

Tnpo3 Cas9-CKO Strategy

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Project Overview

Project Name

Tnpo3

Project type

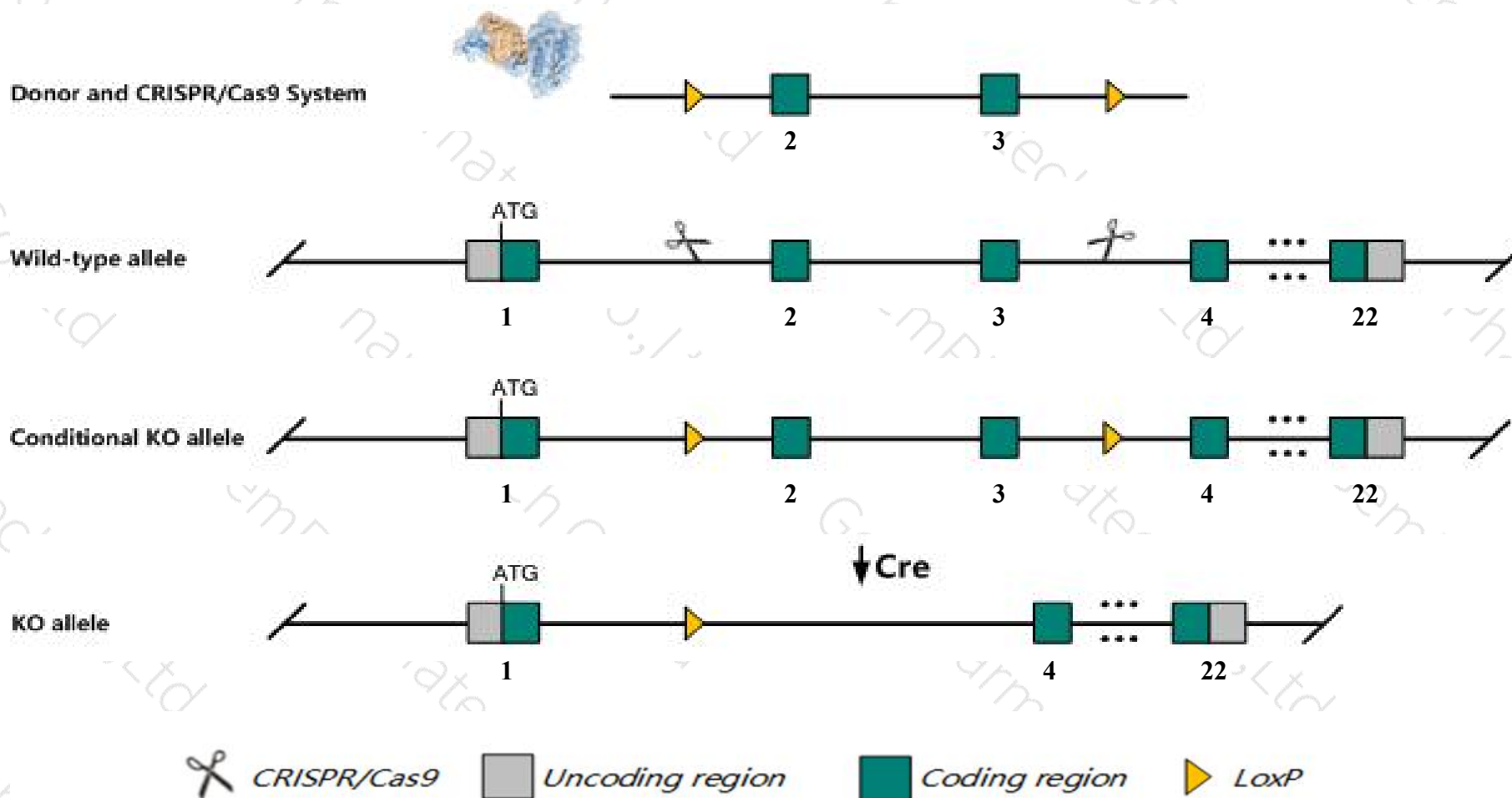
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tnpo3* gene. The schematic diagram is as follows:



Technical routes

- The *Tnpo3* gene has 11 transcripts. According to the structure of *Tnpo3* gene, exon2-exon3 of *Tnpo3*-202(ENSMUST00000115251.7) transcript is recommended as the knockout region. The region contains 275bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tnpo3* 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, mice homozygous for an ENU-induced allele exhibit embryonic lethality.
- Transcript 209 CDS 5' incomplete the influences is unknown.
- The *Tnpo3* gene is located on the Chr6. 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)

Tnpo3 transportin 3 [Mus musculus (house mouse)]

Gene ID: 320938, updated on 13-Mar-2020

Summary



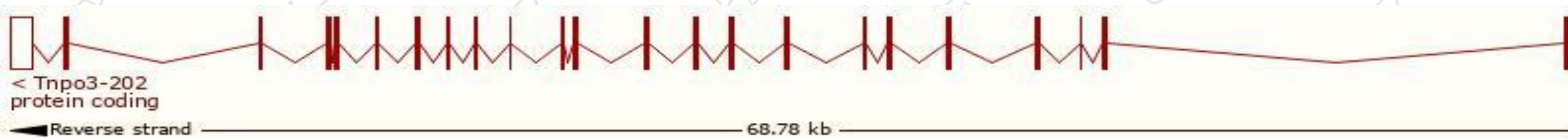
Official Symbol	Tnpo3 provided by MGI
Official Full Name	transportin 3 provided by MGI
Primary source	MGI:MGI:1196412
See related	Ensembl:ENSMUSG00000012535
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5730544L10Rik, C430013M08Rik, C81142, D6Ertd313e, Trn-SR, mKIAA4133
Expression	Ubiquitous expression in CNS E11.5 (RPKM 24.3), placenta adult (RPKM 20.3) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

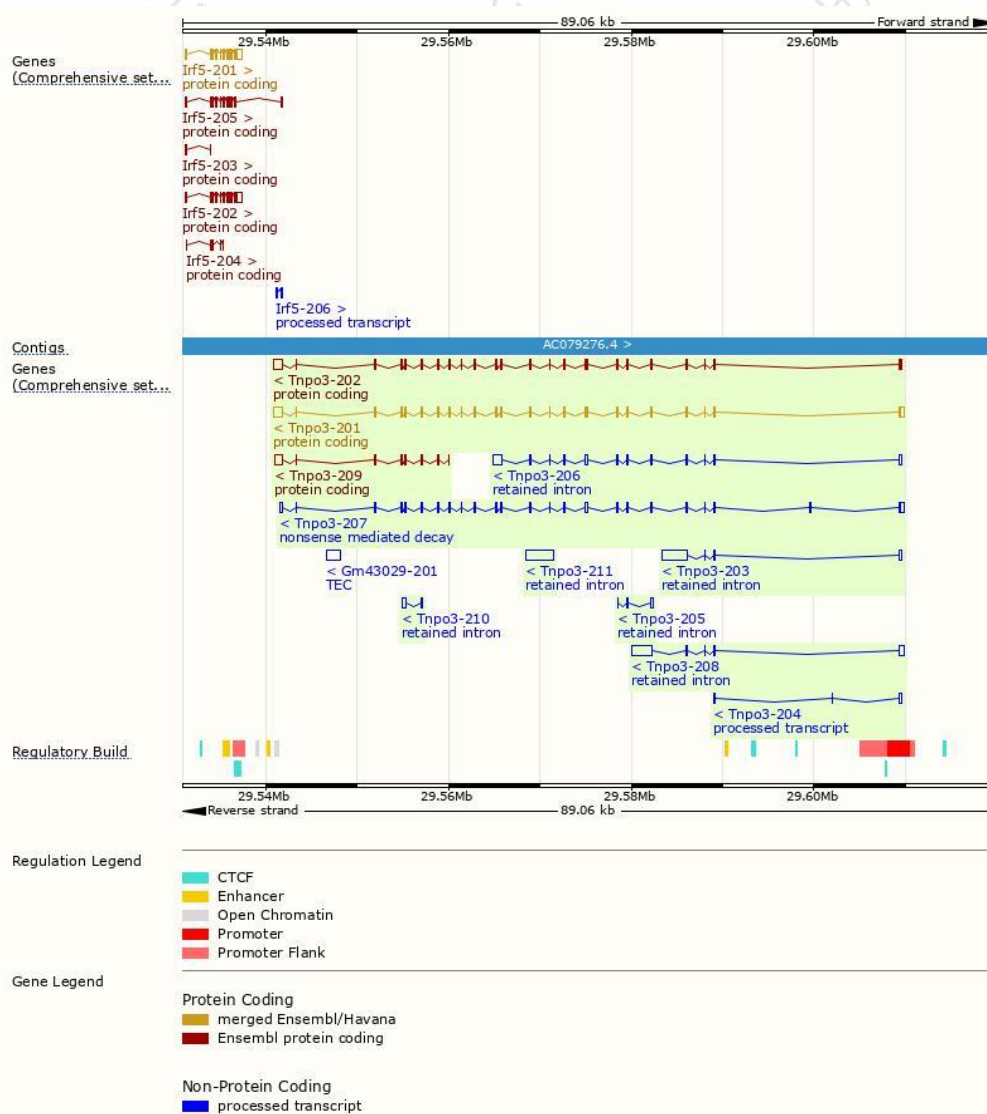
The gene has 11 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tnpo3-201	ENSMUST00000012679.14	4251	923aa	Protein coding	CCDS19963	Q6P2B1	TSL:1 GENCODE basic APPRIS P1
Tnpo3-202	ENSMUST00000115251.7	3989	929aa	Protein coding	CCDS85023	Q6P2B1	TSL:5 GENCODE basic
Tnpo3-209	ENSMUST00000170647.1	1664	247aa	Protein coding	-	F6TDZ2	CDS 5' incomplete TSL:1
Tnpo3-207	ENSMUST00000170350.7	3590	42aa	Nonsense mediated decay	-	E9Q0H8	TSL:5
Tnpo3-204	ENSMUST00000166844.1	456	No protein	Processed transcript	-	-	TSL:3
Tnpo3-203	ENSMUST00000164325.1	3396	No protein	Retained intron	-	-	TSL:1
Tnpo3-208	ENSMUST00000170634.7	3143	No protein	Retained intron	-	-	TSL:1
Tnpo3-211	ENSMUST00000201797.1	3086	No protein	Retained intron	-	-	TSL:NA
Tnpo3-206	ENSMUST00000169302.7	2615	No protein	Retained intron	-	-	TSL:1
Tnpo3-210	ENSMUST00000171865.1	515	No protein	Retained intron	-	-	TSL:2
Tnpo3-205	ENSMUST00000167056.1	447	No protein	Retained intron	-	-	TSL:3

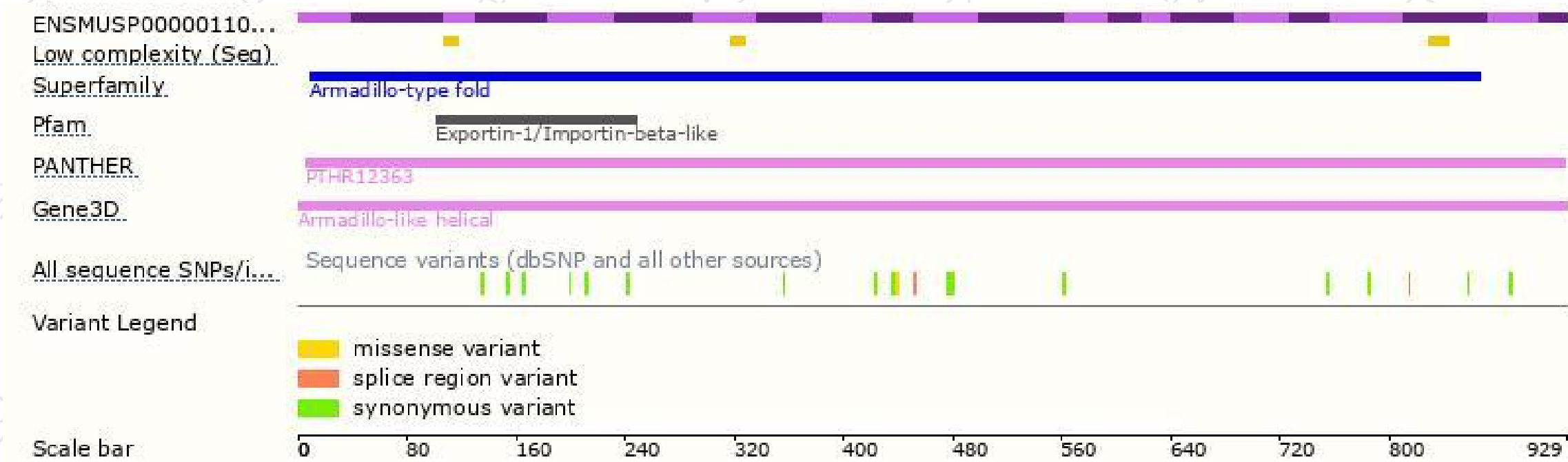
The strategy is based on the design of *Tnpo3-202* transcript, the transcription is shown below:



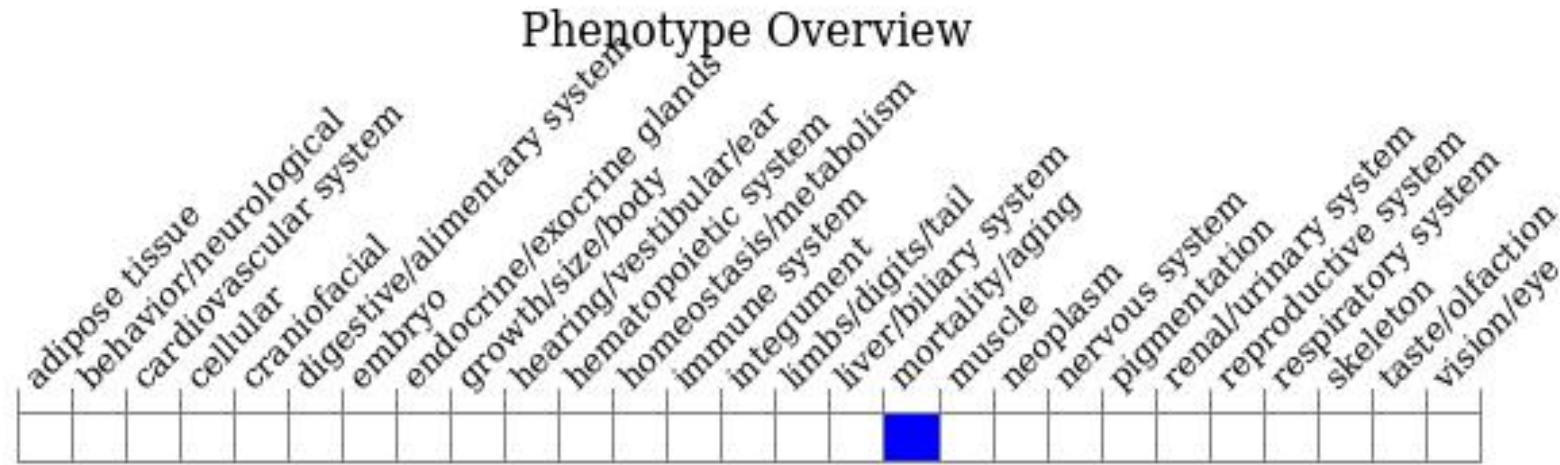
Genomic location distribution



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/>).

According to the existing MGI data, mice homozygous for an ENU-induced allele exhibit embryonic lethality.

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

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