Mtmr7 Cas9-CKO Strategy

Designer: Xueting Zhang
Reviewer:Yanhua Shen
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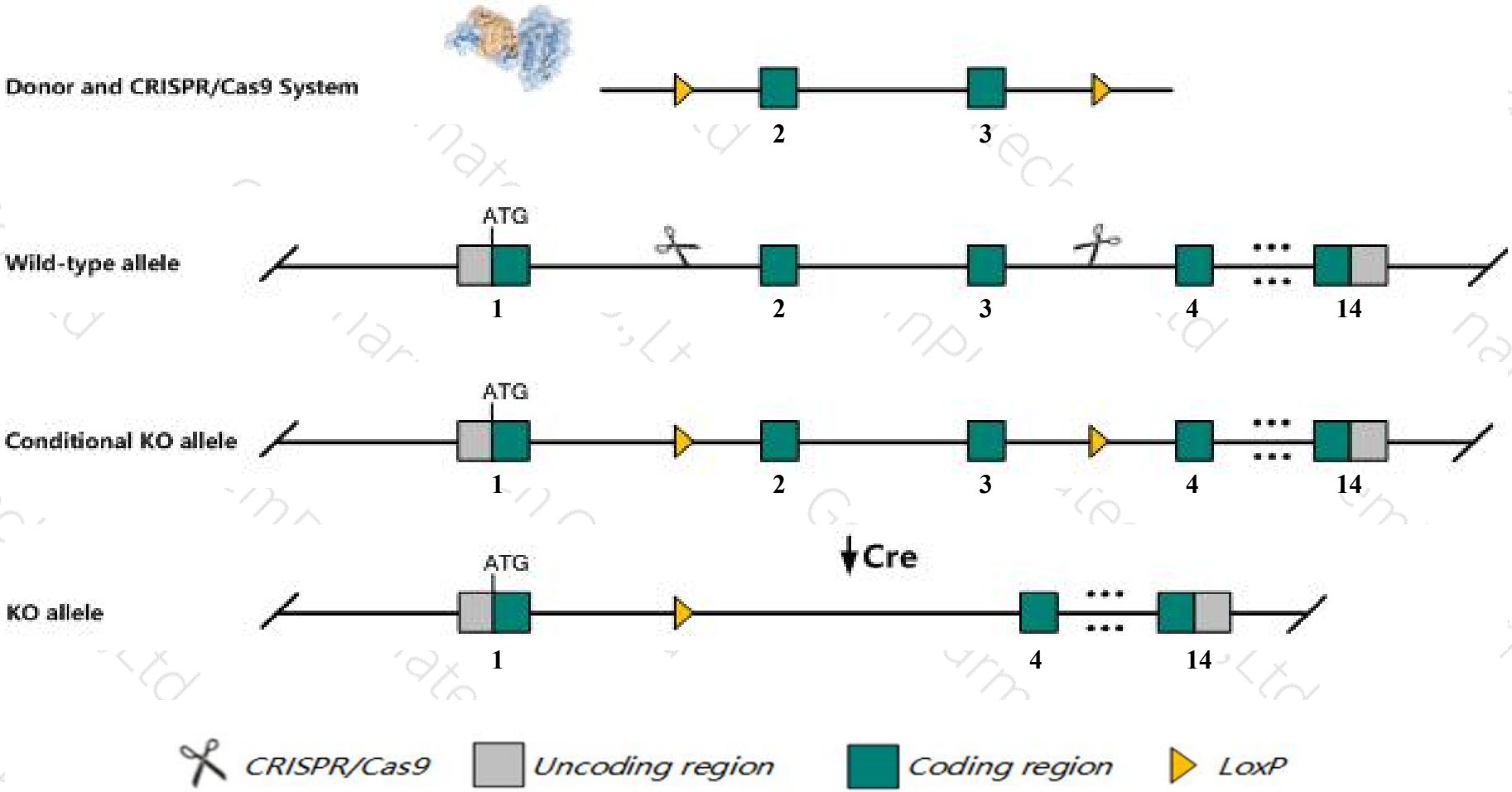
集萃药康 GemPharmatech
GemPharmatech Co.,Ltd

Project Overview

Project Name	***Mtmr7***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mtmr7* gene. The schematic diagram is as follows:



Technical routes

- The *Mtmr7* gene has 6 transcripts. According to the structure of *Mtmr7* gene, exon2-exon3 of *Mtmr7-202* (ENSMUST00000048898.16) transcript is recommended as the knockout region.The region contains 286bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Mtmr7* gene. The brief process is as follows:CRISPR/Cas9 system 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.

Notice

- The effect on transcript *Mtmr7*-203 is unknown.
- The *Mtmr7* gene is located on the Chr8. 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）

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Mtmr7 myotubularin related protein 7 [*Mus musculus* (house mouse)]

Gene ID: 54384, updated on 27-Feb-2020

Summary

Official Symbol	Mtmr7 provided by MGI
Official Full Name	myotubularin related protein 7 provided by MGI
Primary source	MGI:MGI:1891693
See related	Ensembl:ENSMUSG00000039431
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
Expression	Broad expression in cerebellum adult (RPKM 9.2), CNS E18 (RPKM 9.0) and 21 other tissues See more
Orthologs	human all

Genomic context

Location: 8; 8 A4

See Mtmr7 in Genome Data Viewer

Exon count: 17

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	8	NC_000074.6 (40548199..40634935, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	8	NC_000074.5 (41635513..41720146, complement)

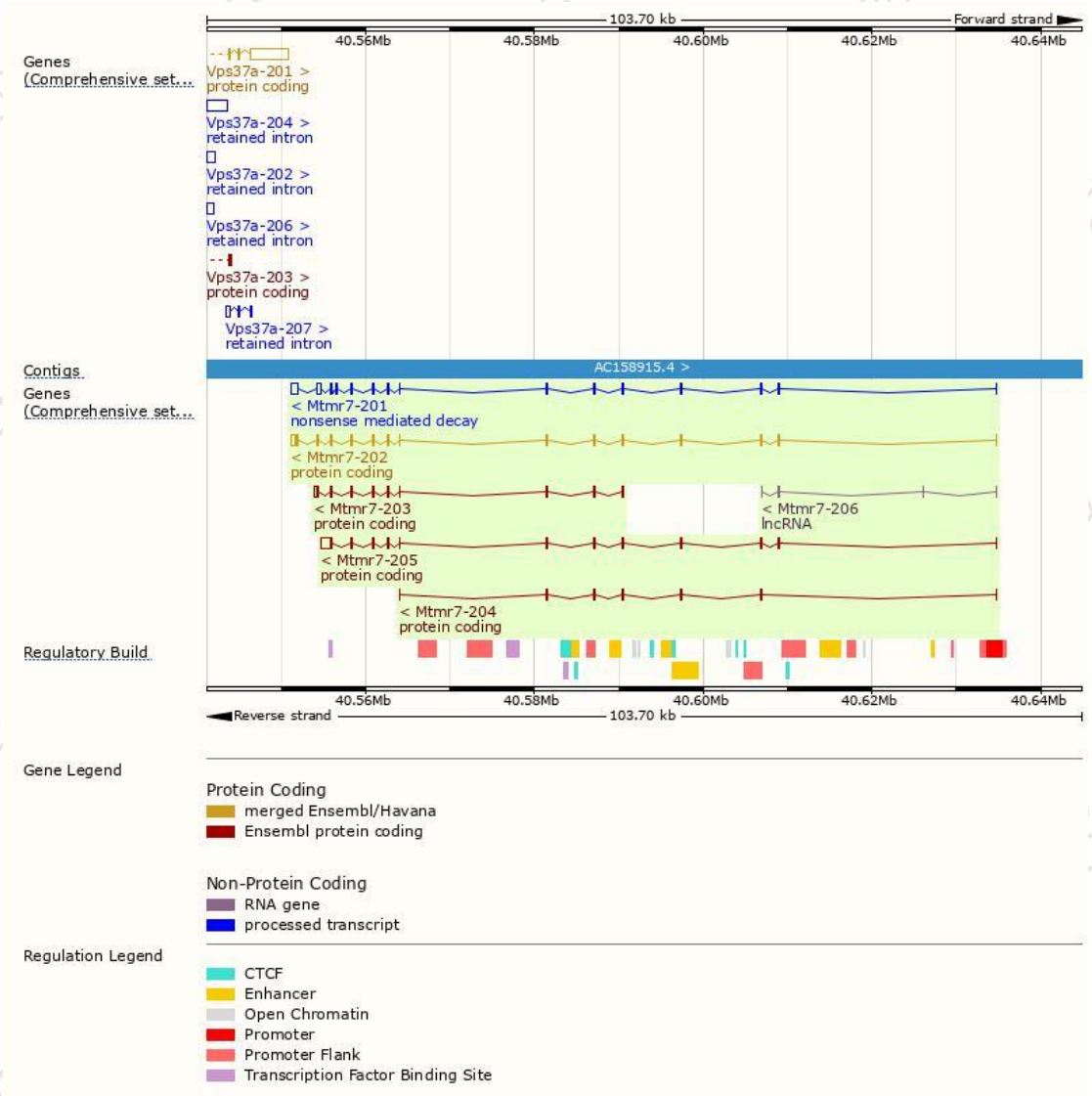
Transcript information（Ensembl）

The gene has 6 transcripts,all transcripts are shown below:

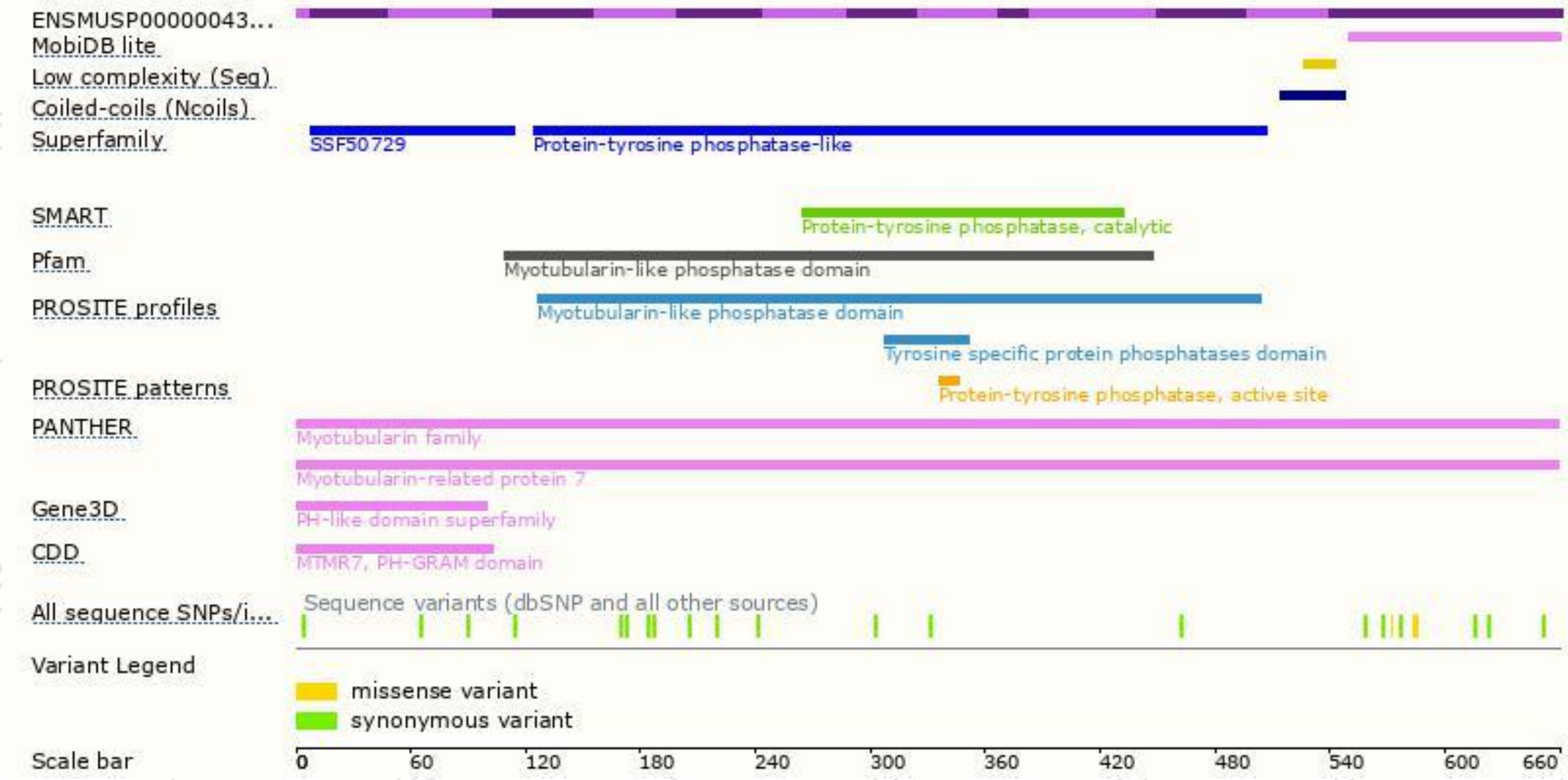
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mtmr7-202	ENSMUST00000048898.16	2488	660aa	Protein coding	CCDS40324	Q9Z2C9	TSL:1 GENCODE basic APPRIS P1
Mtmr7-205	ENSMUST00000174205.7	2679	498aa	Protein coding	-	G3V027	TSL:1 GENCODE basic
Mtmr7-203	ENSMUST00000173487.7	1541	424aa	Protein coding	-	G3UYZ2	CDS 5' incomplete TSL:5
Mtmr7-204	ENSMUST00000173957.1	819	260aa	Protein coding	-	G3UYB7	CDS 3' incomplete TSL:5
Mtmr7-201	ENSMUST00000048890.16	2799	467aa	Nonsense mediated decay	-	I6L9A6	TSL:1
Mtmr7-206	ENSMUST00000174537.1	359	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Mtmr7-202* transcript,The transcription is shown below

Genomic location distribution



Protein domain



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

Tel: 400-9660890

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