

# *Tnrc18* Cas9-CKO Strategy

Designer: Xiangli Bian

Reviewer: Yao Yu

Design Date: 2023-12-8

# Overview

## Target Gene Name

- *Tnrc18*

## Project Type

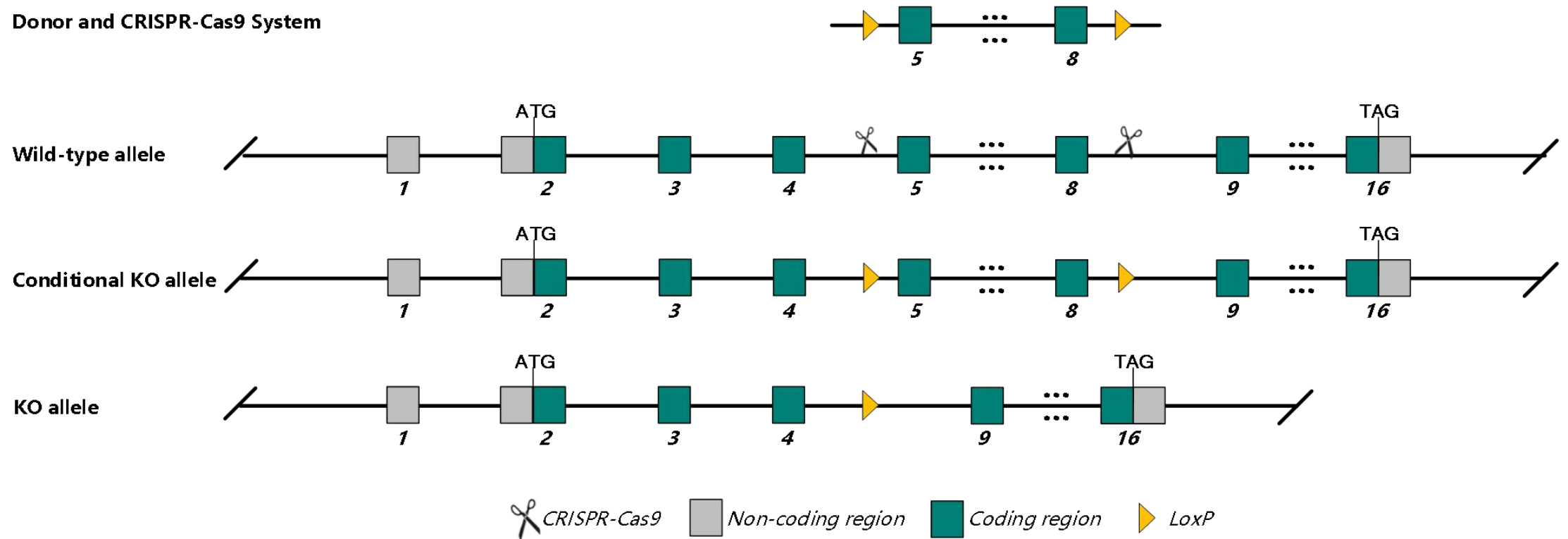
- Cas9-CKO

## Genetic Background

- C57BL/6JGpt

# Strain Strategy

## Donor and CRISPR-Cas9 System



Schematic representation of CRISPR-Cas9 engineering used to edit the *Tnrc18* gene.

# Technical Information

- The *Tnrc18* gene has 7 transcripts. According to the structure of *Tnrc18* gene, exon 5-8 of *Tnrc18*-201 (ENSMUST00000151477.8) is recommended as the knockout region. The region contains 641 bp of coding sequence. Knocking out the region will result in disruption of gene function.
- In this project we use CRISPR-Cas9 technology to modify *Tnrc18* 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

**Tnrc18** trinucleotide repeat containing 18 [ *Mus musculus* (house mouse) ]

Gene ID: 231861, updated on 6-Oct-2023

[Download Datasets](#)

## Summary

<b>Official Symbol</b>	Tnrc18 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	trinucleotide repeat containing 18 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:3648294</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000039477</a> <a href="#">AllianceGenome:MGI:3648294</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	Zfp469; EG381742
<b>Summary</b>	Predicted to enable chromatin binding activity. Predicted to be located in cytosol; mitochondrion; and nucleus. Orthologous to human TNRC18 (trinucleotide repeat containing 18). [provided by Alliance of Genome Resources, Apr 2022]
<b>Expression</b>	Ubiquitous expression in ovary adult (RPKM 24.2), colon adult (RPKM 14.8) and 25 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>
<b>NEW</b>	Try the new <a href="#">Gene table</a> Try the new <a href="#">Transcript table</a>

## Genomic context

**Location:** 5 G2; 5 81.73 cM

See Tnrc18 in [Genome Data Viewer](#)

**Exon count:** 34

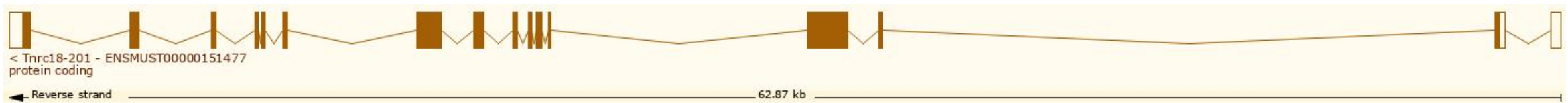
<https://www.ncbi.nlm.nih.gov/gene/231861>

# Transcript Information

The gene has 7 transcripts, all transcripts are shown below:

Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
<a href="#">ENSMUST00000152247.8</a>	Tnrc18-202	9342	<a href="#">2673aa</a>	Protein coding		<a href="#">F6Z7L1</a>	Ensembl Canonical TSL:5 CDS 5' incomplete
<a href="#">ENSMUST00000151477.8</a>	Tnrc18-201	6487	<a href="#">1755aa</a>	Protein coding	<a href="#">CCDS19830</a>	<a href="#">D3YV17</a>	GENCODE basic APPRIS P1 TSL:1
<a href="#">ENSMUST00000198181.2</a>	Tnrc18-205	696	<a href="#">114aa</a>	Protein coding		<a href="#">A0A0G2JFH8</a>	TSL:5 CDS 3' incomplete
<a href="#">ENSMUST00000155461.2</a>	Tnrc18-203	712	No protein	Protein coding CDS not defined		-	TSL:2
<a href="#">ENSMUST00000198932.5</a>	Tnrc18-206	600	No protein	Protein coding CDS not defined		-	TSL:3
<a href="#">ENSMUST00000200371.2</a>	Tnrc18-207	830	No protein	Retained intron		-	TSL:3
<a href="#">ENSMUST00000196888.2</a>	Tnrc18-204	647	No protein	Retained intron		-	TSL:3

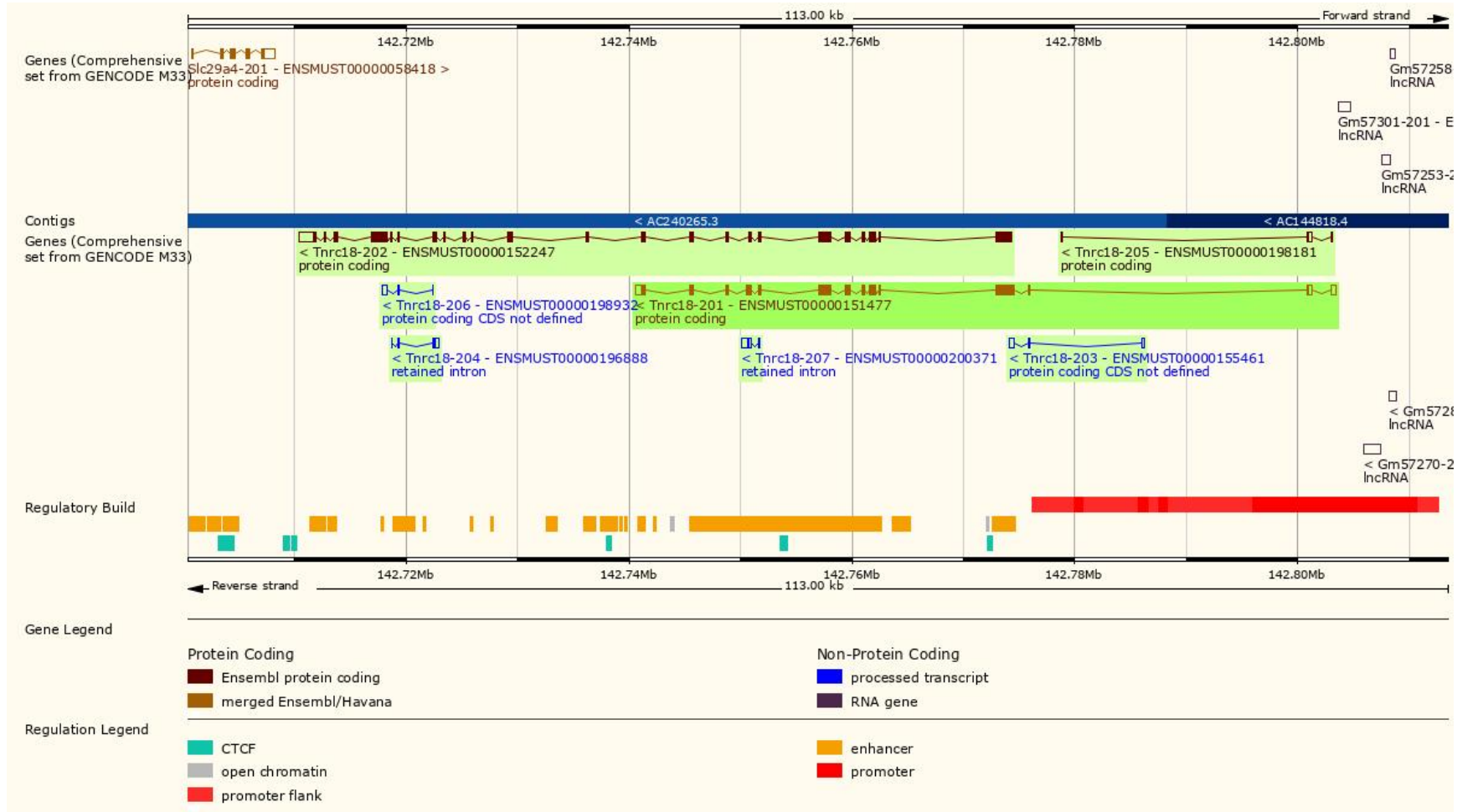
The strategy is based on the design of *Tnrc18-201* transcript, the transcription is shown below:



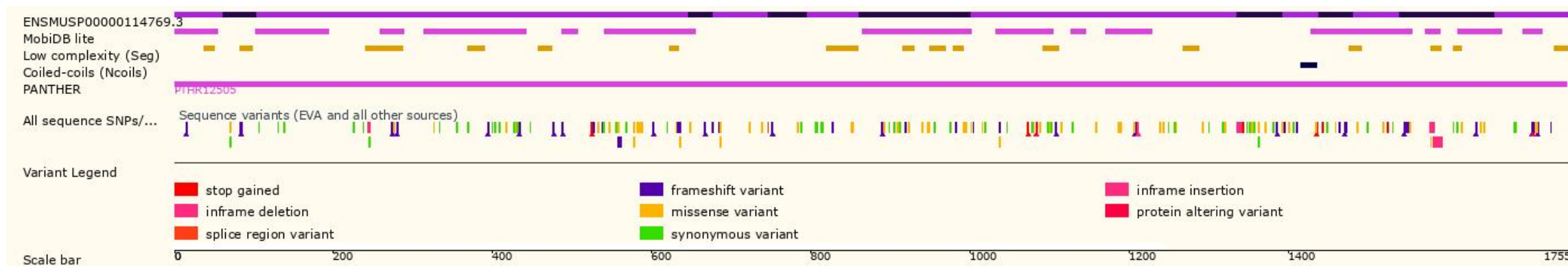
Source: <http://asia.ensembl.org/>



# Genomic Information



# Protein Information





# Important Information

- Since the *Tnrc18*-202 transcript 5' is incomplete, the effect of this strategy on *Tnrc18*-202 transcript is unknown.
- Since the *Tnrc18*-205 transcript 3' is incomplete, the effect of this strategy on *Tnrc18*-205 transcript is unknown.
- This strategy may not affect *Tnrc18*-203, *Tnrc18*-204, *Tnrc18*-206, and *Tnrc18*-207 transcript.
- A part of amino acid sequence (646 aa) will still remain at the N-terminal of *Tnrc18* gene.
- *Tnrc18* is located on Chr 5. 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.