

Traf7 Cas9-CKO Strategy

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Design Date: 2023-12-19

Overview

Target Gene Name

- Traf7

Project Type

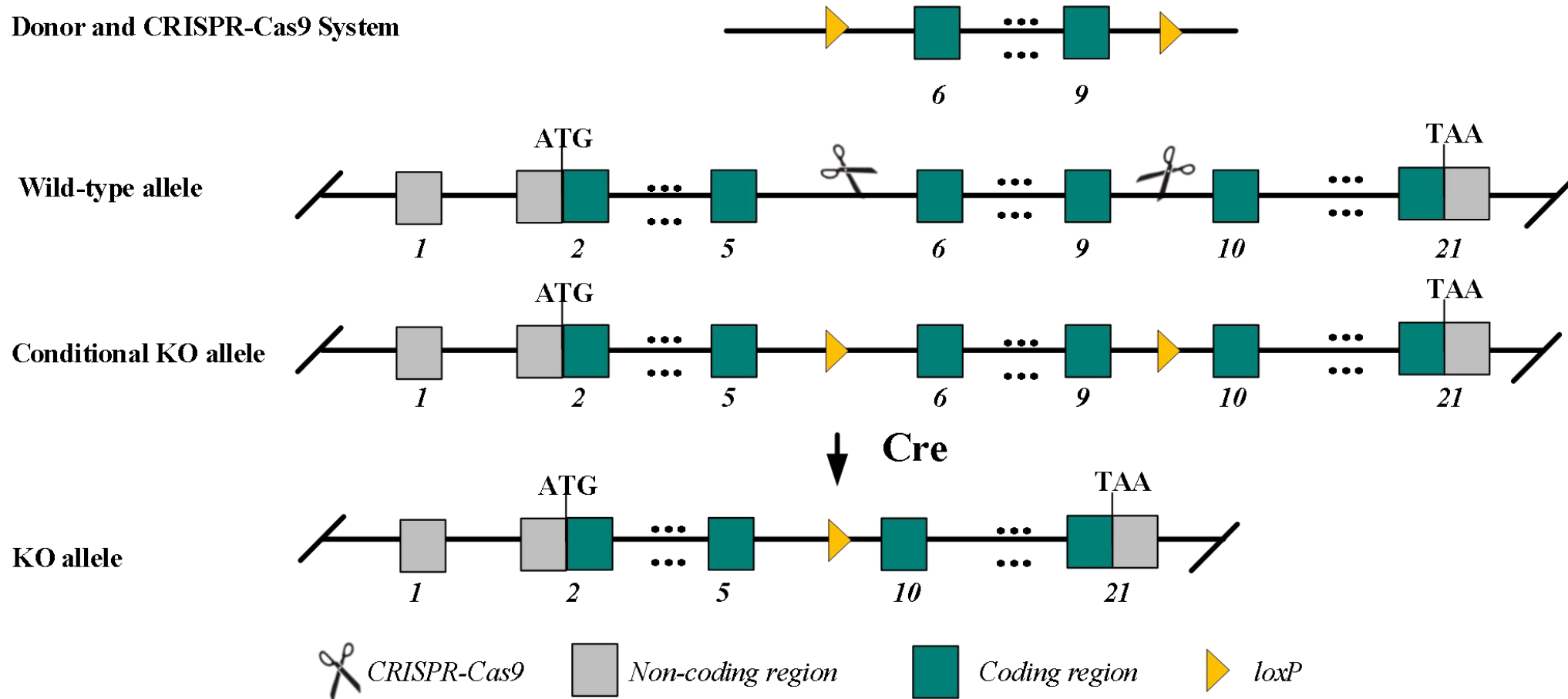
- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy

Donor and CRISPR-Cas9 System



Schematic representation of CRISPR-Cas9 engineering used to edit the *Traf7* gene.

Technical Information

- The *Traf7* gene has 26 transcripts. According to the structure of *Traf7* gene, exon 6-exon 9 of *Traf7*-215 (ENSMUST00000176652.8) transcript is recommended as the knockout region. The region contains 446bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Traf7* 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- 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.

Gene Information

Traf7 TNF receptor-associated factor 7 [*Mus musculus* (house mouse)]

Gene ID: 224619, updated on 23-Nov-2023

[Download Datasets](#)

Summary

Official Symbol	Traf7 provided by MGI
Official Full Name	TNF receptor-associated factor 7 provided by MGI
Primary source	MGI:MGI:3042141
See related	Ensembl:ENSMUSG00000052752 AllianceGenome:MGI:3042141
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	RFWD1
Summary	Predicted to enable ubiquitin-protein transferase activity. Acts upstream of or within several processes, including cellular response to interleukin-6; negative regulation of transcription by RNA polymerase II; and positive regulation of protein sumoylation. Located in cytosol; nucleus; and perinuclear region of cytoplasm. Is expressed in genitourinary system and pancreas epithelium. Orthologous to human TRAF7 (TNF receptor associated factor 7). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Ubiquitous expression in ovary adult (RPKM 69.0), lung adult (RPKM 60.1) and 28 other tissues See more
Orthologs	human all
NEW	Try the new Gene table Try the new Transcript table

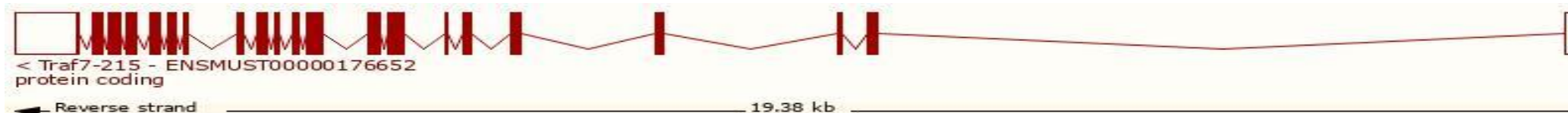
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

The gene has 26 transcripts, all transcripts are shown below:

Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000176652.8	Traf7-215	3003	669aa	Protein coding	CCDS50014.2	F8WJF7.2	Ensembl Canonical GENCODE basic APPRIS P1 TSL:5
ENSMUST00000088464.12	Traf7-202	2504	669aa	Protein coding	CCDS50014.2	F8WJF7.2	GENCODE basic APPRIS P1 TSL:5
ENSMUST00000176353.8	Traf7-210	2503	629aa	Protein coding	CCDS50015.2	Q8C2K8.2	GENCODE basic TSL:1
ENSMUST00000070777.13	Traf7-201	2384	629aa	Protein coding	CCDS50015.2	Q8C2K8.2	GENCODE basic TSL:5
ENSMUST00000176237.8	Traf7-208	950	271aa	Protein coding		H3BJD9.2	TSL:5 CDS 3' incomplete
ENSMUST00000177154.8	Traf7-222	758	228aa	Protein coding		H3BLQ3.2	TSL:5 CDS 3' incomplete
ENSMUST00000177193.8	Traf7-223	644	170aa	Protein coding		H3BK82.2	TSL:3 CDS 3' incomplete
ENSMUST00000176086.8	Traf7-205	2687	132aa	Nonsense mediated decay		H3BLM6.2	TSL:1
ENSMUST00000175698.8	Traf7-203	755	84aa	Nonsense mediated decay		H3BKN1.2	TSL:3 CDS 5' incomplete
ENSMUST00000176668.8	Traf7-216	2667	81aa	Nonsense mediated decay		H3BKZ1.2	TSL:1
ENSMUST00000177405.8	Traf7-225	606	80aa	Nonsense mediated decay		H3BJU4.2	TSL:3
ENSMUST00000177502.2	Traf7-226	641	76aa	Nonsense mediated decay		H3BJF9.2	TSL:3 CDS 5' incomplete
ENSMUST00000176178.8	Traf7-207	680	54aa	Nonsense mediated decay		H3BJ15.2	TSL:3
ENSMUST00000177401.8	Traf7-224	699	45aa	Nonsense mediated decay		H3BKC9.2	TSL:2
ENSMUST00000176324.8	Traf7-209	604	44aa	Nonsense mediated decay		H3BKC7.2	TSL:3
ENSMUST00000177025.2	Traf7-220	428	44aa	Nonsense mediated decay		H3BKC7.2	TSL:3
ENSMUST00000176092.2	Traf7-206	382	No protein	Protein coding CDS not defined		-	TSL:3
ENSMUST00000177139.8	Traf7-221	332	No protein	Protein coding CDS not defined		-	TSL:3
ENSMUST00000177024.8	Traf7-219	3194	No protein	Retained intron		-	TSL:1
ENSMUST00000176805.2	Traf7-217	1749	No protein	Retained intron		-	TSL:5
ENSMUST00000176530.8	Traf7-213	938	No protein	Retained intron		-	TSL:3
ENSMUST00000176900.8	Traf7-218	861	No protein	Retained intron		-	TSL:3
ENSMUST00000176361.2	Traf7-211	693	No protein	Retained intron		-	TSL:3
ENSMUST00000176434.8	Traf7-212	559	No protein	Retained intron		-	TSL:2
ENSMUST00000176633.2	Traf7-214	500	No protein	Retained intron		-	TSL:2
ENSMUST00000175732.2	Traf7-204	366	No protein	Retained intron		-	TSL:1

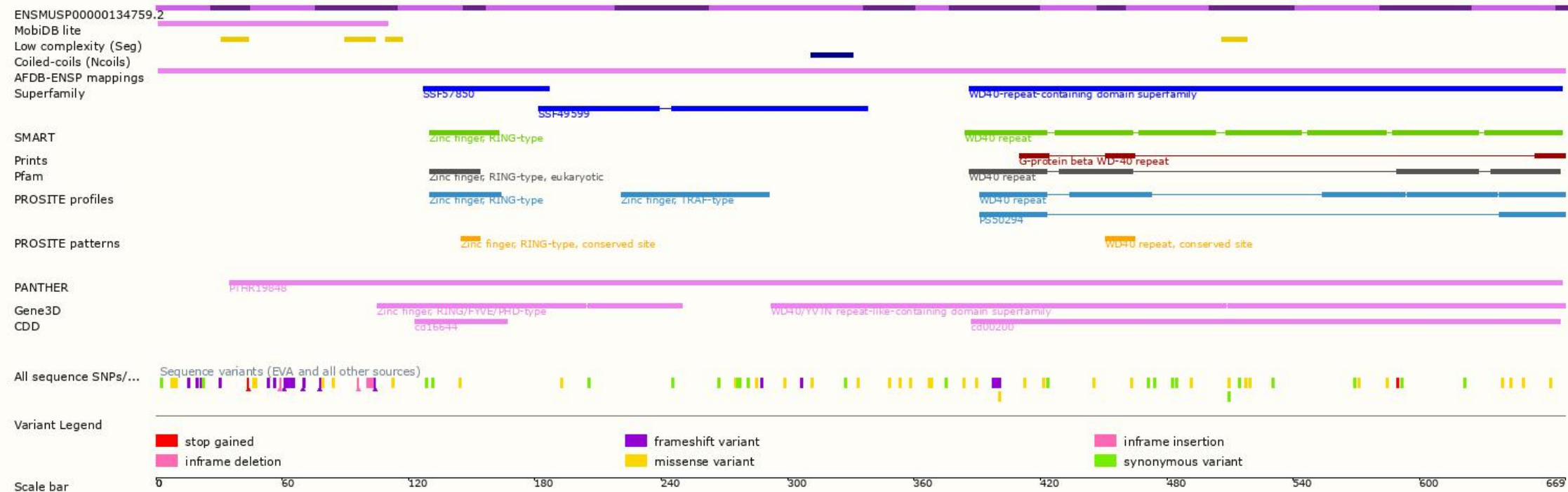
The strategy is based on the design of *Traf7*-215 transcript, the transcription is shown below:



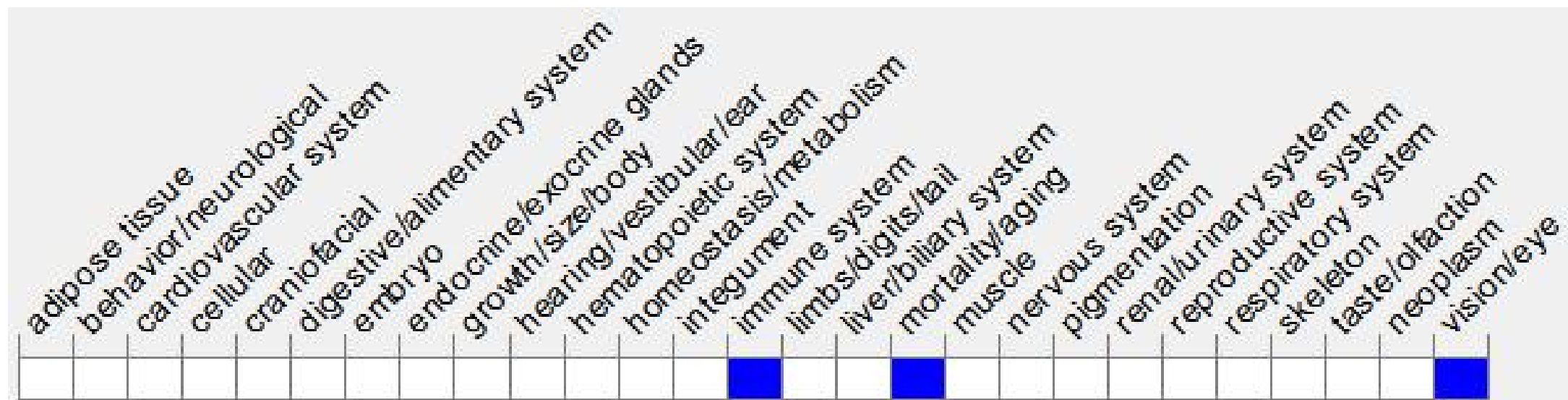
Source: <https://www.ensembl.org>

[illegible]

Protein Information



Mouse Phenotype Information (MGI)



Important Information

- According to MGI, Traf7 knockout homozygous mice died.
- Both introns 5-6 (495 bp) and 9-10 (563 bp) are short, and loxp insertions may interfere with normal splicing.
- *Traf7* is located on Chr17. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 the existing technology level.