

Tpm2 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Tpm2

Project type

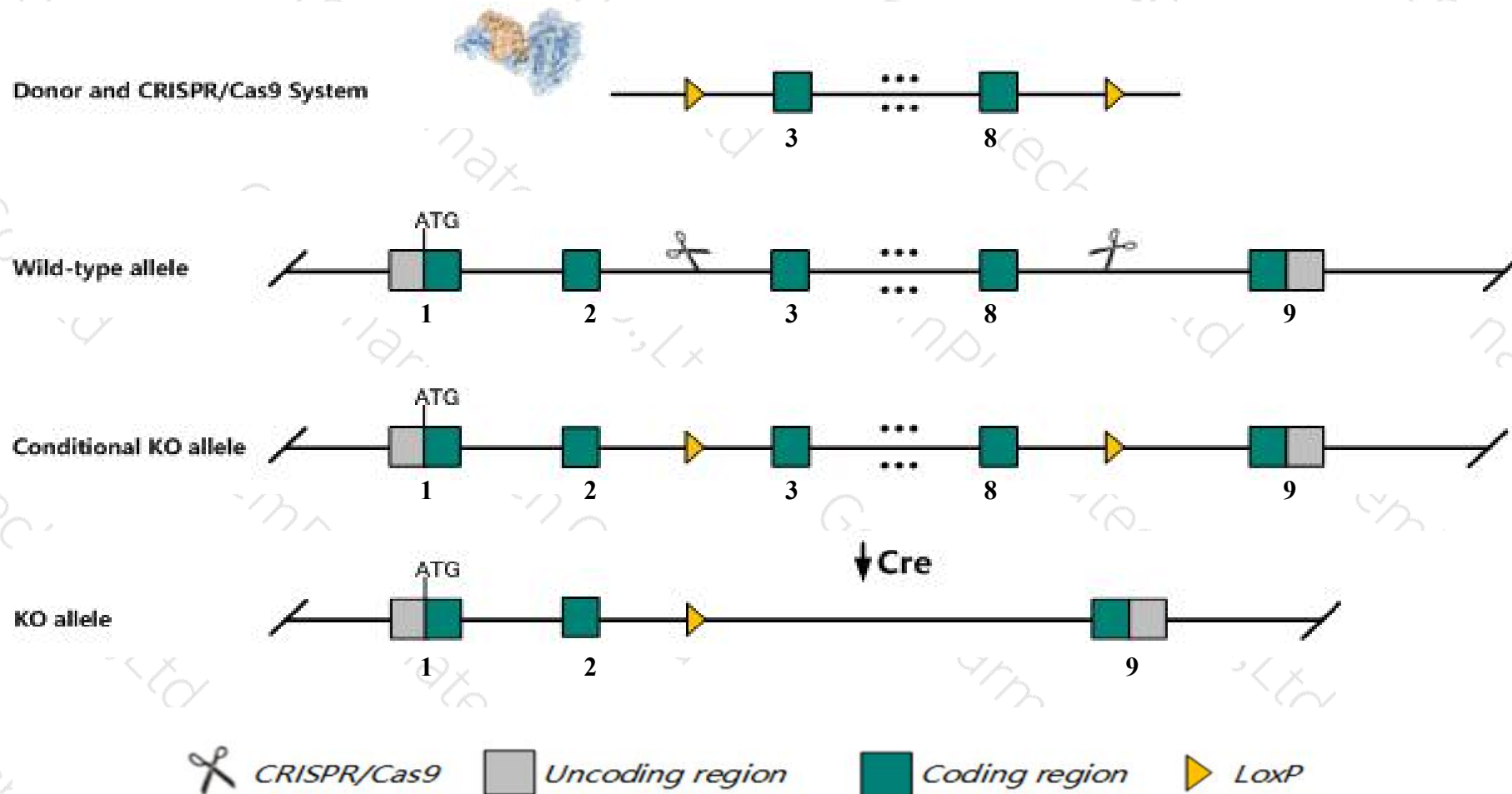
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tpm2* gene. The schematic diagram is as follows:



- The *Tpm2* gene has 6 transcripts. According to the structure of *Tpm2* gene, exon3-exon8 of *Tpm2-202* (ENSMUST00000107913.9) transcript is recommended as the knockout region. The region contains 532bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tpm2* 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 *Tpm2* gene is located on the Chr4. 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.

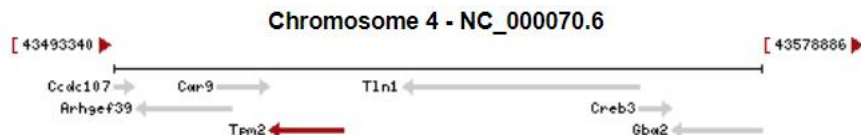
Gene information (NCBI)

Tpm2 tropomyosin 2, beta [*Mus musculus* (house mouse)]

Gene ID: 22004, updated on 14-Nov-2019

Summary

Official Symbol	Tpm2 provided by MGI
Official Full Name	tropomyosin 2, beta provided by MGI
Primary source	MGI:MGI:98810
See related	Ensembl:ENSMUSG00000028464
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Tpm-2; Trop-2
Summary	This gene belongs to the tropomyosin family which encodes proteins that bind to actin filaments and stabilize them by regulating access to actin modifying proteins. The encoded protein is a high molecular weight tropomyosin expressed in slow skeletal muscle. In humans, mutations in this gene are associated with nemaline myopathy, cap disease and distal arthrogyrosis syndromes. Alternative splicing of this gene results in multiple transcript variants encoding different isoforms. [provided by RefSeq, Apr 2013]
Expression	Biased expression in bladder adult (RPKM 555.0), mammary gland adult (RPKM 100.5) and 4 other tissues See more
Orthologs	human all

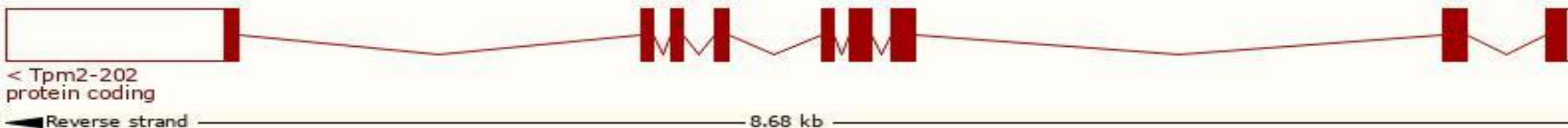


Transcript information (Ensembl)

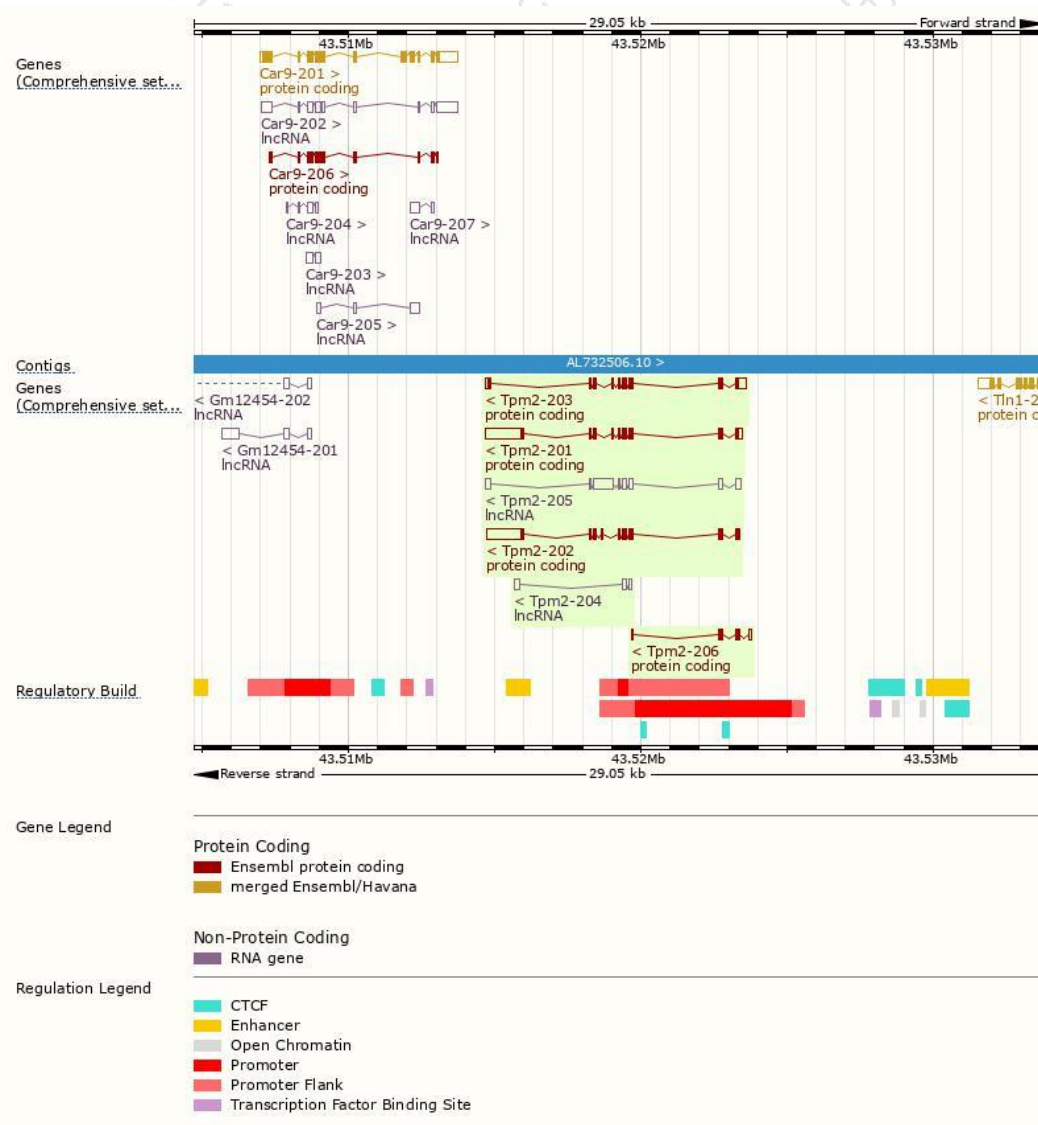
The gene has 6 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Tpm2-202	ENSMUST00000107913.9	2098	284aa	ENSMUSP00000103546.3	Protein coding	CCDS18100	P58774	TSL:1 GENCODE basic APPRIS P3
Tpm2-203	ENSMUST00000107914.9	1164	284aa	ENSMUSP00000103547.3	Protein coding	CCDS71374	P58774 Q6PJ18	TSL:1 GENCODE basic APPRIS ALT1
Tpm2-201	ENSMUST00000030184.11	2175	284aa	ENSMUSP00000030184.5	Protein coding	-	A2AIM4	TSL:5 GENCODE basic APPRIS ALT1
Tpm2-206	ENSMUST00000150592.1	401	105aa	ENSMUSP00000119908.1	Protein coding	-	A2AIM5	CDS 3' incomplete TSL:3
Tpm2-205	ENSMUST00000150262.7	1545	No protein	-	lncRNA	-	-	TSL:2
Tpm2-204	ENSMUST00000133355.1	337	No protein	-	lncRNA	-	-	TSL:5

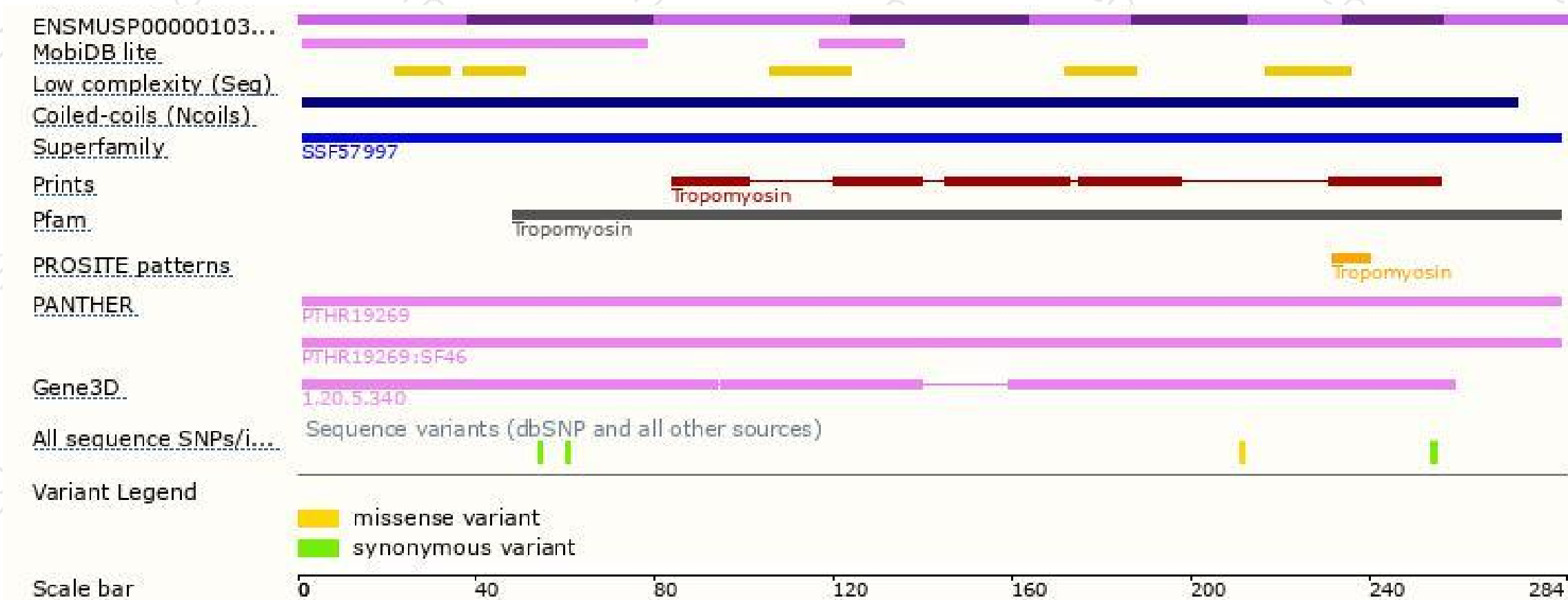
The strategy is based on the design of *Tpm2-202* transcript, The transcription is shown below



Genomic location distribution



Protein domain



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

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