GemPharmatech™

Usp48 Cas9-KO Strategy

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Overview

Target Gene Name

- Usp48

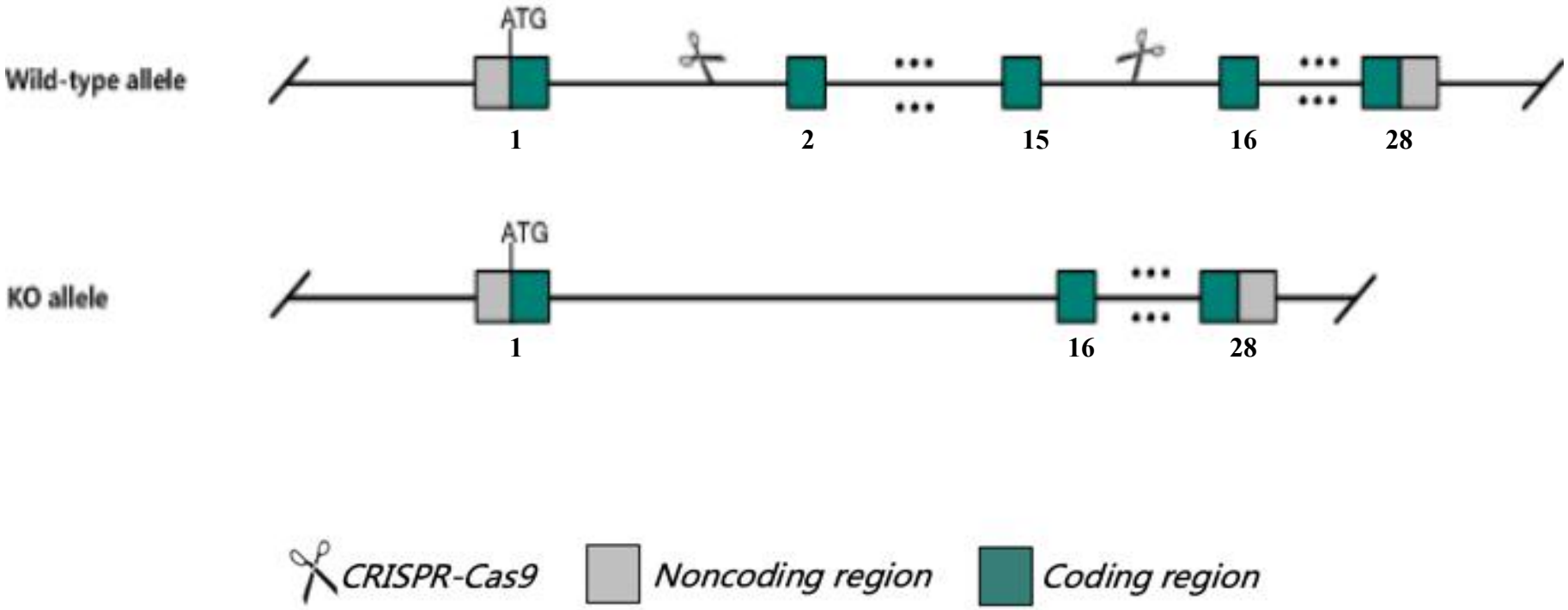
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Technical Information

- The *Usp48* gene has 17 transcripts. According to the structure of *Usp48* gene, exon2-exon15 of *Usp48*-201 (ENSMUST00000055131.13) transcript is recommended as the knockout region. The region contains 1826bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Usp48* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.

Gene Information

Usp48 ubiquitin specific peptidase 48 [Mus musculus (house mouse)]

Gene ID: 170707, updated on 19-Mar-2019

Summary

Official Symbol	Usp48 provided by MGI
Official Full Name	ubiquitin specific peptidase 48 provided by MGI
Primary source	MGI:MGI:2158502
See related	Ensembl:ENSMUSG00000043411
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	2810449C13Rik, AI115503, BC021769, D330022K21Rik, Usp31
Expression	Ubiquitous expression in CNS E18 (RPKM 12.6), CNS E14 (RPKM 11.8) and 28 other tissues See more
Orthologs	human all

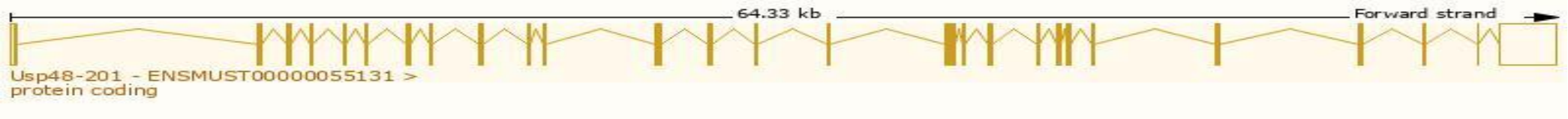
Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

The gene has 17 transcripts,all transcripts are shown below:

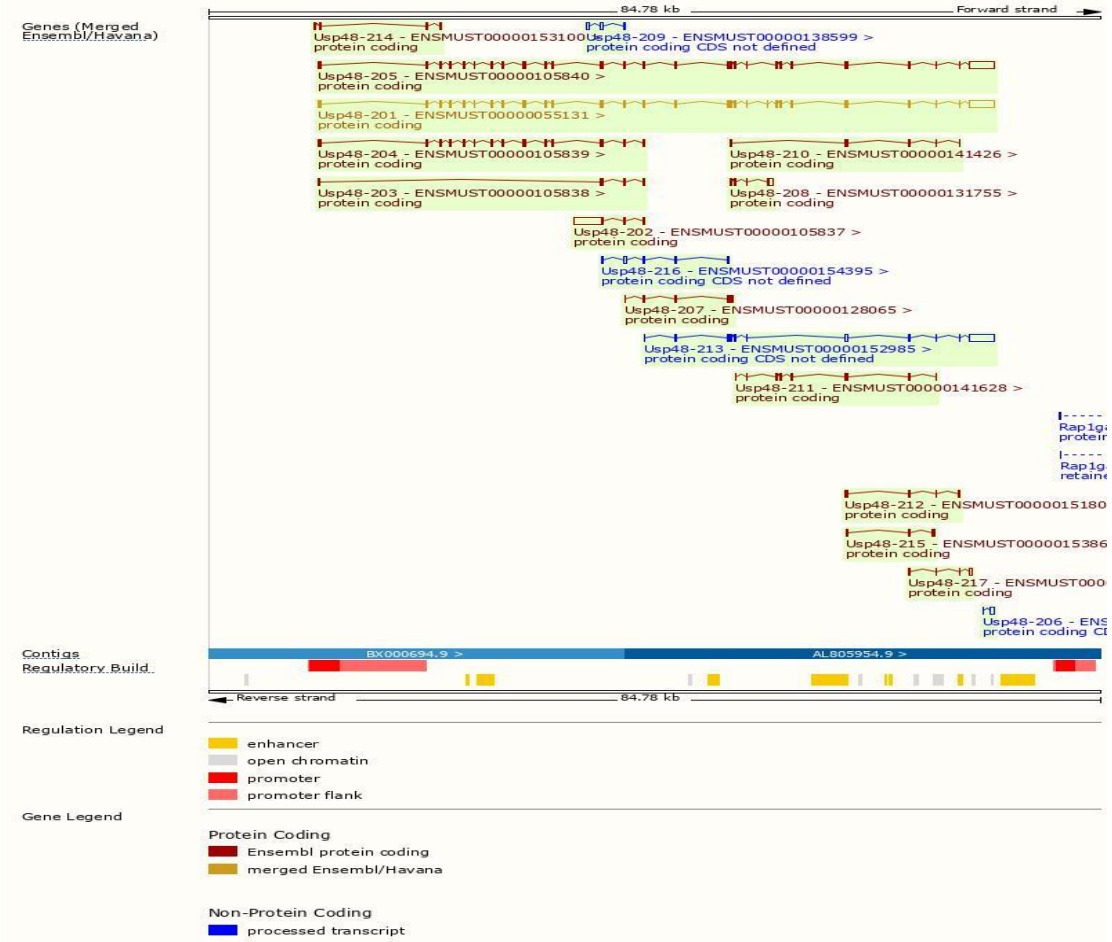
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Usp48-205	ENSMUST00000105840.7	5741	1036aa	Protein coding	CCDS84808	A2ALR9	TSL:5 GENCODE basic APPRIS P1
Usp48-201	ENSMUST00000055131.12	5722	1052aa	Protein coding	CCDS38924	Q3V0C5	TSL:1 GENCODE basic
Usp48-202	ENSMUST00000105837.1	3036	105aa	Protein coding	-	A2ALS8	CDS 3' incomplete TSL:1
Usp48-204	ENSMUST00000105839.7	2071	631aa	Protein coding	-	A2ALR8	CDS 3' incomplete TSL:1
Usp48-211	ENSMUST00000141626.7	837	267aa	Protein coding	-	A2ALR5	CDS 3' incomplete TSL:3
Usp48-208	ENSMUST00000131755.1	694	87aa	Protein coding	-	F6Z2T3	CDS 5' incomplete TSL:3
Usp48-207	ENSMUST00000128065.1	624	170aa	Protein coding	-	F6TGT8	CDS 5' incomplete TSL:2
Usp48-214	ENSMUST00000153100.7	619	165aa	Protein coding	-	A2BDP2	CDS 3' incomplete TSL:3
Usp48-203	ENSMUST00000105838.7	564	106aa	Protein coding	-	A2ALS9	CDS 3' incomplete TSL:5
Usp48-215	ENSMUST00000153869.1	503	113aa	Protein coding	-	F7ALR2	CDS 5' incomplete TSL:2
Usp48-212	ENSMUST00000151807.7	489	123aa	Protein coding	-	F6TH61	CDS 5' incomplete TSL:3
Usp48-217	ENSMUST00000157012.2	468	85aa	Protein coding	-	F6VSQ9	CDS 5' incomplete TSL:3
Usp48-210	ENSMUST00000141426.7	467	156aa	Protein coding	-	F6VSP0	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Usp48-213	ENSMUST00000152985.1	3392	No protein	Processed transcript	-	-	TSL:1
Usp48-216	ENSMUST00000154395.7	619	No protein	Processed transcript	-	-	TSL:3
Usp48-209	ENSMUST00000138599.1	542	No protein	Processed transcript	-	-	TSL:3
Usp48-206	ENSMUST00000125151.1	540	No protein	Processed transcript	-	-	TSL:5

The strategy is based on the design of *Usp48*-201 transcript, the transcription is shown below:



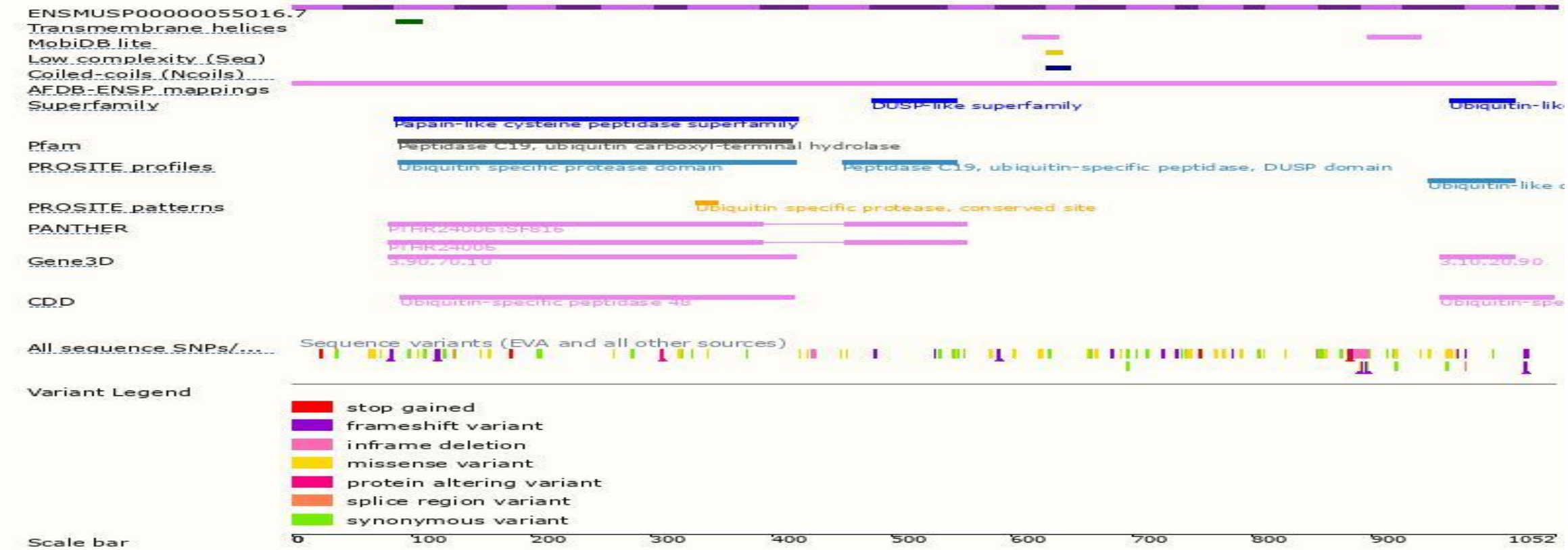
Source: https://www.ensembl.org

Genomic Information



Source: : https://www.ensembl.org

Protein Information



Source: : https://www.ensembl.org

Important Information

- The lethality of *Usp48* gene knockout is unknown.
- Transcript *Usp48*-206&211 may not be affected . And the effect on transcript *Usp48*-208&210&212&215&217 is unknown.
- *Usp48* is located on Chr4. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.