

Traf1 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2019-9-21

Project Overview

Project Name

Traf1

Project type

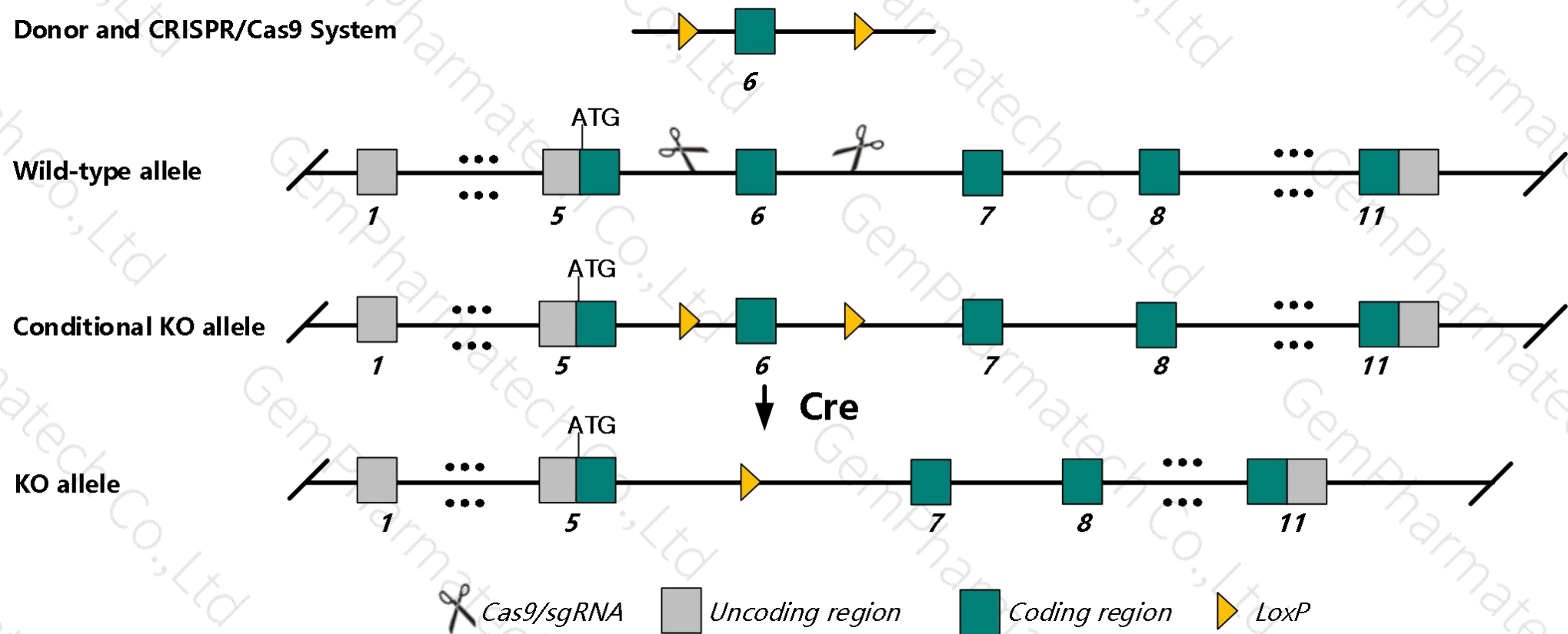
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Traf1* gene. The schematic diagram is as follows:



- The *Traf1* gene has 9 transcripts. According to the structure of *Traf1* gene, exon6 of *Traf1*-202 (ENSMUST00000113064.7) transcript is recommended as the knockout region. The region contains 85bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Traf1* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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.

- According to the existing MGI data, Homozygous null mice exhibit abnormal T cell functionality.
- The *Traf1* gene is located on the Chr2. 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)

Traf1 TNF receptor-associated factor 1 [*Mus musculus* (house mouse)]

Gene ID: 22029, updated on 16-Sep-2019

Summary



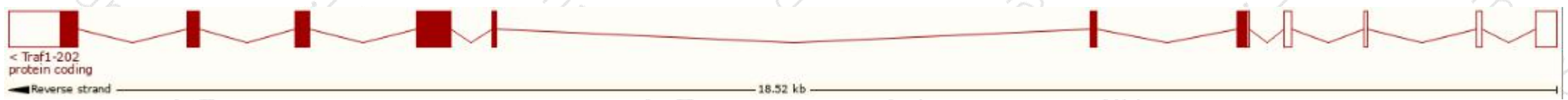
Official Symbol	Traf1 provided by MGI
Official Full Name	TNF receptor-associated factor 1 provided by MGI
Primary source	MGI:MGI:101836
See related	Ensembl:ENSMUSG00000026875
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4732496E14Rik
Expression	Biased expression in spleen adult (RPKM 9.8), thymus adult (RPKM 8.2) and 13 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

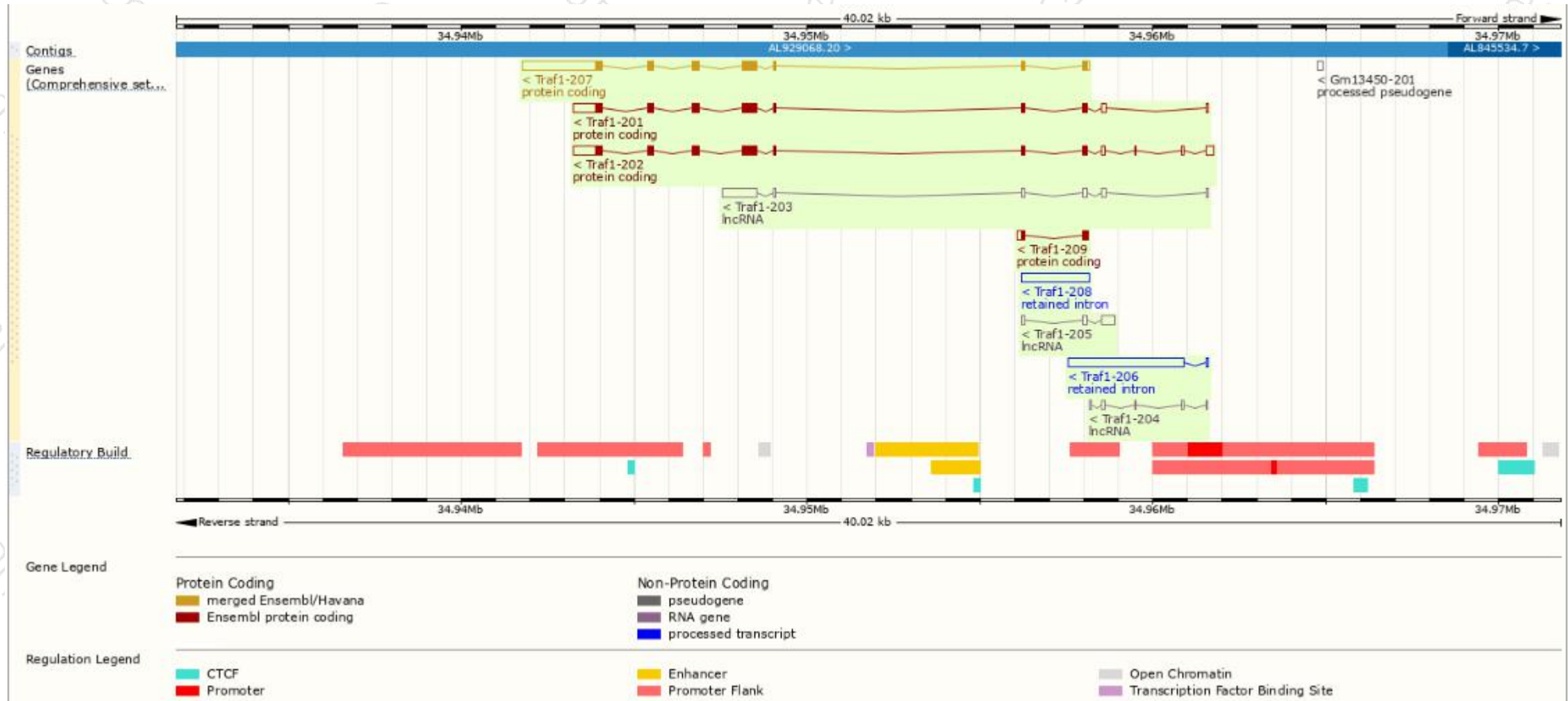
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Traf1-207	ENSMUST00000172159.7	3436	409aa	Protein coding	CCDS15956	P39428	TSL:1 GENCODE basic APPRIS P1
Traf1-202	ENSMUST00000113064.7	2325	409aa	Protein coding	CCDS15956	P39428	TSL:1 GENCODE basic APPRIS P1
Traf1-201	ENSMUST00000028234.11	2069	409aa	Protein coding	CCDS15956	P39428	TSL:5 GENCODE basic APPRIS P1
Traf1-209	ENSMUST00000201690.1	386	71aa	Protein coding	-	A0A0J9YUH9	TSL:3 GENCODE basic
Traf1-206	ENSMUST00000156479.2	3415	No protein	Retained intron	-	-	TSL:2
Traf1-208	ENSMUST00000201335.1	1980	No protein	Retained intron	-	-	TSL:NA
Traf1-203	ENSMUST00000129131.7	1508	No protein	lncRNA	-	-	TSL:5
Traf1-205	ENSMUST00000141238.1	628	No protein	lncRNA	-	-	TSL:5
Traf1-204	ENSMUST00000135870.1	319	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Traf1-202* transcript,The transcription is shown below



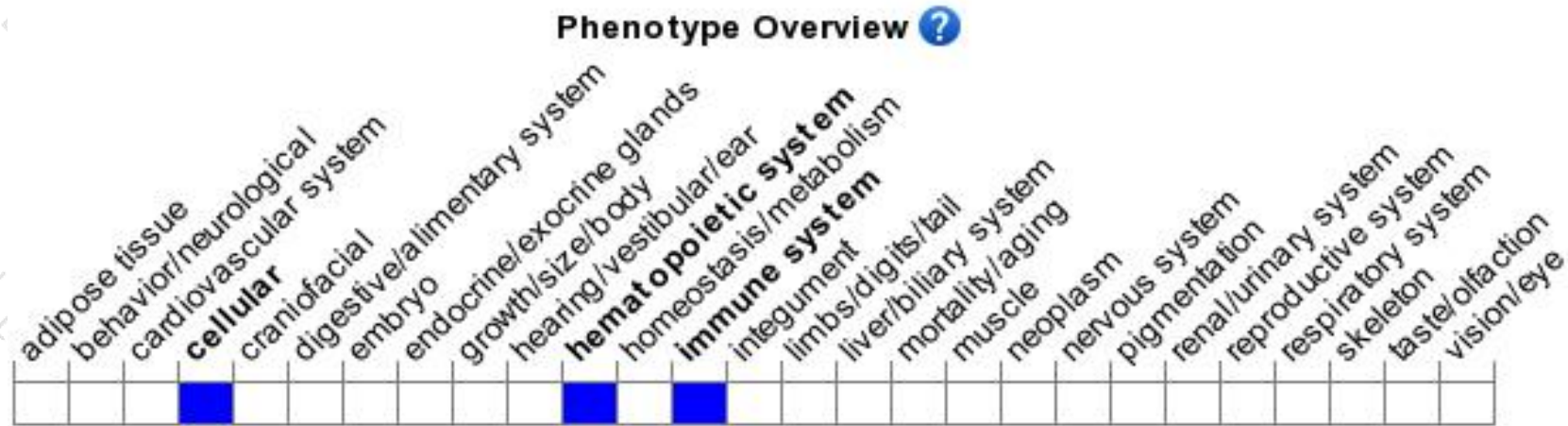
Genomic location distribution



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, Homozygous null mice exhibit abnormal T cell functionality.

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

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