

***Trim54* Cas9-KO Strategy**

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Project Overview

Project Name

Trim54

Project type

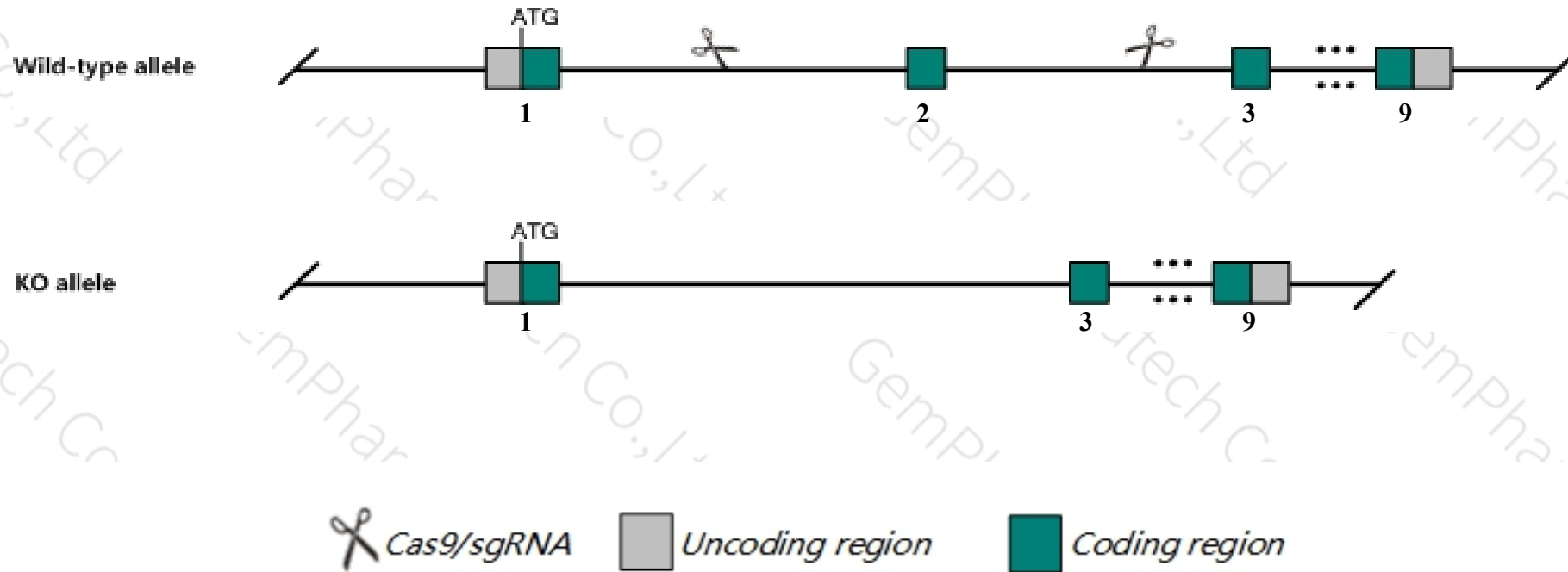
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Trim54* gene. The schematic diagram is as follows:



- The *Trim54* gene has 2 transcripts. According to the structure of *Trim54* gene, exon2 of *Trim54-201* (ENSMUST00000013771.14) transcript is recommended as the knockout region. The region contains 173bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Trim54* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit normal cardiac function but are prone to cardiac rupture after acute myocardial infarction.
- The *Trim54* gene is located on the Chr5. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Trim54 tripartite motif-containing 54 [Mus musculus (house mouse)]

Gene ID: 58522, updated on 19-Mar-2019

Summary



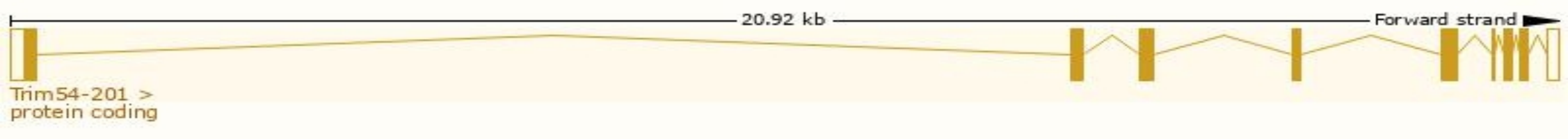
Official Symbol	Trim54 provided by MGI
Official Full Name	tripartite motif-containing 54 provided by MGI
Primary source	MGI:MGI:1889623
See related	Ensembl:ENSMUSG00000062077
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930486E09Rik, 4930566I02Rik, MURF, MURF-3, MuRF3, Rnf30
Expression	Biased expression in heart adult (RPKM 63.3), mammary gland adult (RPKM 10.6) and 2 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

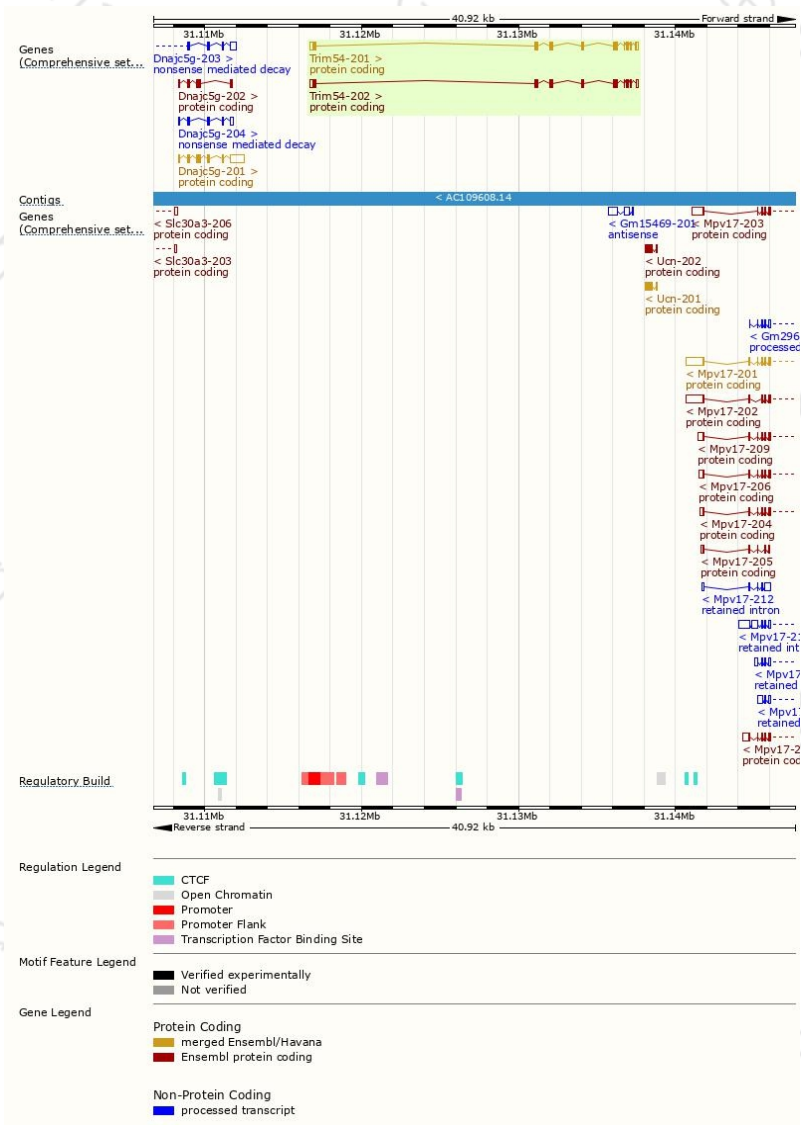
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Trim54-201	ENSMUST00000013771.14	1434	366aa	Protein coding	CCDS19173	Q9ERP3	TSL:1 GENCODE basic APPRIS P2
Trim54-202	ENSMUST000000202769.1	1408	364aa	Protein coding	-	E9QAT9	TSL:5 GENCODE basic APPRIS ALT 1

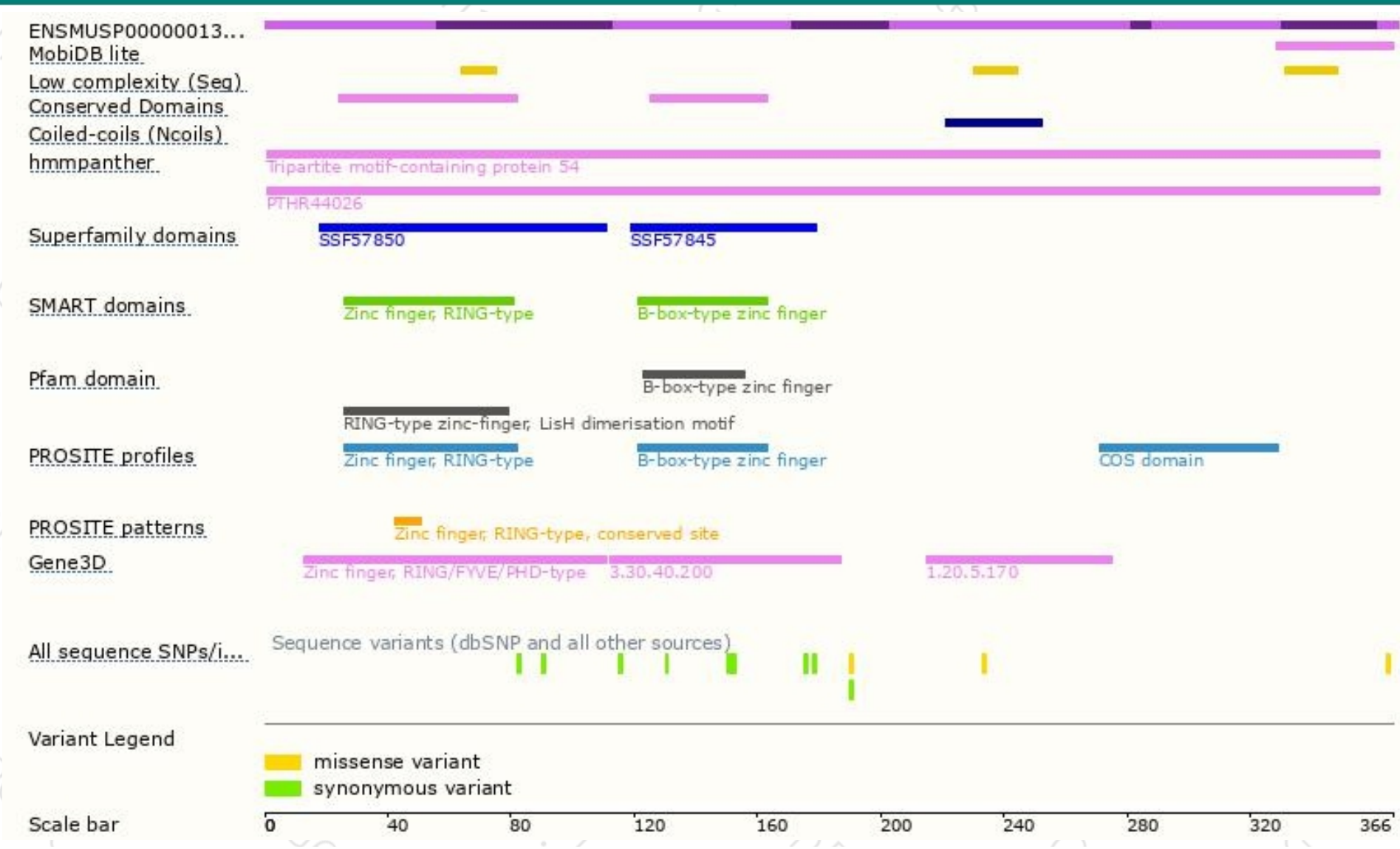
The strategy is based on the design of *Trim54-201* transcript,The transcription is shown below



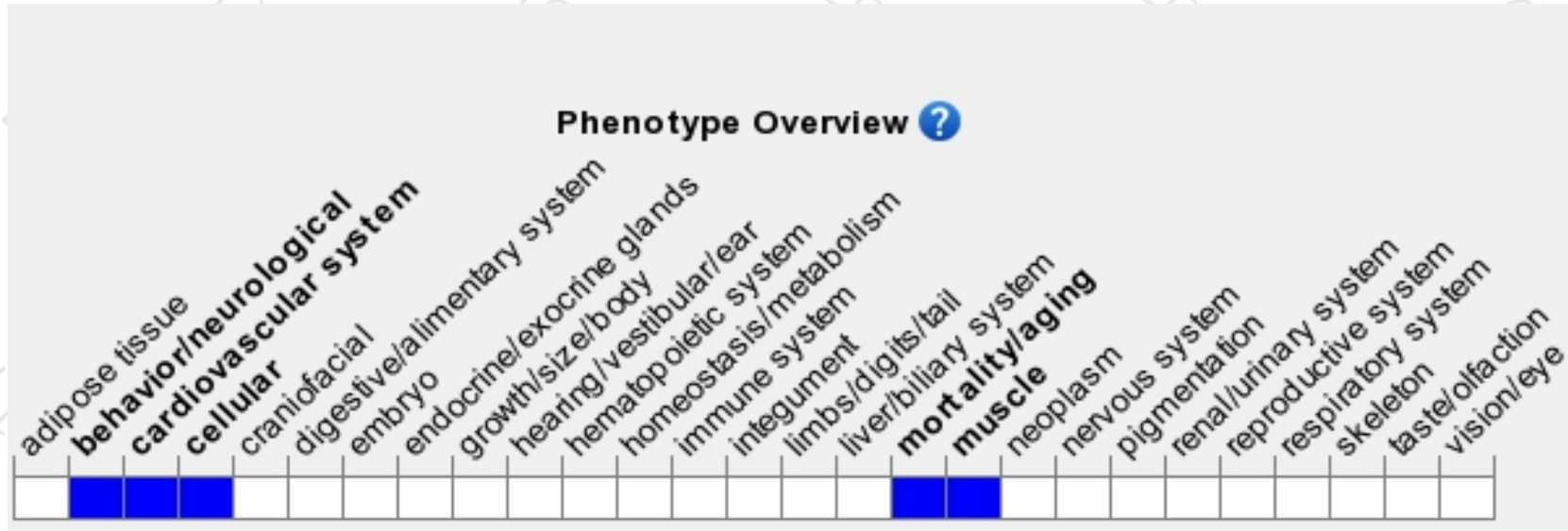
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for a knock-out allele exhibit normal cardiac function but are prone to cardiac rupture after acute myocardial infarction.

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

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