

***Tmtc1* Cas9-CKO Strategy**

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Project Overview

Project Name

Tmtc1

Project type

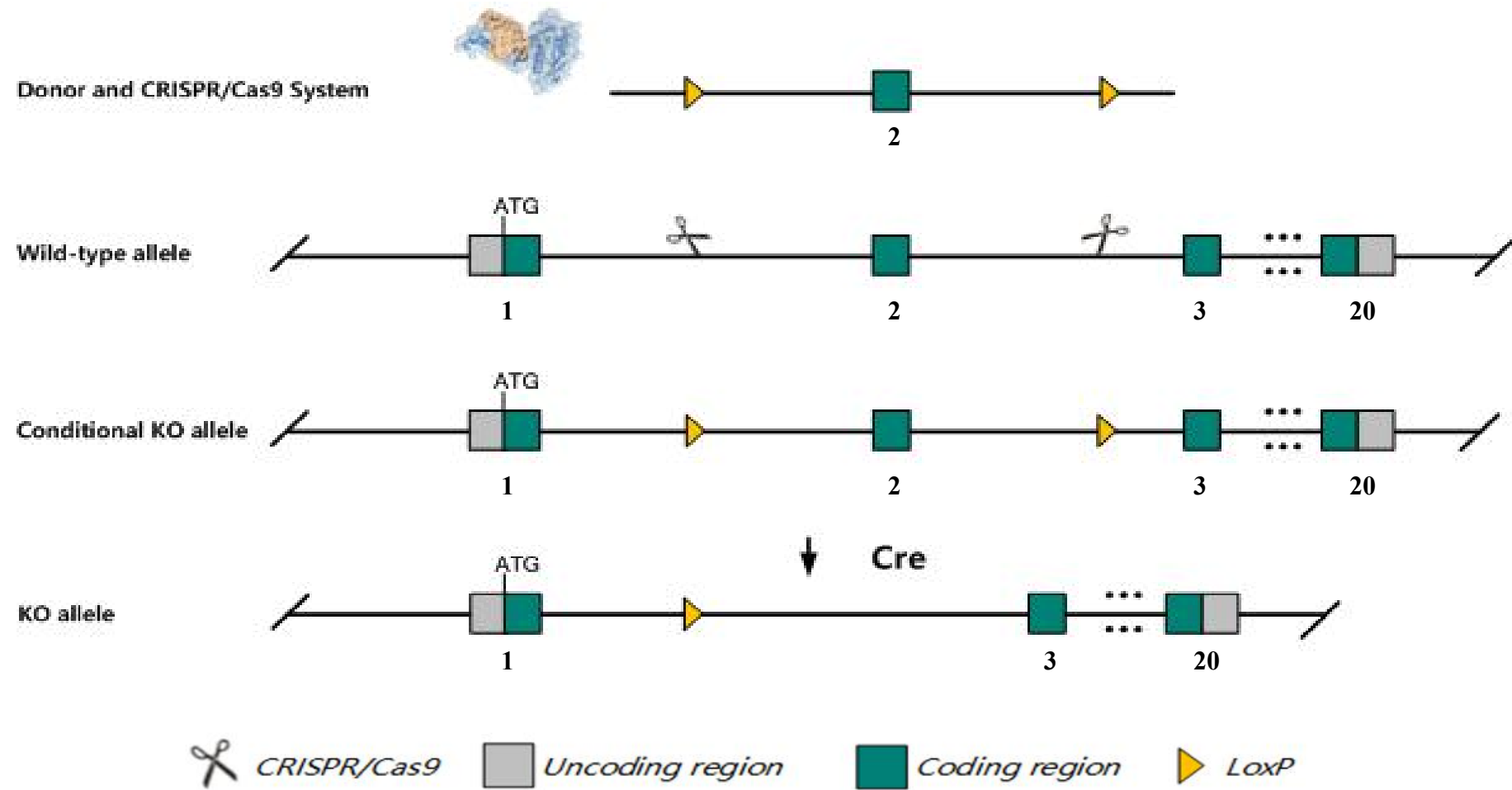
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tmtc1* gene. The schematic diagram is as follows:



The *Tmtc1* gene has 4 transcripts. According to the structure of *Tmtc1* gene, exon2 of *Tmtc1-201*(ENSMUST00000060095.15) transcript is recommended as the knockout region. The region contains 178bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Tmtc1* 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.

The *Tmtc1* gene is located on the Chr6. 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.

Tmtc1 transmembrane and tetratricopeptide repeat containing 1 [Mus musculus (house mouse)]

Gene ID: 387314, updated on 17-Dec-2020

Summary

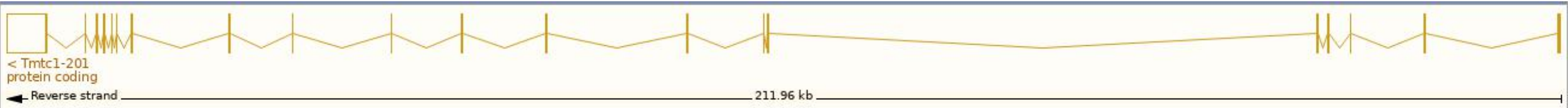
Official Symbol	Tmtc1 provided by MGI
Official Full Name	transmembrane and tetratricopeptide repeat containing 1 provided by MGI
Primary source	MGI:MGI:3039590
See related	Ensembl:ENSMUSG00000030306
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Arg99, BC023818
Expression	Broad expression in heart adult (RPKM 8.8), frontal lobe adult (RPKM 6.6) and 22 other tissues See more
Orthologs	human all

Transcript information Ensembl

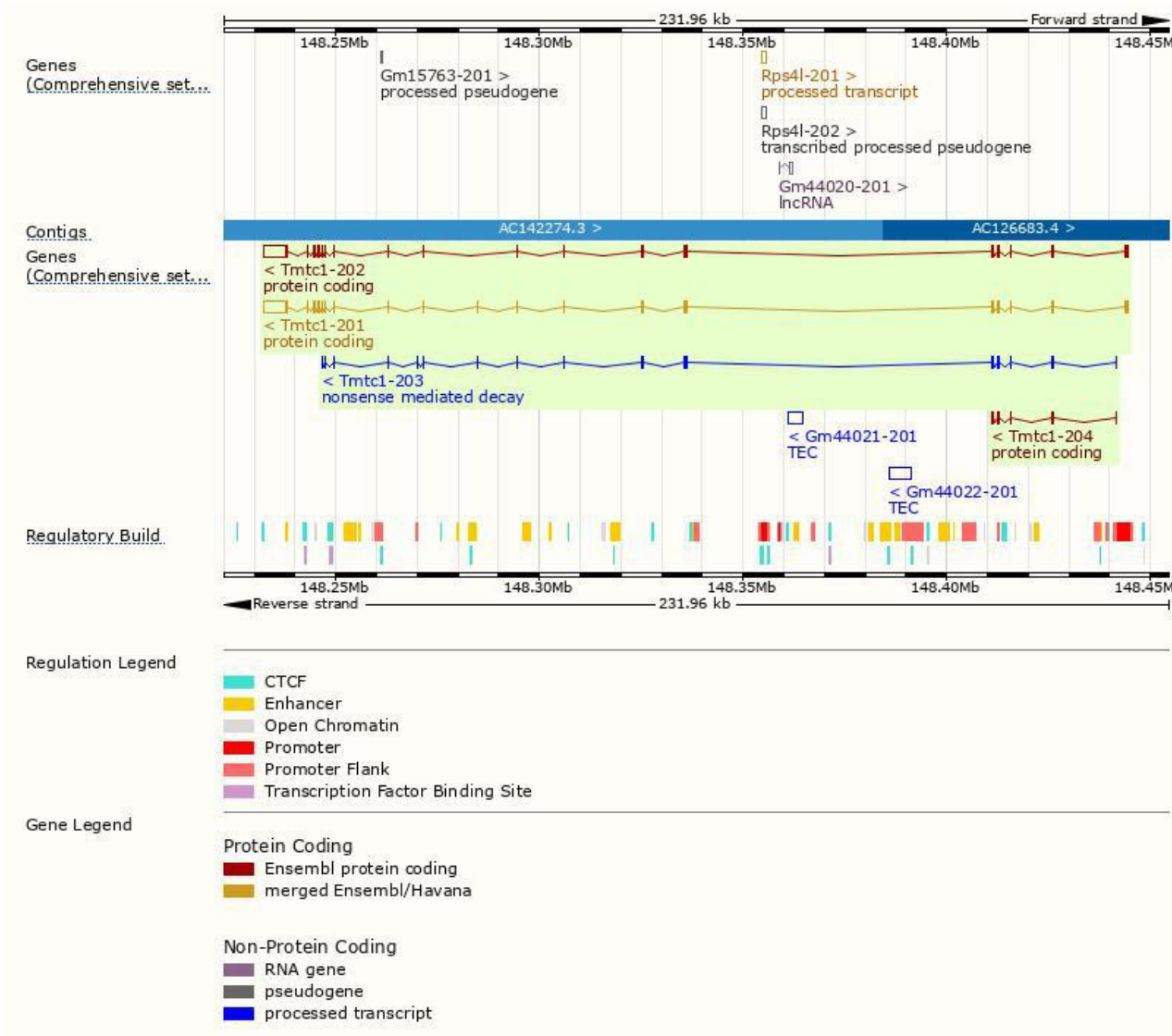
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tmtc1-201	ENSMUST00000060095.15	8383	942aa	Protein coding	CCDS51960		TSL:1 , GENCODE basic , APPRIS P1 ,
Tmtc1-202	ENSMUST00000100772.10	8269	904aa	Protein coding	CCDS85189		TSL:2 , GENCODE basic ,
Tmtc1-204	ENSMUST00000203991.2	703	208aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Tmtc1-203	ENSMUST00000140797.4	2245	570aa	Nonsense mediated decay	-		TSL:5 ,

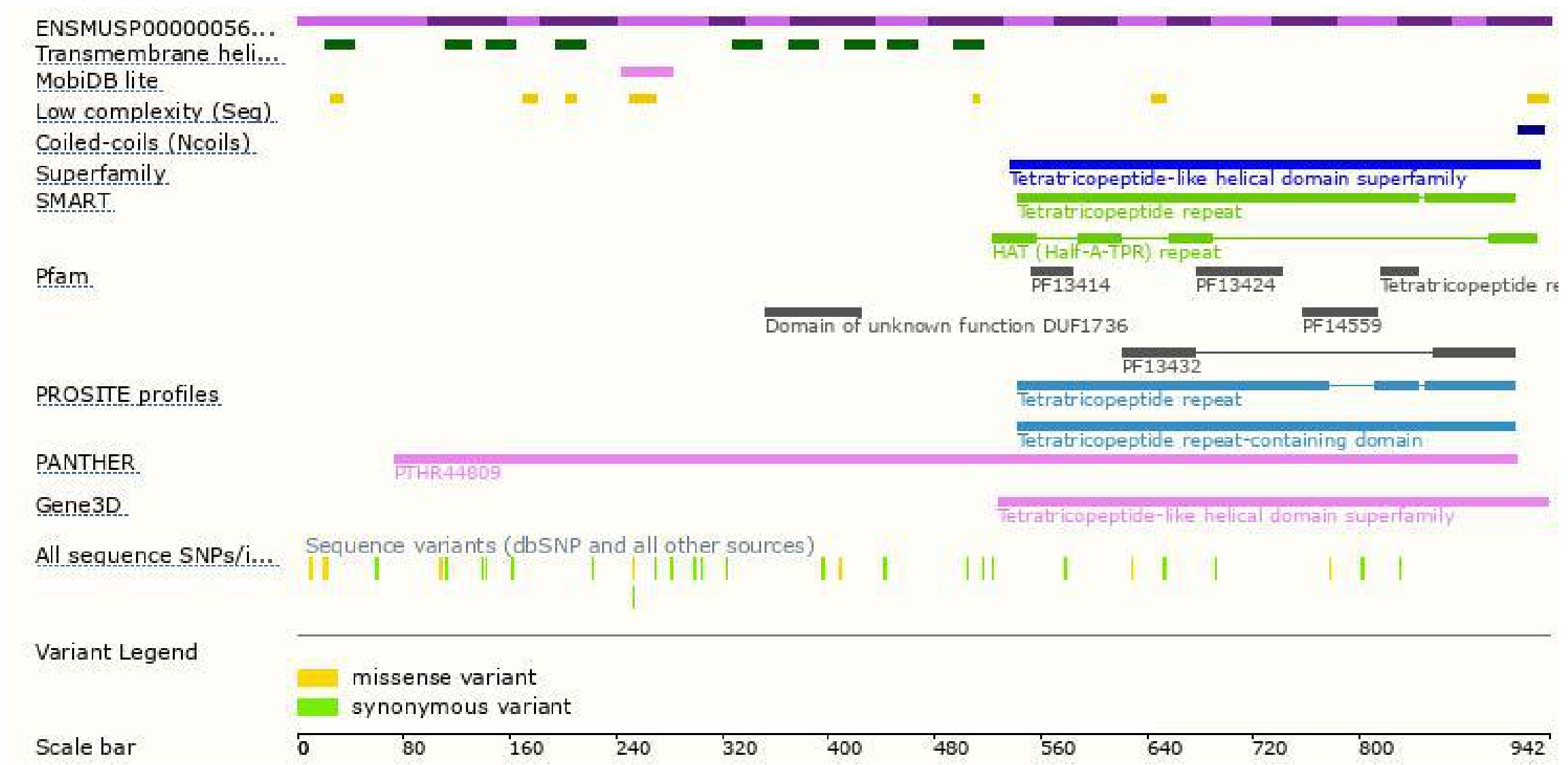
The strategy is based on the design of *Tmtc1-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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