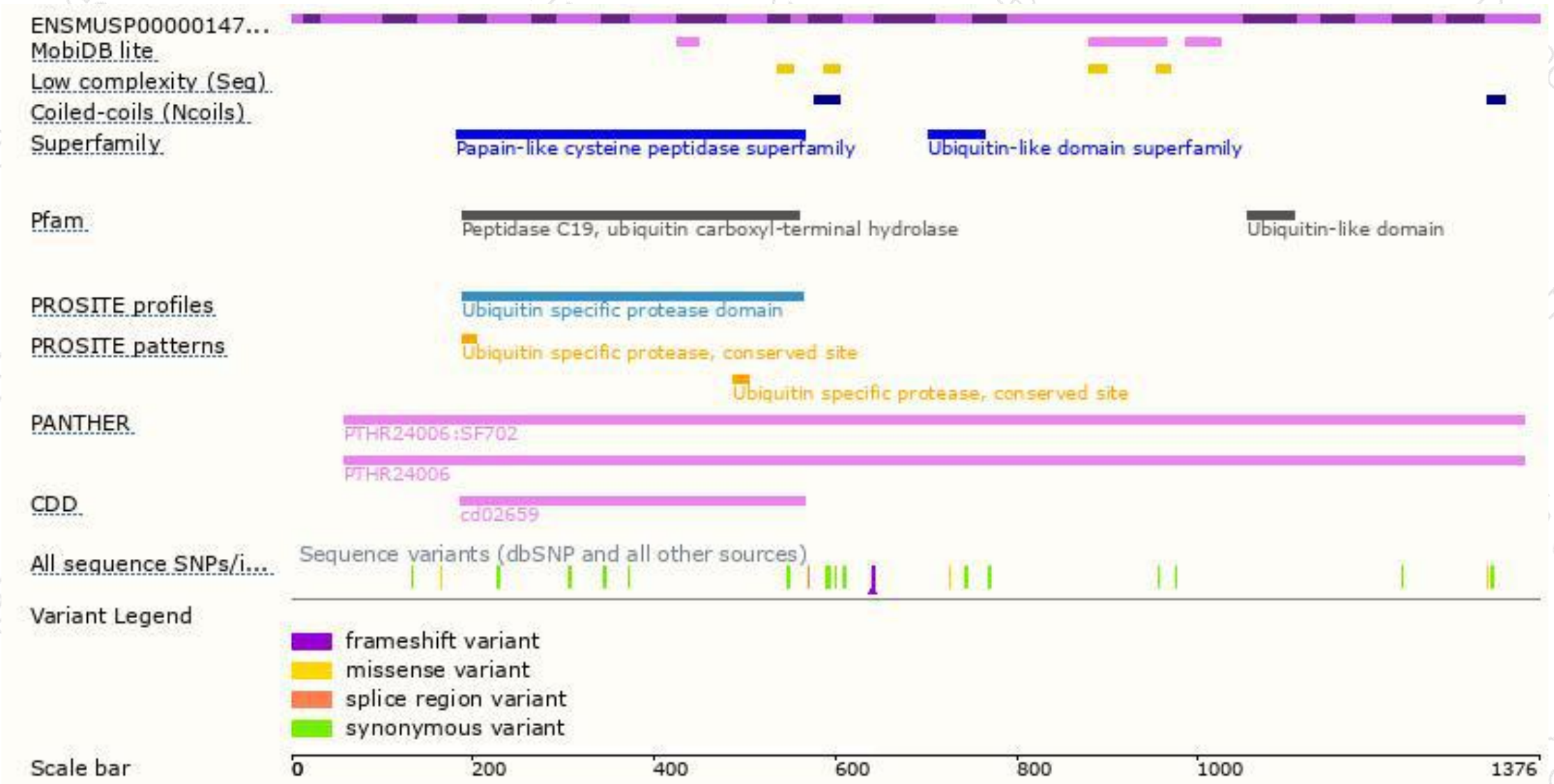
The strategy is based on the design of *Usp47-202* transcript,the transcription is shown below:



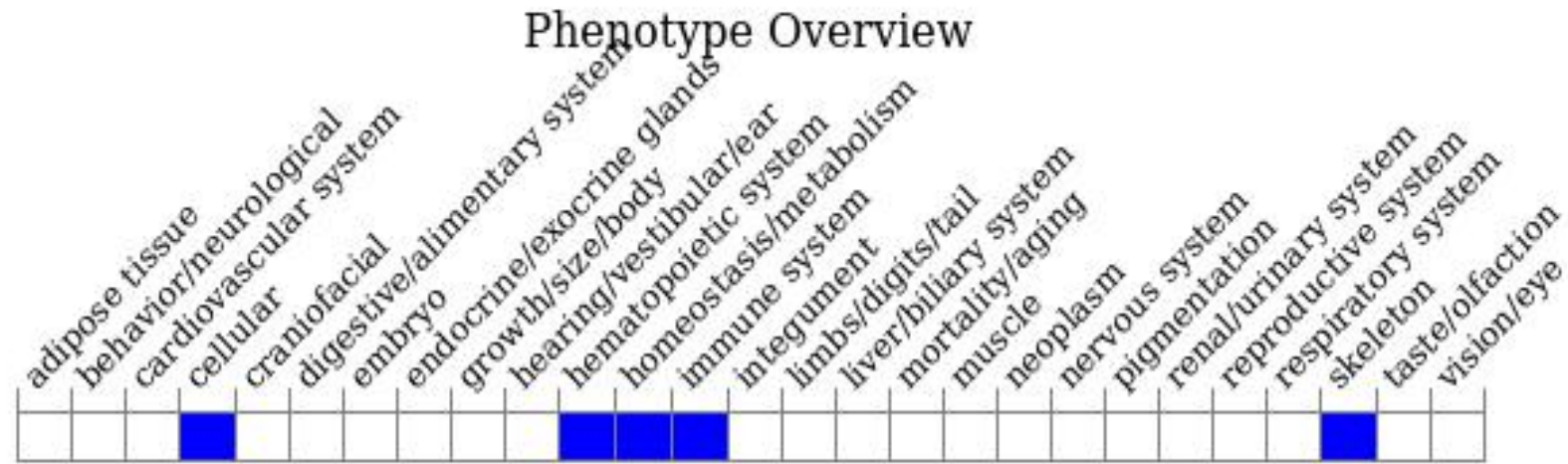
Genomic location distribution



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, mouse embryonic fibroblasts from mice homozygous for a gene trap allele exhibit increased sensitivity to UV irradiation.

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

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