Tgif2 Cas9-CKO Strategy

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Project Overview

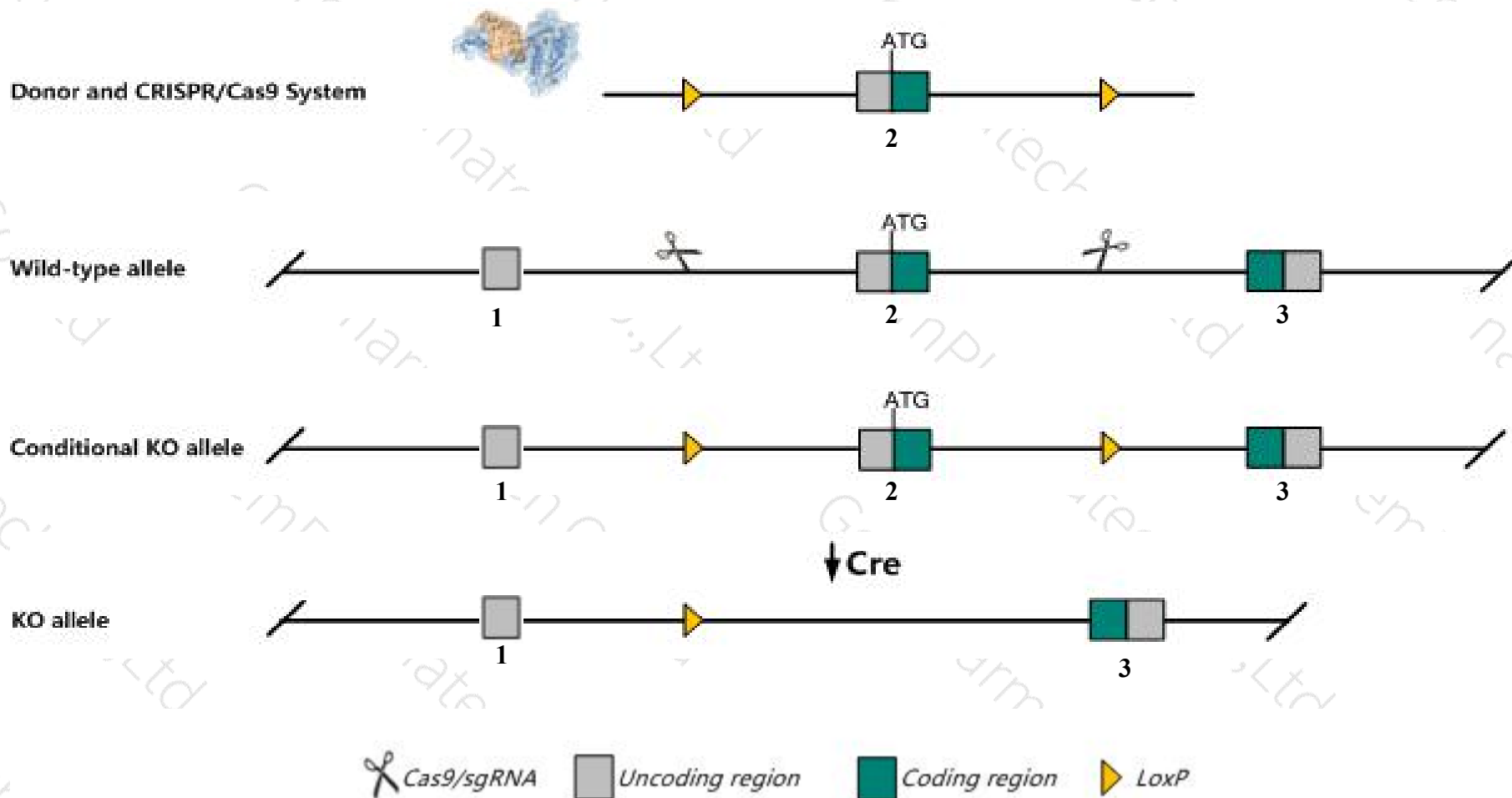|	
Project Name	*Tgif2*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tgif2* gene. The schematic diagram is as follows:

Donor and CRISPR/Cas9 System

Wild-type allele

Conditional KO allele

Cre

KO allele

Cas9/sgRNA · Uncoding region · Coding region · LoxP

Technical routes

➢ The *Tgif2* gene has 5 transcripts. According to the structure of *Tgif2* gene, exon2 of *Tgif2-202* (ENSMUST00000081335.12) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Tgif2* 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

➢ According to the existing MGI data,Homozygous mice are viable and do not display any gross defects.

➢ The exon2 of *5430405H02Rik-203*(LncRNA) will be deleted after mating with Cre mice.

➢ The 5-terminal regulation of *Gm14230* may be affected.

➢ The *Tgif2* 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.
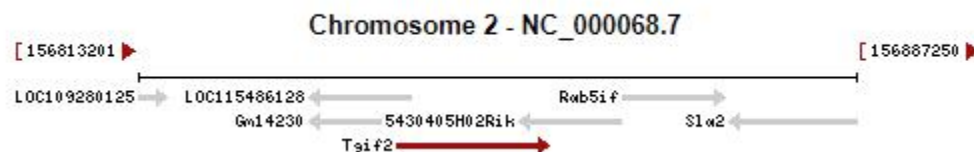
Gene information （NCBI）

Tgif2 TGFB-induced factor homeobox 2 [*Mus musculus* (house mouse)]

Gene ID: 228839, updated on 10-Oct-2019

▲ **Summary**

Official Symbol	Tgif2 provided by MGI
Official Full Name	TGFB-induced factor homeobox 2 provided by MGI
Primary source	MGI:MGI:1915299
See related	Ensembl:ENSMUSG00000062175
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	C80753; C81206; 4921501K24; 5730599O09Rik
Expression	Broad expression in CNS E11.5 (RPKM 11.1), limb E14.5 (RPKM 10.5) and 25 other tissues See more
Orthologs	human all

Chromosome 2 - NC_000068.7

[156813201 ▶   [156887250 ▶

LOC109280125 →   LOC115486128 →   Rab5if →

Gm14230 →   5430405H02Rik ◀   Slα2 ◀

Tgif2 ━━▶

Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tgif2-202	ENSMUST00000081335.12	2900	237aa	Protein coding	CCDS16969	A2AVY9 Q8C0Y1	TSL:1 GENCODE basic APPRIS P1
Tgif2-201	ENSMUST00000073352.9	2690	198aa	Protein coding	CCDS71173	Q3TZS1	TSL:1 GENCODE basic
Tgif2-203	ENSMUST00000150078.1	484	68aa	Nonsense mediated decay	-	H3BJF0	TSL:3
Tgif2-204	ENSMUST00000175634.1	594	No protein	Processed transcript	-	-	TSL:3
Tgif2-205	ENSMUST00000176281.1	564	No protein	Processed transcript	-	-	TSL:5

The strategy is based on the design of *Tgif2-202* transcript,The transcription is shown below

15.56 kb — Forward strand

Tgif2-202 >
protein coding
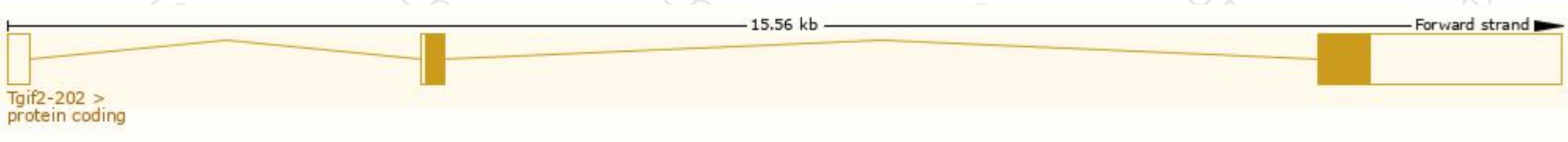
Genomic location distribution
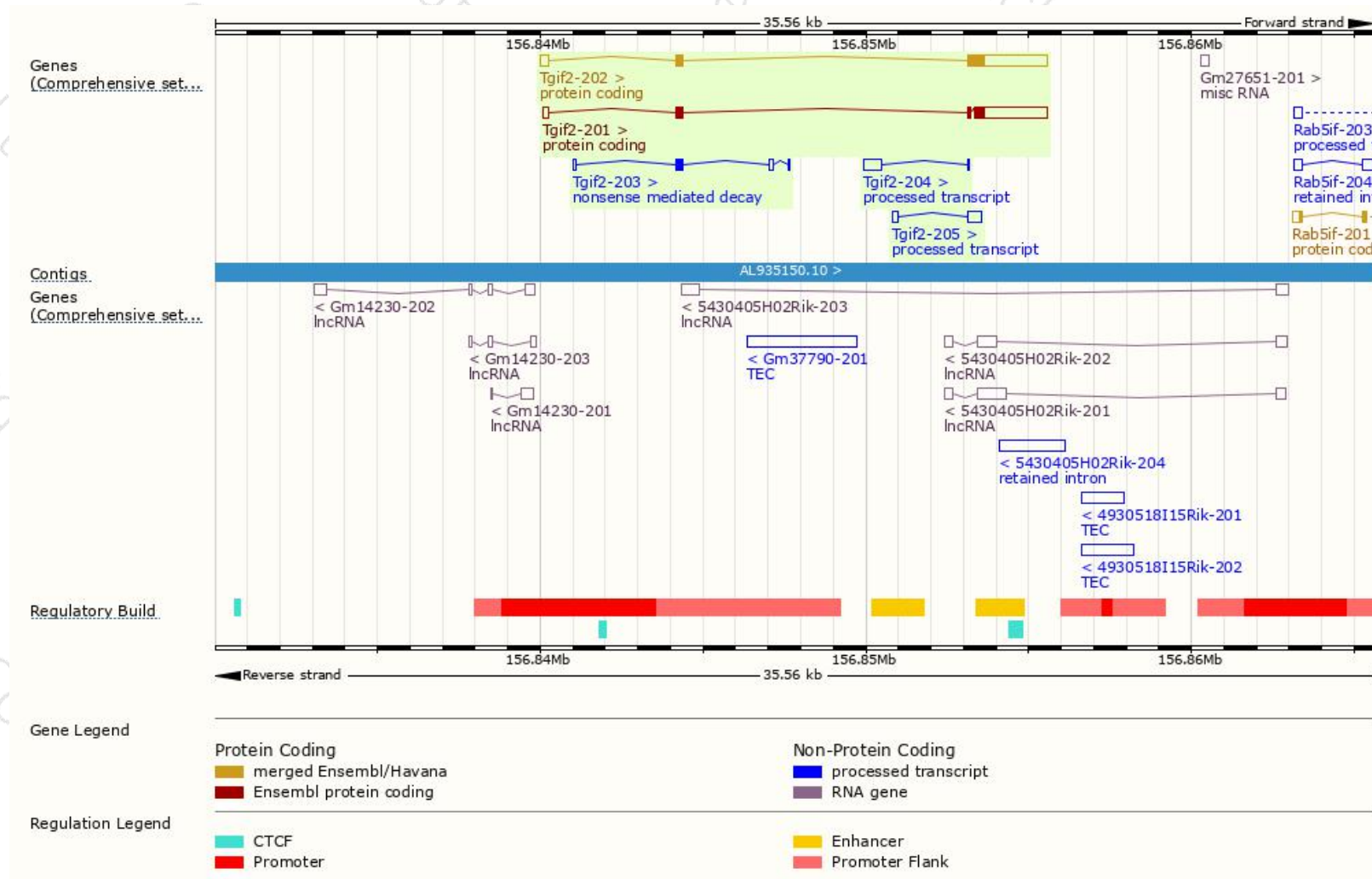
Protein domain
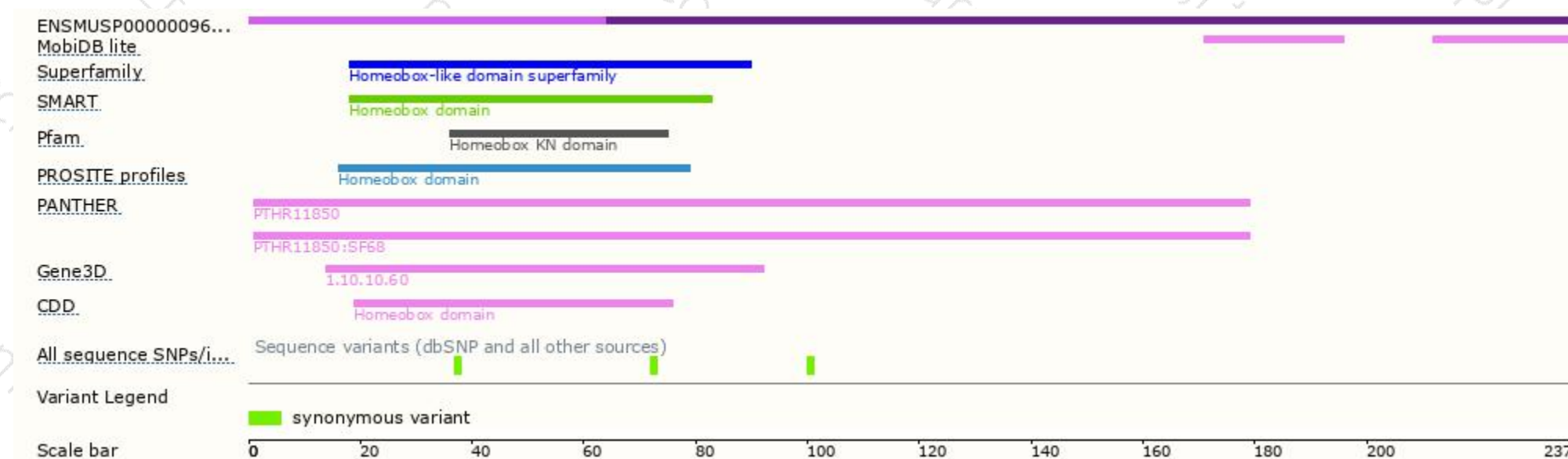
Mouse phenotype description(MGI)

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 mice are viable and do not display any gross defects.

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