

Usp50 Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Usp50

Project type

Cas9-CKO

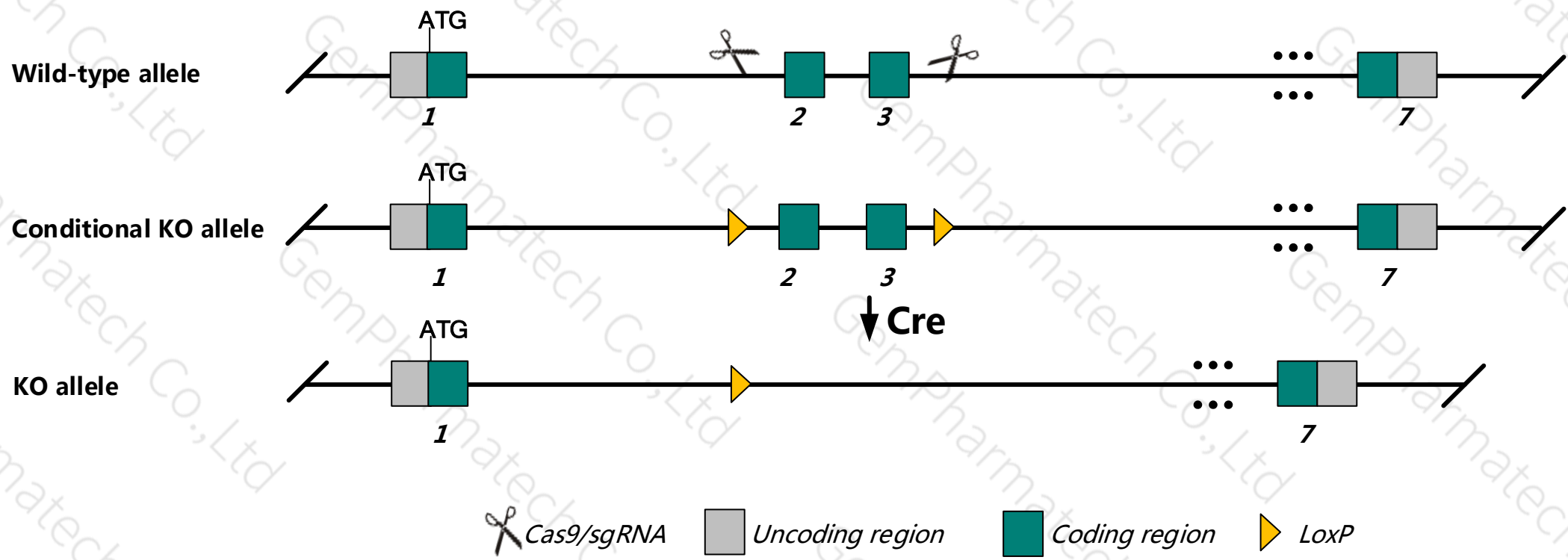
Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp50* gene. The schematic diagram is as follows:

Donor and CRISPR/Cas9 System



- The *Usp50* gene has 5 transcripts. According to the structure of *Usp50* gene, exon2-exon3 of *Usp50*-201 (ENSMUST00000028842.8) transcript is recommended as the knockout region. The region contains 379bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Usp50* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues or cell types.

- The *Usp50* gene is located on the Chr2. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Usp50 ubiquitin specific peptidase 50 [*Mus musculus* (house mouse)]

Gene ID: 75083, updated on 12-Aug-2018

Summary

Official Symbol Usp50 provided by [MGI](#)

Official Full Name ubiquitin specific peptidase 50 provided by [MGI](#)

Primary source [MGI:MGI:1922333](#)

See related [Ensembl:ENSMUSG000000027364](#) [Vega:OTTMUSG000000015955](#)

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 1700086G18Rik; 4930511O11Rik

Expression Restricted expression toward testis adult (RPKM 57.6) [See more](#)

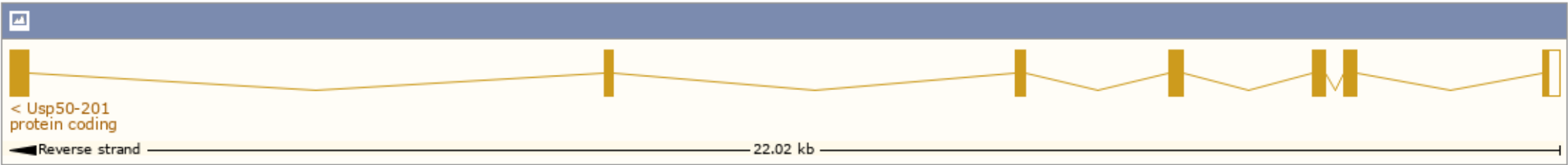
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

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

Show/hide columns (1 hidden)								Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags	
Usp50-201	ENSMUST00000028842.8	1361	390aa	Protein coding	CCDS16688	Q6P8X6	NM_029163 NP_083439	TSL:1	GENCODE basic APPRIS P1
Usp50-202	ENSMUST00000130356.2	1203	329aa	Protein coding	-	B0QZZ0	-	TSL:5	GENCODE basic
Usp50-203	ENSMUST00000136319.7	2129	271aa	Nonsense mediated decay	-	D6RCG3	-	TSL:2	
Usp50-204	ENSMUST00000145194.1	809	No protein	Processed transcript	-	-	-	TSL:3	
Usp50-205	ENSMUST00000151140.1	980	No protein	Retained intron	-	-	-	TSL:1	

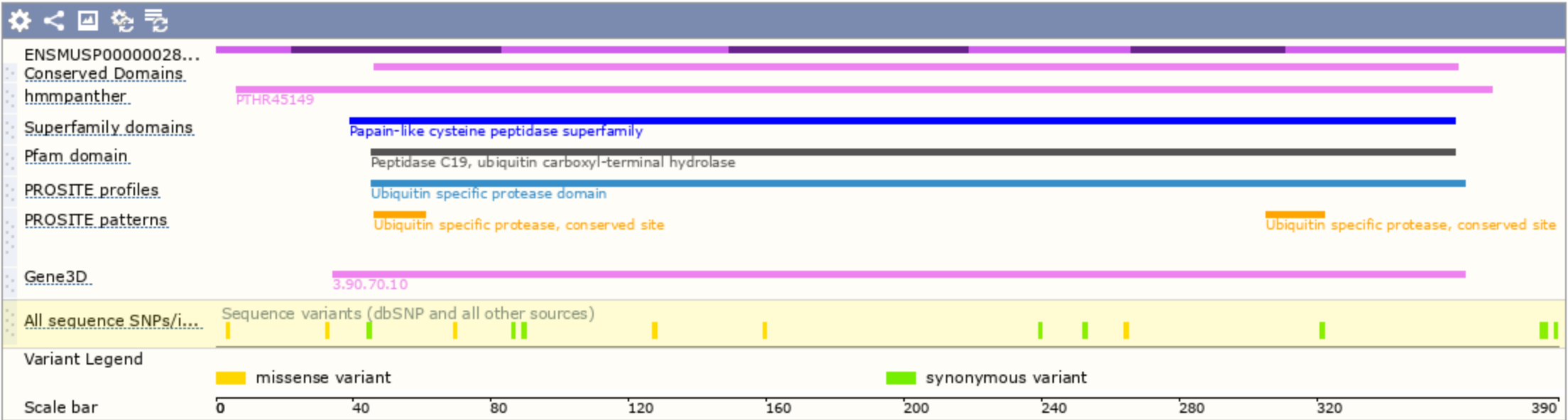
The strategy is based on the design of *Usp50-201* transcript, The transcription is shown below



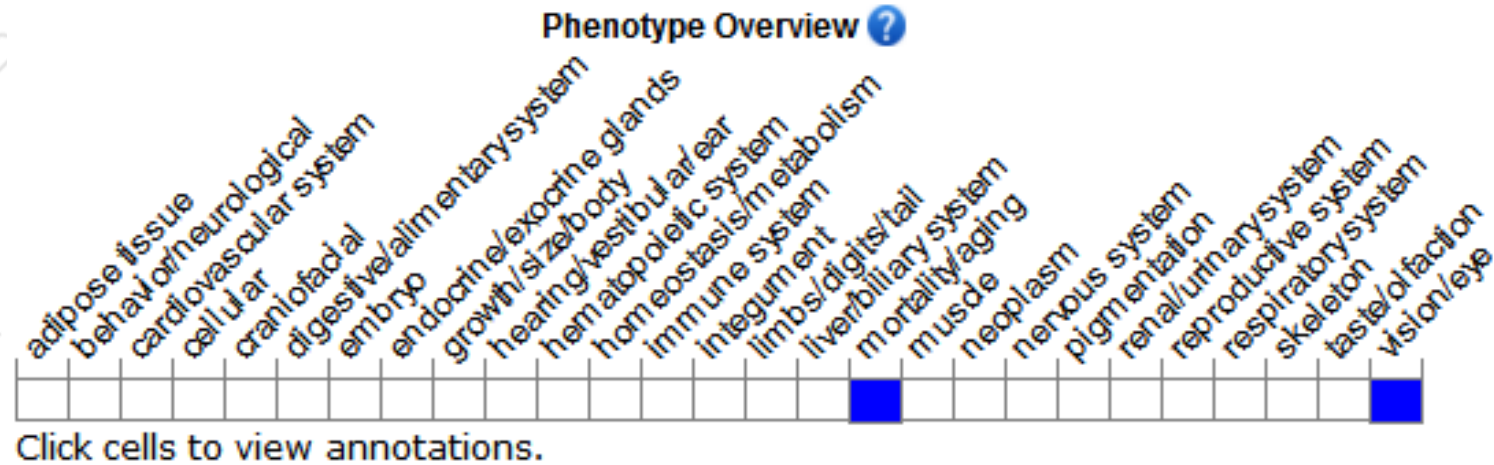
Genomic location distribution



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/>).

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