

Usp54 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Usp54

Project type

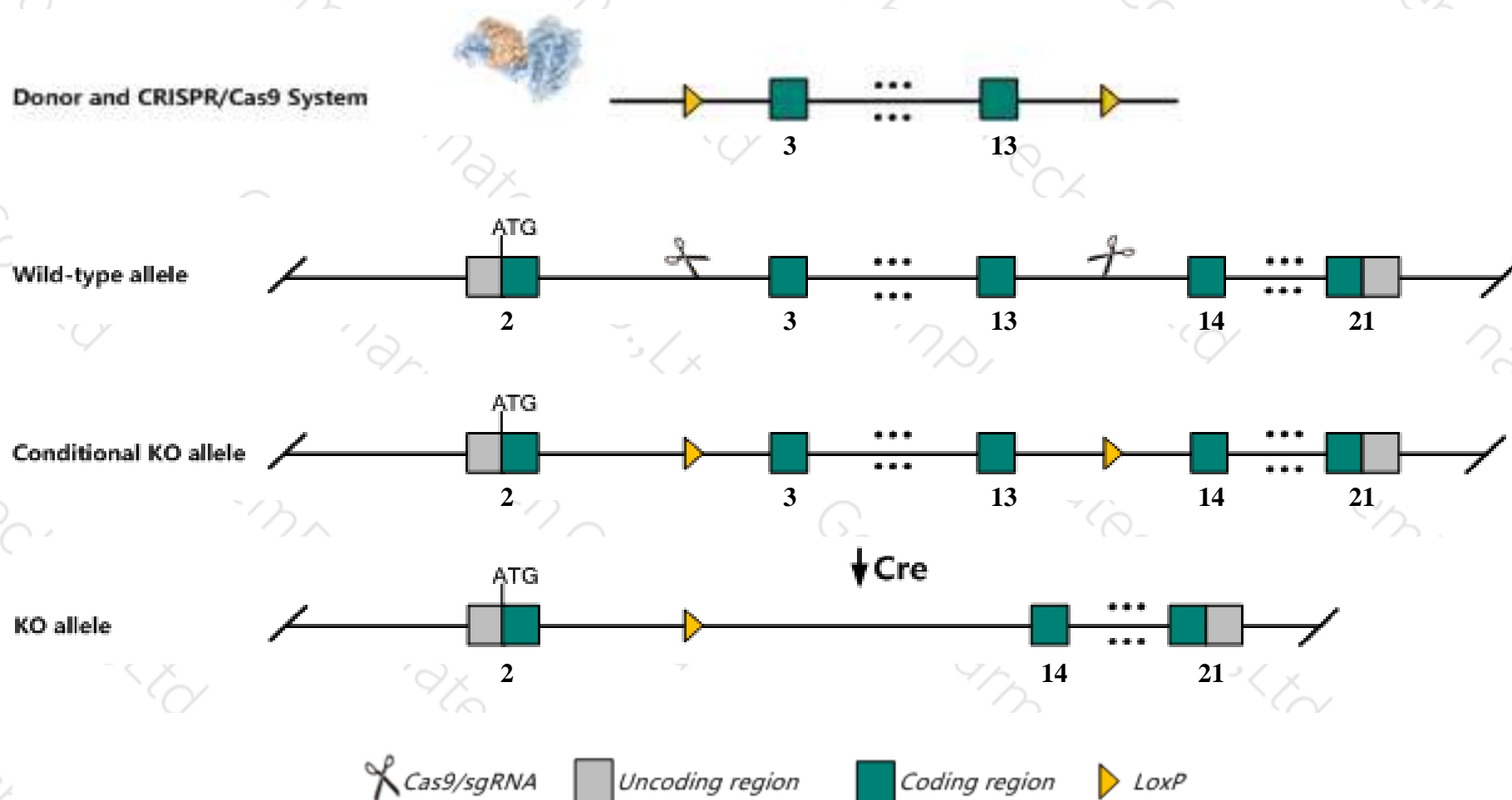
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp54* gene. The schematic diagram is as follows:



- The *Usp54* gene has 5 transcripts. According to the structure of *Usp54* gene, exon3-exon13 of *Usp54-202* (ENSMUST00000035340.13) transcript is recommended as the knockout region. The region contains 1739bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Usp54* 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 and cell types.

- The KO region is close to 3'UTR region of the *1810062O18Rik* gene. Knockout the region may affect the expression of *1810062O18Rik* gene.
- The *Usp54* gene is located on the Chr14. 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)

Usp54 ubiquitin specific peptidase 54 [*Mus musculus* (house mouse)]

Gene ID: 78787, updated on 12-Aug-2019

Summary



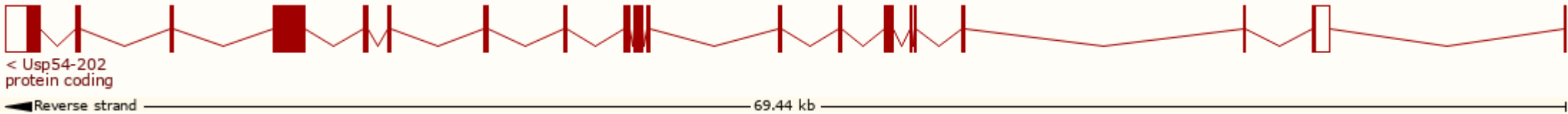
Official Symbol	Usp54 provided by MGI
Official Full Name	ubiquitin specific peptidase 54 provided by MGI
Primary source	MGI:MGI:1926037
See related	Ensembl:ENSMUSG00000034235
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI115571; 4930429G18Rik; C030002J06Rik
Expression	Ubiquitous expression in cerebellum adult (RPKM 6.3), cortex adult (RPKM 4.8) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

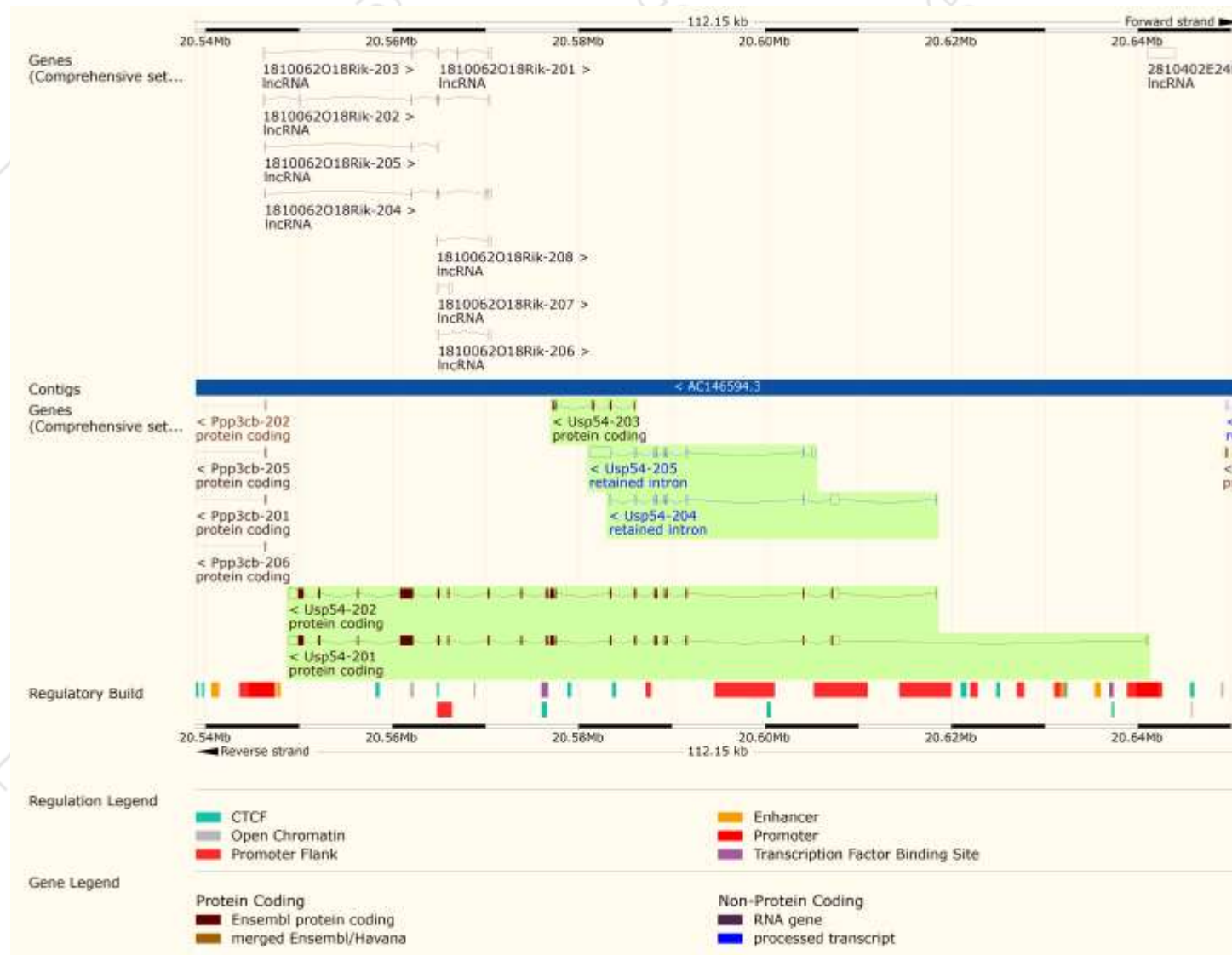
The gene has 5 transcripts,all transcripts are shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Translation ID ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Usp54-201	ENSMUST00000022356.11	6580	1588aa	ENSMUSP00000022356.4	Protein coding	CCDS26847	Q8BL06	TSL:5 Gencode basic APPRIS P1
Usp54-202	ENSMUST00000035340.13	6495	1588aa	ENSMUSP00000036214.7	Protein coding	CCDS26847	Q8BL06	TSL:5 Gencode basic APPRIS P1
Usp54-203	ENSMUST00000123287.1	666	222aa	ENSMUSP00000117503.1	Protein coding	-	F6ZXV1	CDS 5' and 3' incomplete TSL:3
Usp54-204	ENSMUST00000127342.1	1980	No protein	-	Retained intron	-	-	TSL:1
Usp54-205	ENSMUST00000143267.7	3423	No protein	-	Retained intron	-	-	TSL:1

The strategy is based on the design of *Usp54-202* transcript, The transcription is shown below



Genomic location distribution



Protein domain



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

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