

Usp37 Cas9-CKO Strategy

Designer: Xiaojing Li
Design Date: 2019-9-19
Reviewer: JiaYu

Project Overview

Project Name

Usp37

Project type

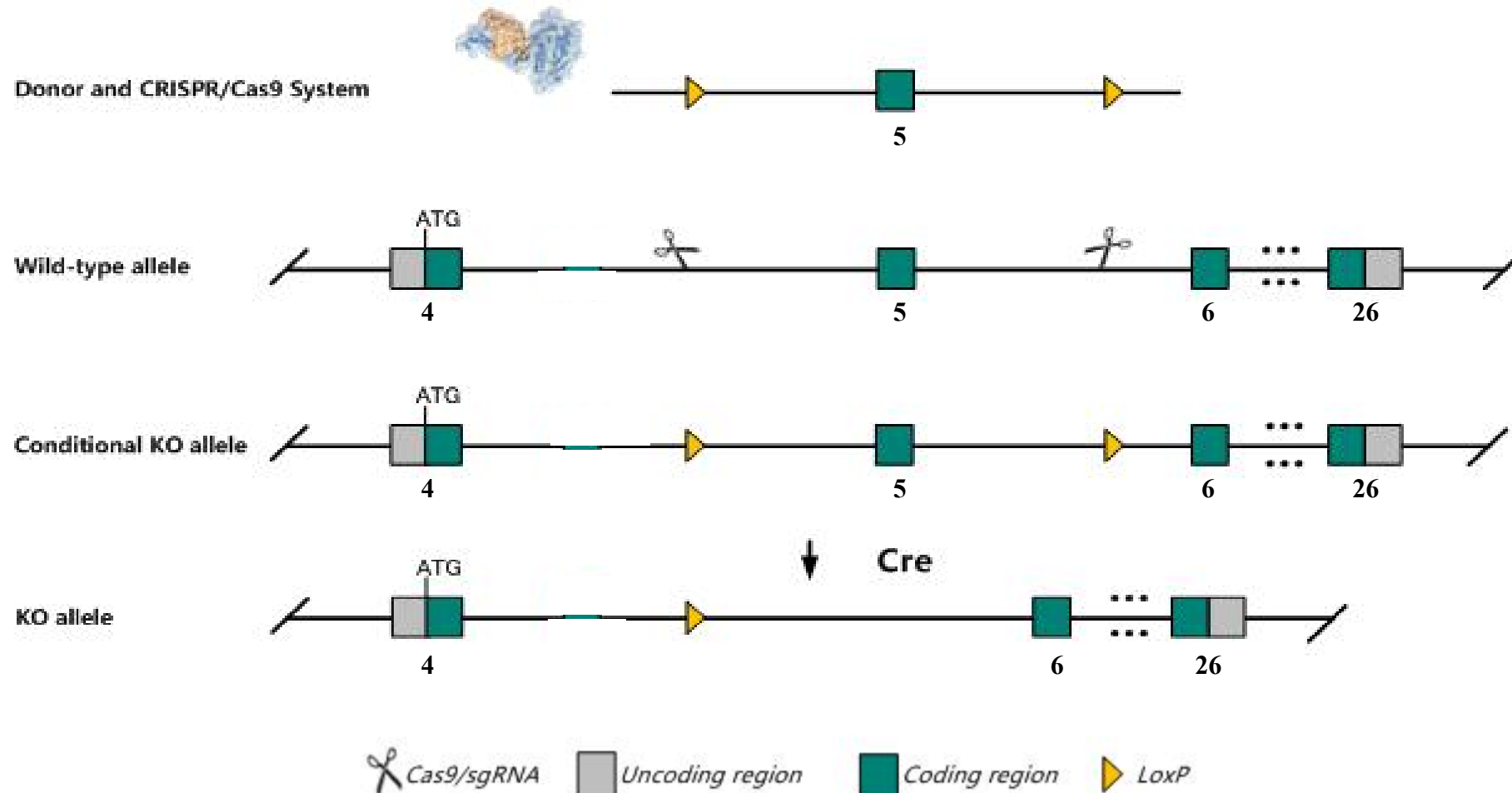
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp37* gene. The schematic diagram is as follows:



- The *Usp37* gene has 7 transcripts. According to the structure of *Usp37* gene, exon5 of *Usp37-205* (ENSMUST00000189257.6) transcript is recommended as the knockout region. The region contains 172bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Usp37* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, Mice homozygous for an ENU-induced mutation exhibit complete embryonic lethality.
- The *Usp37* gene is located on the Chr1. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Usp37 ubiquitin specific peptidase 37 [Mus musculus (house mouse)]

Gene ID: 319651, updated on 19-Mar-2019

Summary



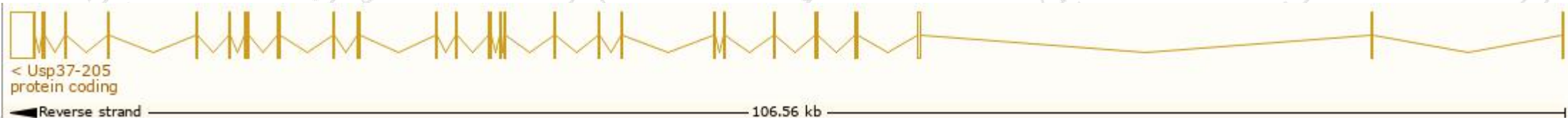
Official Symbol	Usp37 provided by MGI
Official Full Name	ubiquitin specific peptidase 37 provided by MGI
Primary source	MGI:MGI:2442483
See related	Ensembl:ENSMUSG00000033364
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4932415L06Rik, C330008N13Rik
Expression	Ubiquitous expression in duodenum adult (RPKM 7.5), small intestine adult (RPKM 7.5) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

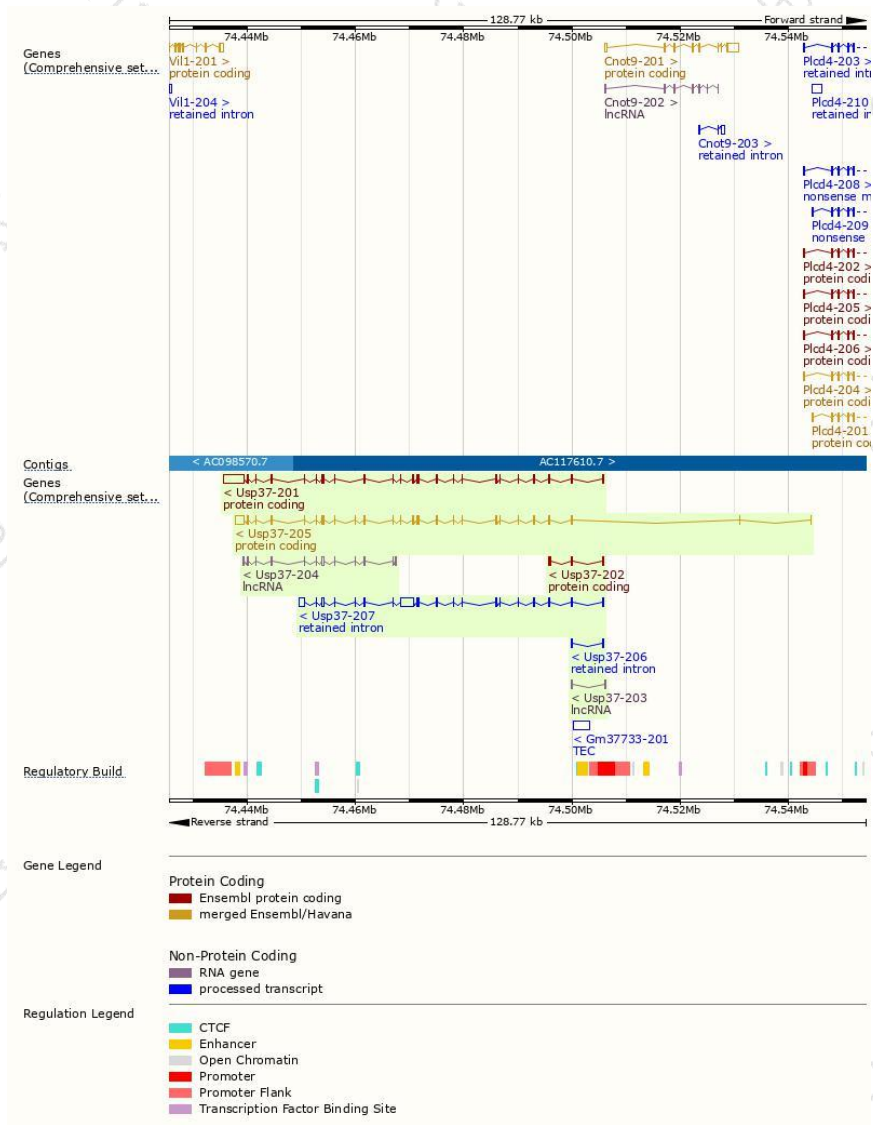
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Usp37-201	ENSMUST00000044260.10	7111	957aa	Protein coding	CCDS78616	Q8C0R0	TSL:5 GENCODE basic APPRIS ALT 1
Usp37-205	ENSMUST00000189257.6	4974	979aa	Protein coding	CCDS15050	A0A0R4J2D0	TSL:1 GENCODE basic APPRIS P3
Usp37-202	ENSMUST00000186282.6	584	22aa	Protein coding	-	A0A087WQE4	CDS 3' incomplete TSL:3
Usp37-204	ENSMUST00000188012.6	1836	No protein	Processed transcript	-	-	TSL:5
Usp37-203	ENSMUST00000187590.1	279	No protein	Processed transcript	-	-	TSL:5
Usp37-207	ENSMUST00000191058.6	6011	No protein	Retained intron	-	-	TSL:2
Usp37-206	ENSMUST00000190592.1	361	No protein	Retained intron	-	-	TSL:3

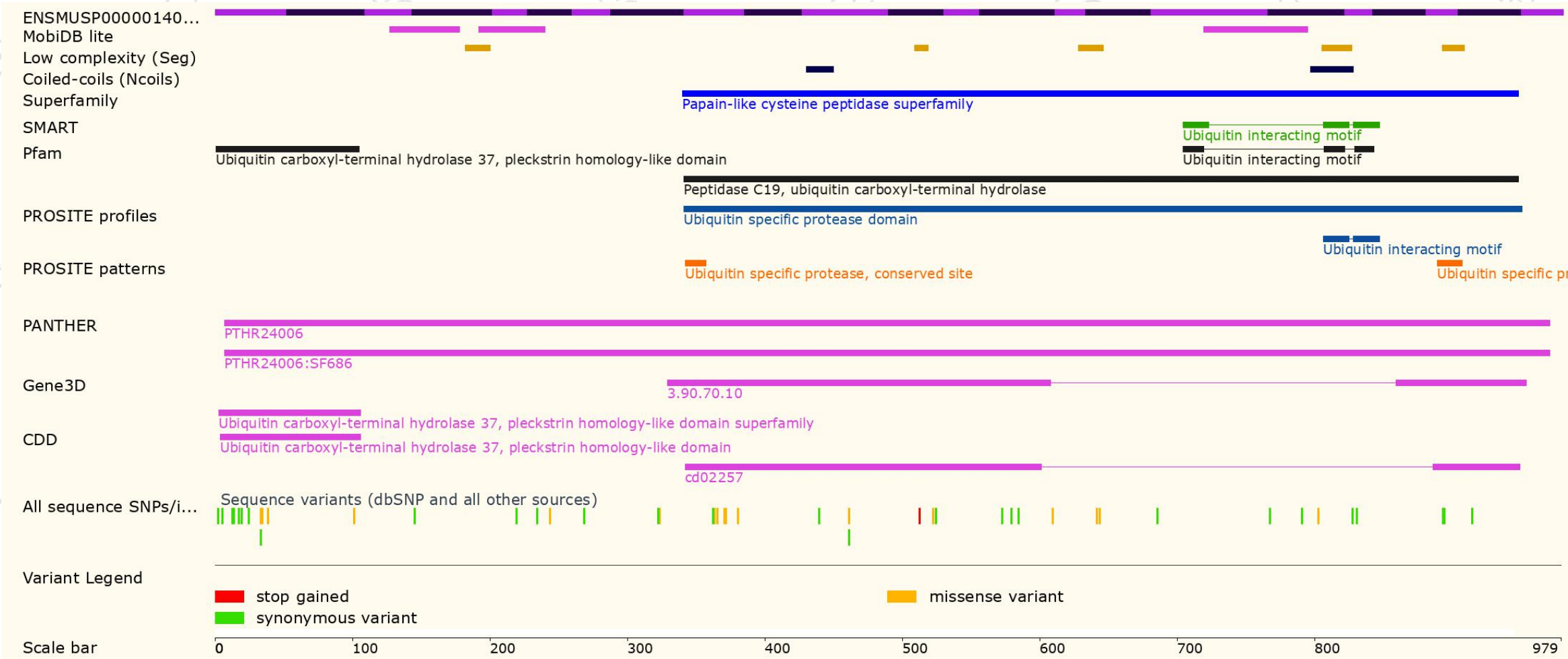
The strategy is based on the design of *Usp37-205* transcript,The transcription is shown below



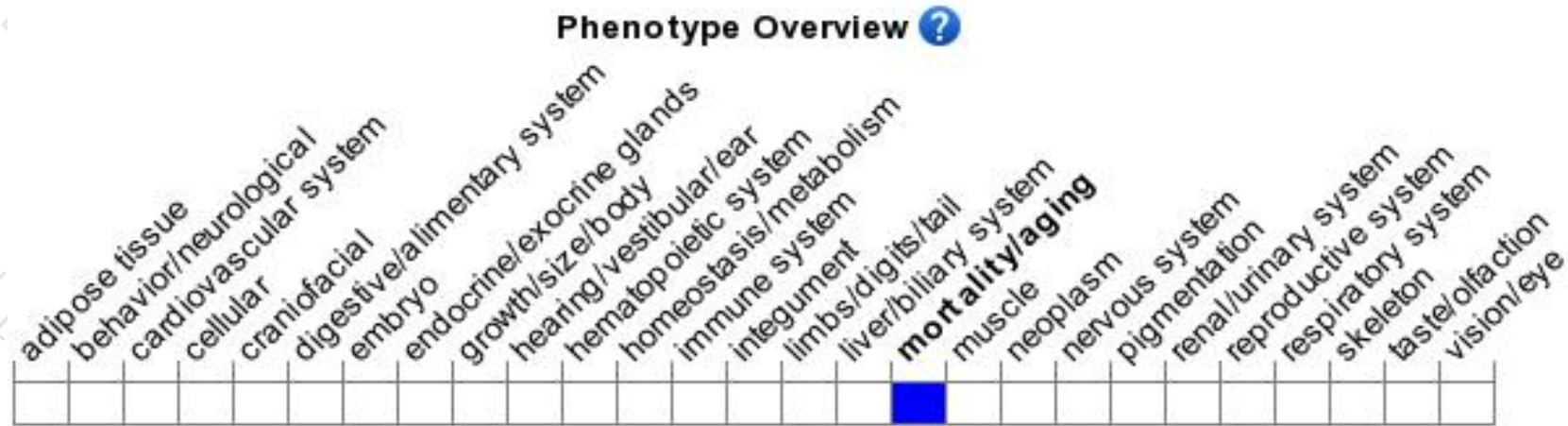
Genomic location distribution



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 an ENU-induced mutation exhibit complete embryonic lethality.

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

Tel: 400-9660890

