

# *Tnpo2* Cas9-CKO Strategy

Designer: Yanhua Shen

Reviewer: Xueting Zhang

Design Date: 2020-2-7

# Project Overview



**Project Name**

***Tnpo2***

**Project type**

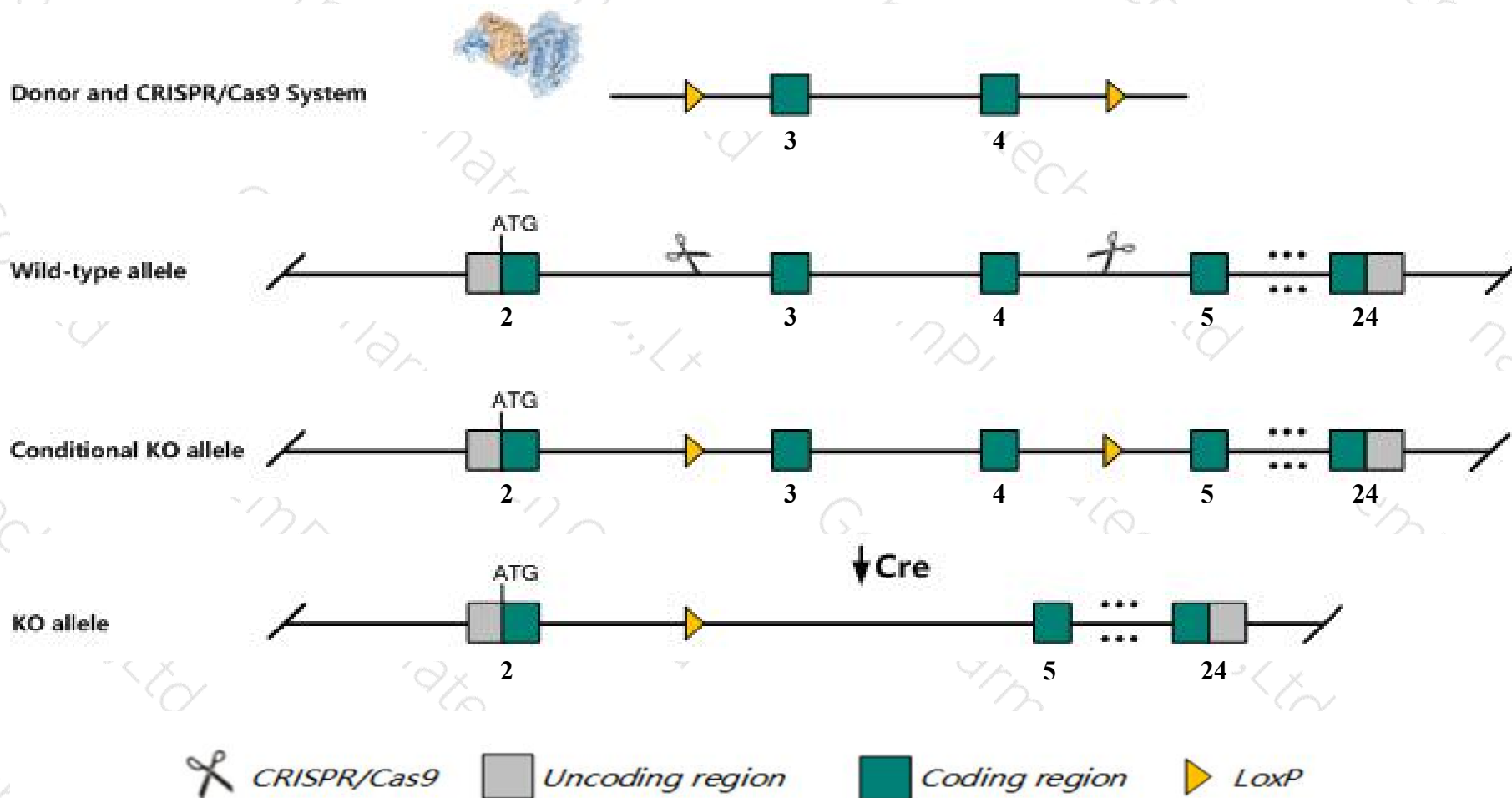
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tnpo2* gene. The schematic diagram is as follows:



- The *Tnpo2* gene has 7 transcripts. According to the structure of *Tnpo2* gene, exon3-exon4 of *Tnpo2-202* (ENSMUST00000166592.1) transcript is recommended as the knockout region. The region contains 226bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tnpo2* 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

- Transcript 204 may not be affected.
- The *Tnpo2* gene is located on the Chr8. 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)

## Tnpo2 transportin 2 (importin 3, karyopherin beta 2b) [ *Mus musculus* (house mouse) ]

Gene ID: 212999, updated on 24-Oct-2019

### Summary



Official Symbol	Tnpo2 provided by <a href="#">MGI</a>
Official Full Name	transportin 2 (importin 3, karyopherin beta 2b) provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:2384849</a>
See related	<a href="#">Ensembl:ENSMUSG000000031691</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	IPO3; TRN2; Knpb2b; Kpnb2b; AA414969; AI464345; AI852433; 1110034O24Rik
Expression	Ubiquitous expression in ovary adult (RPKM 27.2), thymus adult (RPKM 27.1) and 28 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

### Genomic context



Location: 8; 8 C3

Exon count: 26

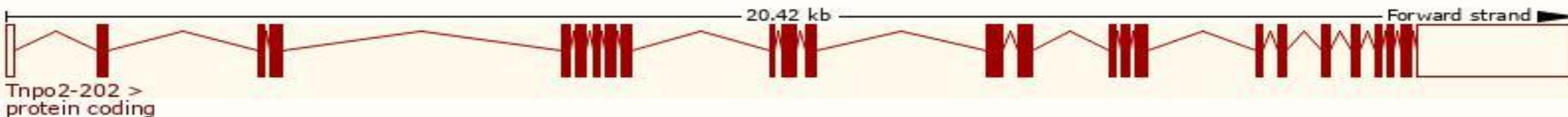
See Tnpo2 in [Genome Data Viewer](#)

# Transcript information (Ensembl)

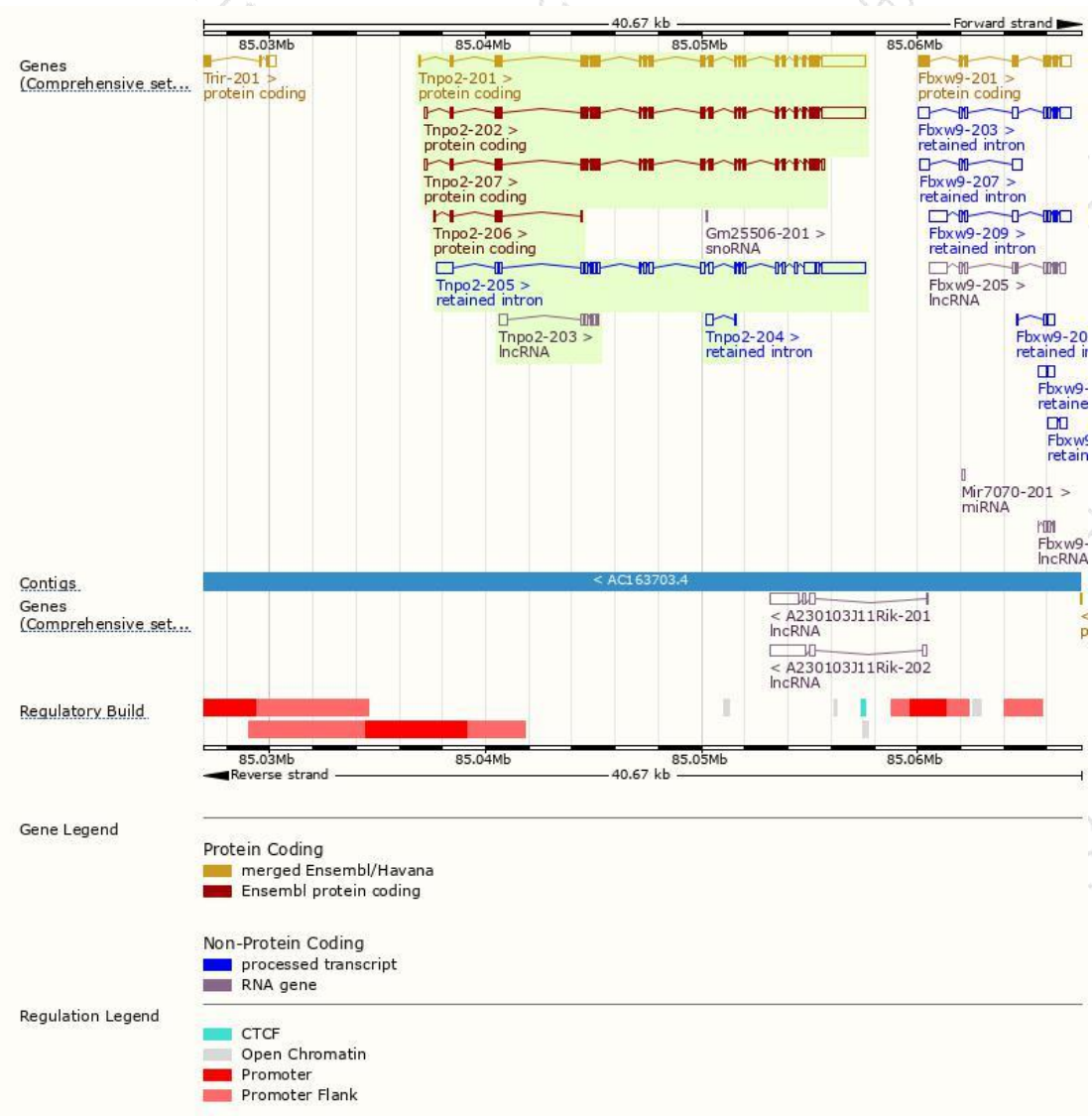
The gene has 7 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
<b>Tnpo2-202</b>	<a href="#">ENSMUST00000166592.1</a>	4884	<a href="#">897aa</a>	Protein coding	<a href="#">CCDS22491</a>	<a href="#">E9PV58</a>	TSL:5 GENCODE basic APPRIS P2
<b>Tnpo2-201</b>	<a href="#">ENSMUST00000093360.11</a>	4863	<a href="#">897aa</a>	Protein coding	<a href="#">CCDS22491</a>	<a href="#">E9PV58</a>	TSL:1 GENCODE basic APPRIS P2
<b>Tnpo2-207</b>	<a href="#">ENSMUST00000211601.1</a>	2941	<a href="#">887aa</a>	Protein coding	-	<a href="#">Q99LG2</a>	TSL:1 GENCODE basic APPRIS ALT 1
<b>Tnpo2-206</b>	<a href="#">ENSMUST00000210945.1</a>	451	<a href="#">137aa</a>	Protein coding	-	<a href="#">A0A1B0GT37</a>	CDS 3' incomplete TSL:5
<b>Tnpo2-205</b>	<a href="#">ENSMUST00000210576.1</a>	5669	No protein	Retained intron	-	-	TSL:1
<b>Tnpo2-204</b>	<a href="#">ENSMUST00000210461.1</a>	356	No protein	Retained intron	-	-	TSL:3
<b>Tnpo2-203</b>	<a href="#">ENSMUST00000210117.1</a>	799	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Tnpo2-202* transcript, The transcription is shown below

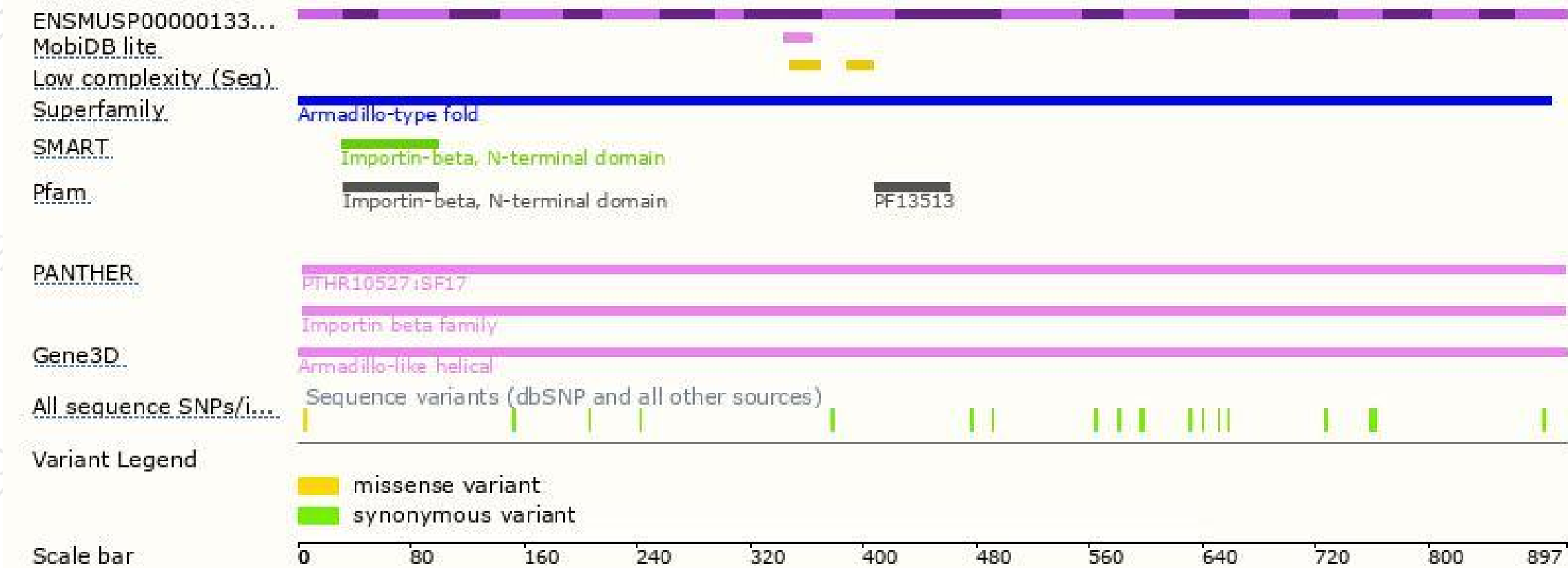


# Genomic location distribution

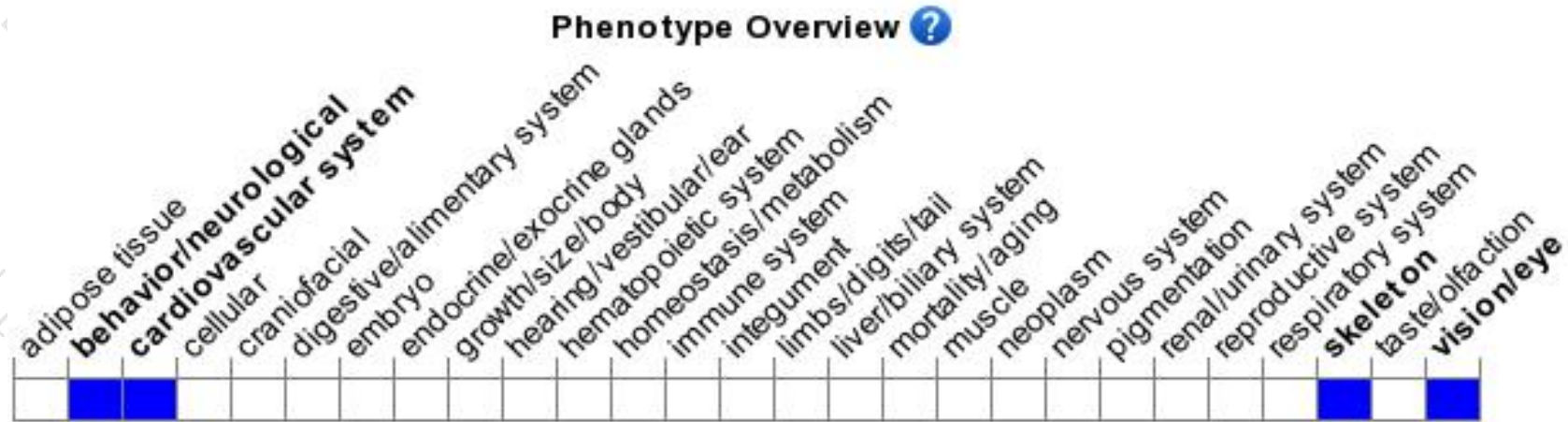




# Protein domain



# Mouse phenotype description(MGI)



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

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

Tel: 400-9660890

