

Usp42 Cas9-KO Strategy

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Project Overview

Project Name

Usp42

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp42* gene. The schematic diagram is as follows:



Technical routes

- The *Usp42* gene has 5 transcripts. According to the structure of *Usp42* gene, exon3-exon11 of *Usp42-201* (ENSMUST00000053287.5) transcript is recommended as the knockout region. The region contains 991bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Usp42* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a null allele exhibit fecundity and behavioral abnormalities, hyperactivity, increased T cell number, abnormal lens morphology, and cataracts. Males display oligozoospermia and testis degeneration.
- The *Usp42* gene is located on the Chr5. 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)

Usp42 ubiquitin specific peptidase 42 [Mus musculus (house mouse)]

Gene ID: 76800, updated on 19-Mar-2019

Summary



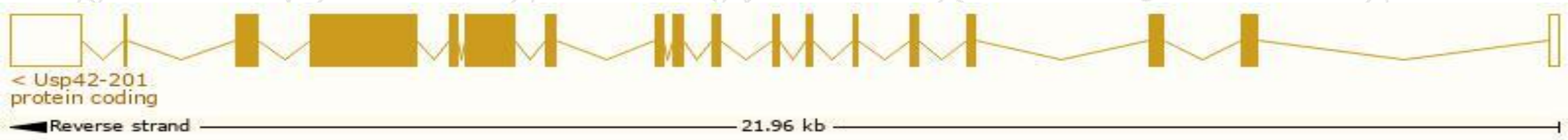
Official Symbol	Usp42 provided by MGI
Official Full Name	ubiquitin specific peptidase 42 provided by MGI
Primary source	MGI:MGI:1924050
See related	Ensembl:ENSMUSG00000051306
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2410140K03Rik, 3110031A07Rik, A630018G05Rik, D5Ertd591e
Expression	Broad expression in testis adult (RPKM 13.7), CNS E11.5 (RPKM 4.9) and 25 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

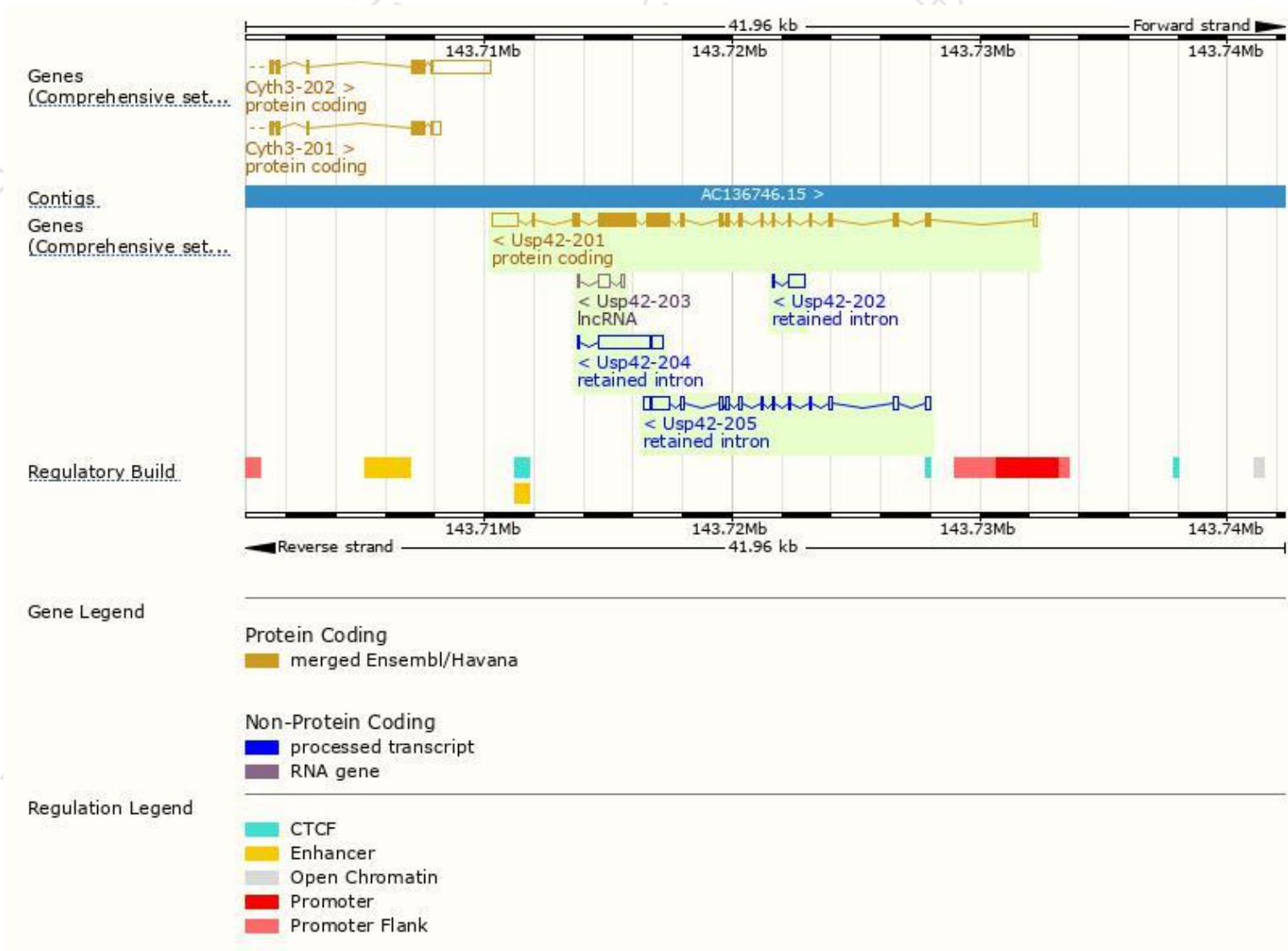
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Usp42-201	ENSMUST00000053287.5	5151	1324aa	Protein coding	CCDS39372	B2RQC2	TSL:5 GENCODE basic APPRIS P1
Usp42-204	ENSMUST00000141396.1	2554	No protein	Retained intron	-	-	TSL:1
Usp42-205	ENSMUST00000155408.1	2359	No protein	Retained intron	-	-	TSL:1
Usp42-202	ENSMUST00000129606.1	710	No protein	Retained intron	-	-	TSL:3
Usp42-203	ENSMUST00000141225.1	654	No protein	lncRNA	-	-	TSL:3

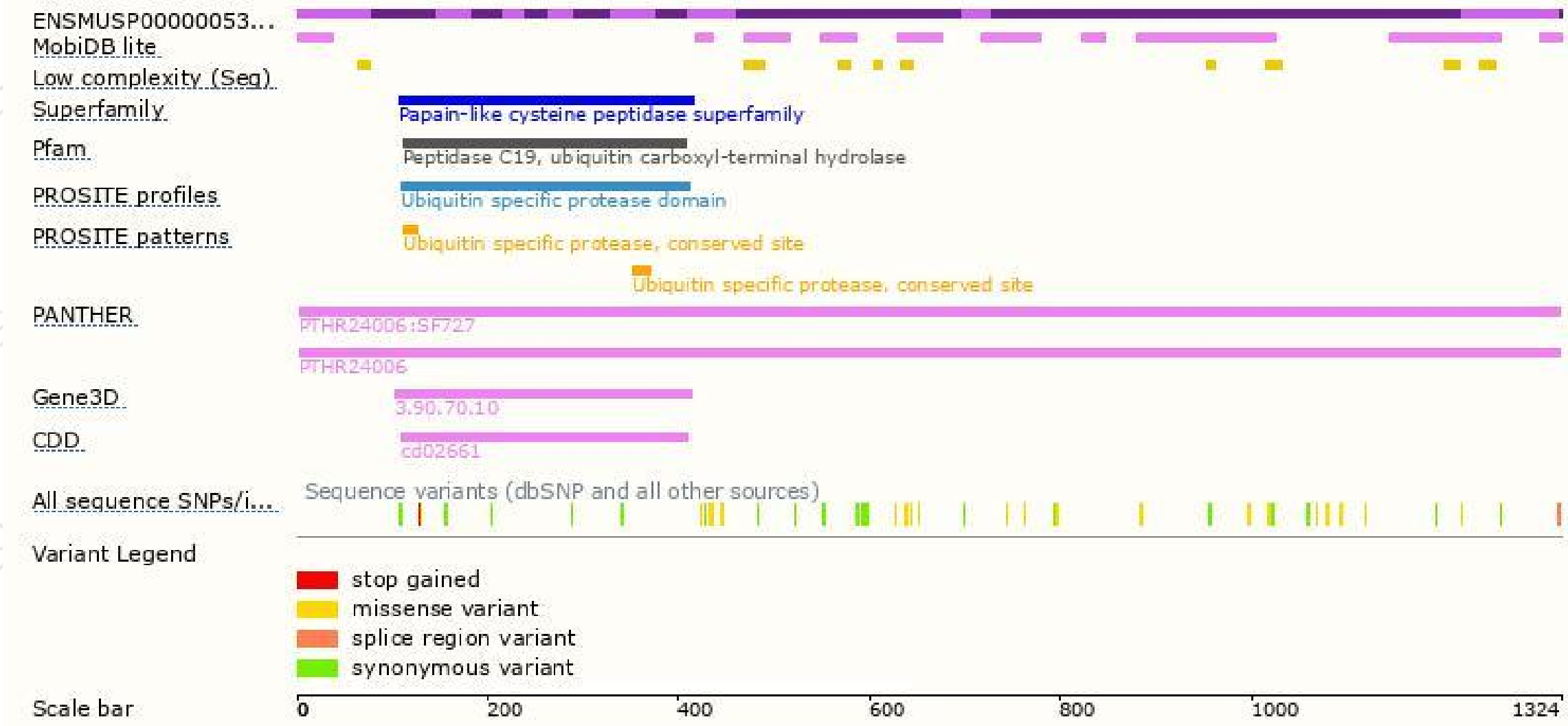
The strategy is based on the design of *Usp42-201* transcript,The transcription is shown below



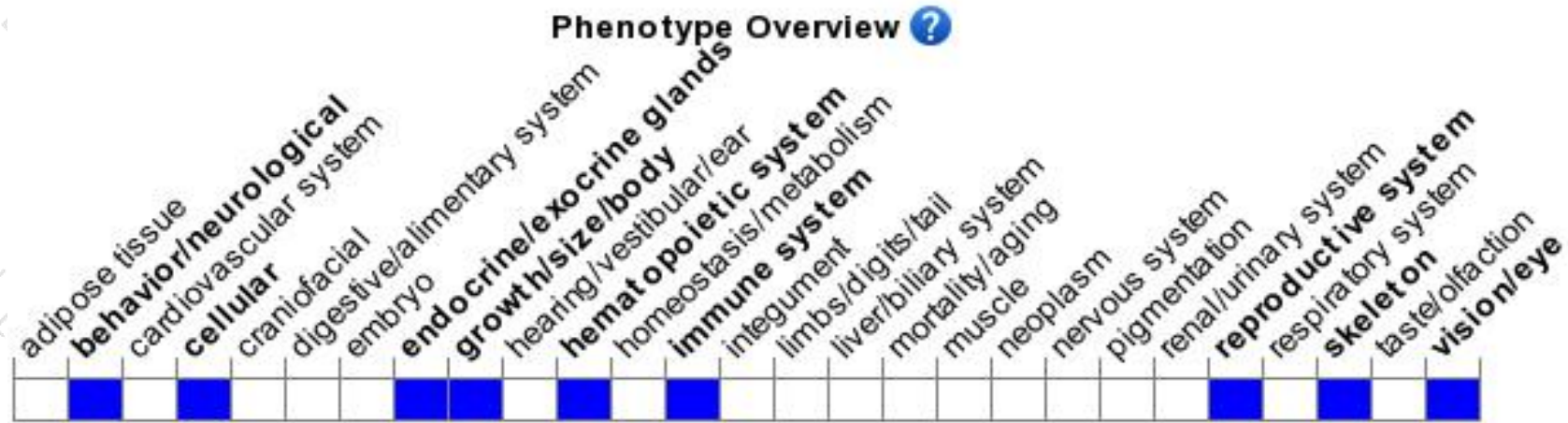
Genomic location distribution



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, Mice homozygous for a null allele exhibit fecundity and behavioral abnormalities, hyperactivity, increased T cell number, abnormal lens morphology, and cataracts. Males display oligozoospermia and testis degeneration.

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

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