Txndc12 Cas9-CKO Strategy

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Project Overview

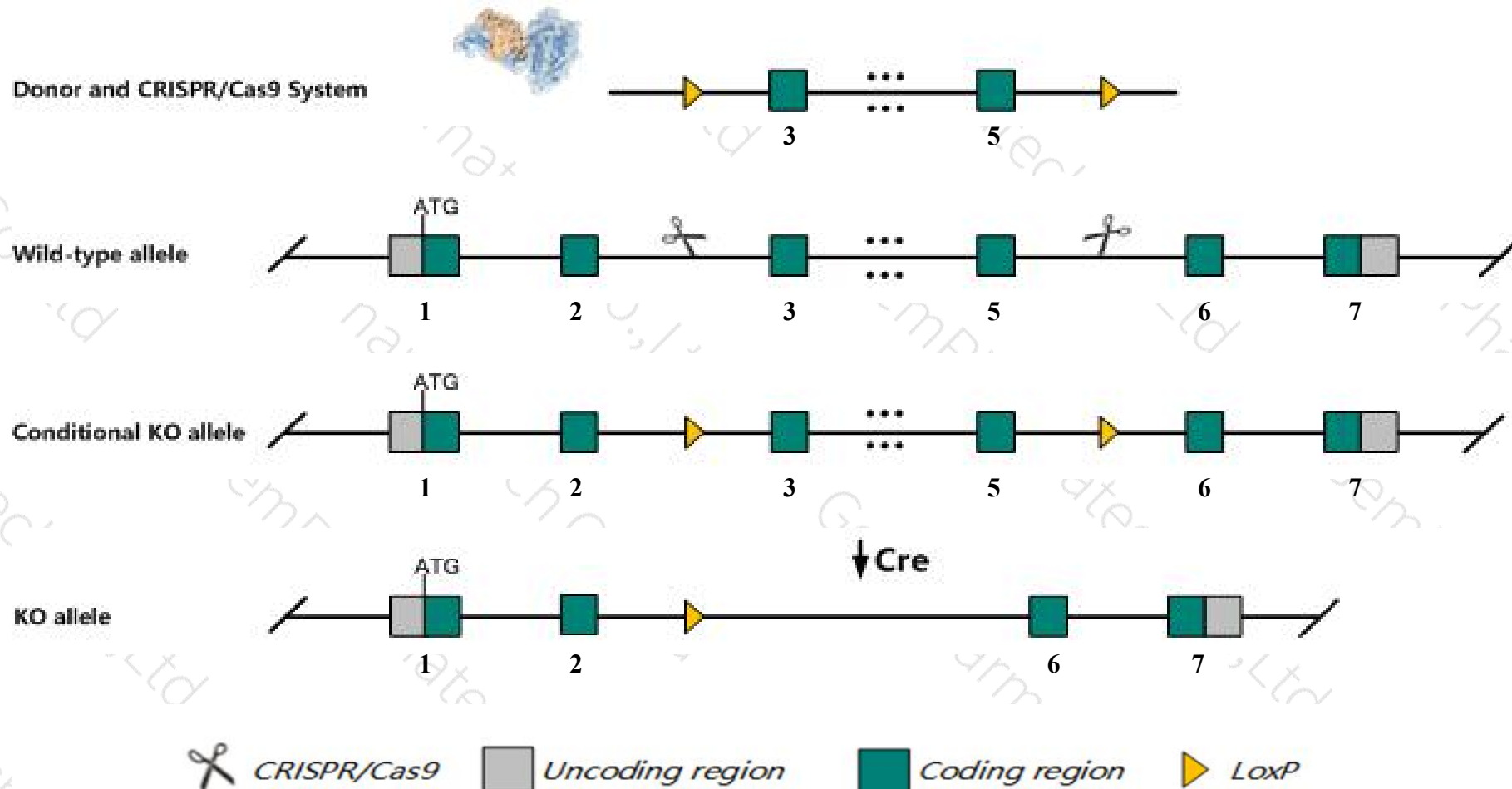|	
Project Name	*Txndc12*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Txndc12* gene. The schematic diagram is as follows:

Technical routes

➢ The *Txndc12* gene has 3 transcripts. According to the structure of *Txndc12* gene, exon3-exon5 of *Txndc12-201* (ENSMUST00000030296.8) transcript is recommended as the knockout region.The region contains Ens 197bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Txndc12* 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,Phenotypic analysis of mice homozygous for a gene trap allele indicates this mutation has no notable phenotype in any parameter tested.

➤ The *Txndc12* gene is located on the Chr4. 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）

Txndc12 thioredoxin domain containing 12 (endoplasmic reticulum) [Mus musculus (house mouse)]

Gene ID: 66073, updated on 13-Mar-2020

▲Summary

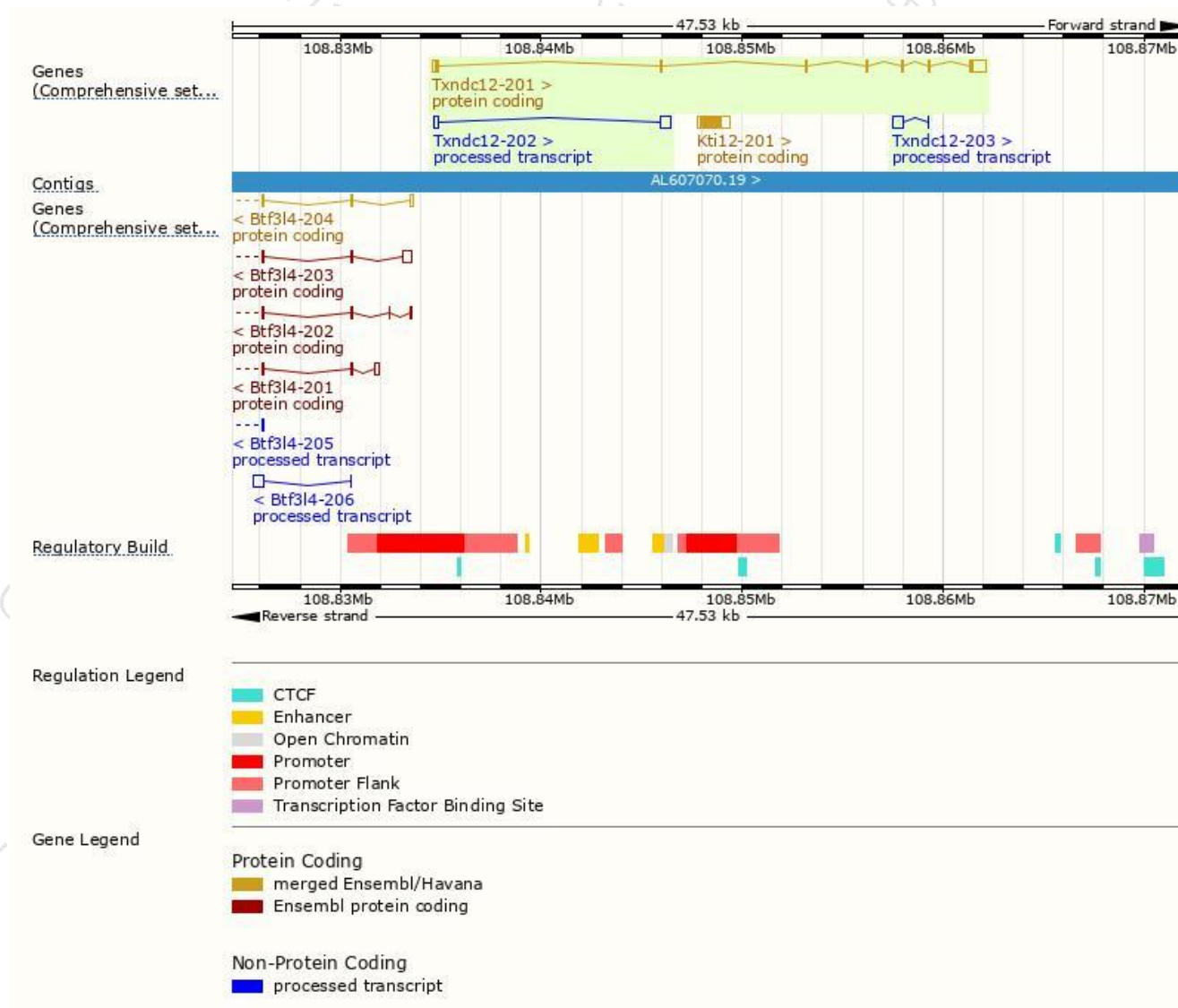|	
Official Symbol	Txndc12 provided by MGI
Official Full Name	thioredoxin domain containing 12 (endoplasmic reticulum) provided by MGI
Primary source	MGI:MGI:1913323
See related	Ensembl:ENSMUSG00000028567
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	0610040B21Rik, ERp16, ERp19
Expression	Ubiquitous expression in placenta adult (RPKM 28.4), limb E14.5 (RPKM 22.4) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Txndc12-201	ENSMUST00000030296.8	1359	170aa	Protein coding	CCDS18457	Q9CQU0	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Txndc12-202	ENSMUST00000147581.1	744	No protein	Processed transcript	-	-	TSL:2
Txndc12-203	ENSMUST00000154017.1	511	No protein	Processed transcript	-	-	TSL:5

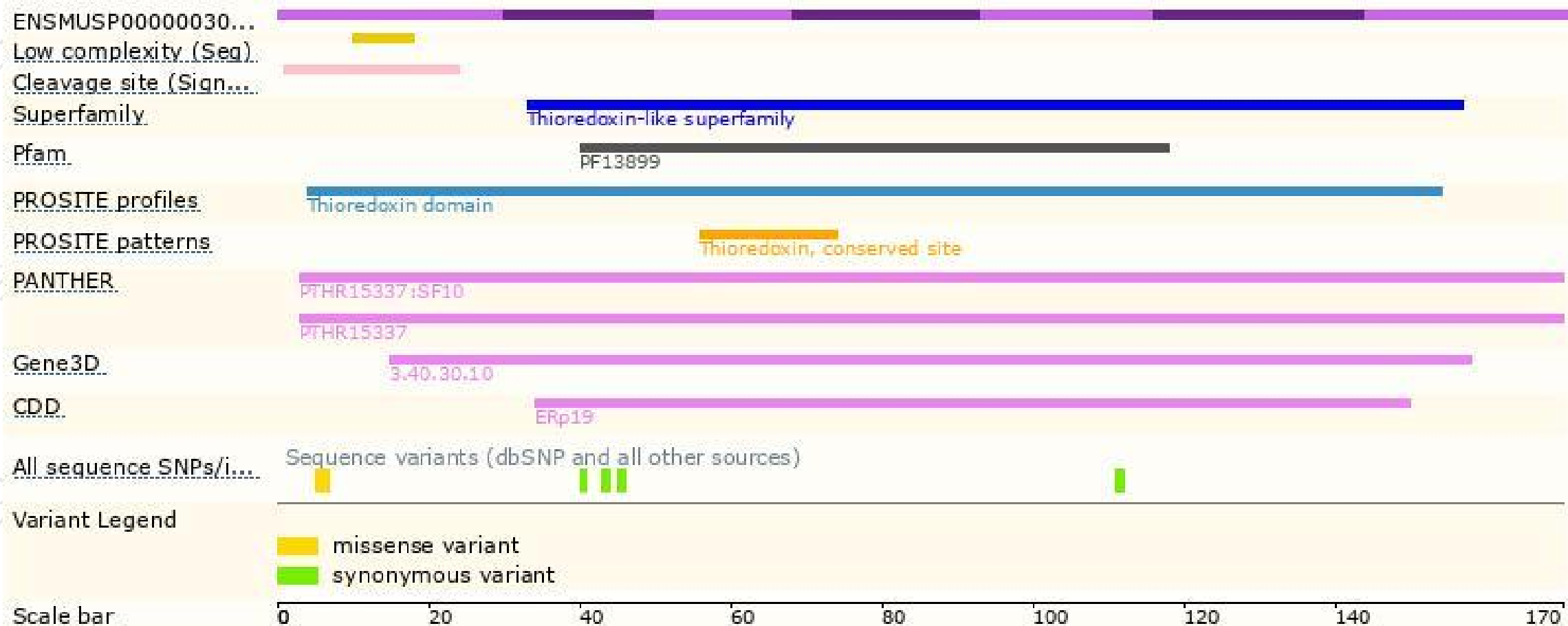The strategy is based on the design of *Txndc12-201* transcript,The transcription is shown below

27.53 kb — Forward strand

Txndc12-201 >
protein coding

Genomic location distribution

Protein domain

ENSMUSP00000030...	
Low complexity (Seg)	
Cleavage site (Sign...	
Superfamily	Thioredoxin-like superfamily
Pfam	PF13899
PROSITE profiles	Thioredoxin domain
PROSITE patterns	Thioredoxin, conserved site
PANTHER	PTHR15337:SF10
	PTHR15337
Gene3D	3.40.30.10
CDD	ERp19
All sequence SNPs/i...	Sequence variants (dbSNP and all other sources)
Variant Legend	▬ missense variant
	▬ synonymous variant
Scale bar	0 20 40 60 80 100 120 140 170

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