

Tro Cas9-KO Strategy

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Project Overview

Project Name

Tro

Project type

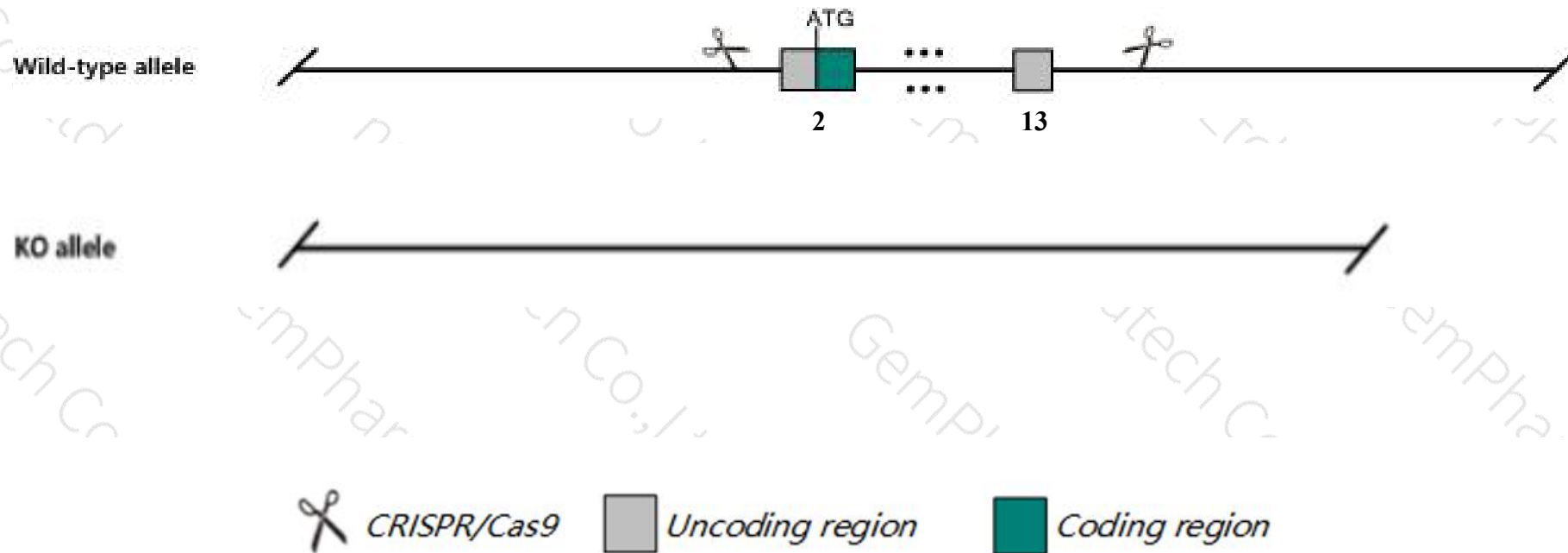
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Tro* gene has 11 transcripts. According to the structure of *Tro* gene, exon2-exon13 of *Tro*-203(ENSMUST00000112709.7) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tro* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, homozygous female or hemizygous male mice on a mixed 129 and NIH black Swiss background are viable, fertile and elderly mice exhibit no disorders. On an inbred 129 background, homozygous female or hemizygous male mice show partial embryonic lethality between E3.5 and E8.5.
- The flox region is about 1.3 kb away from the 3th end of the *Pfkfb1* gene, which may affect the regulation of this gene.
- The *Tro* gene is located on the ChrX. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Tro trophinin [Mus musculus (house mouse)]

Gene ID: 56191, updated on 13-Mar-2020

Summary



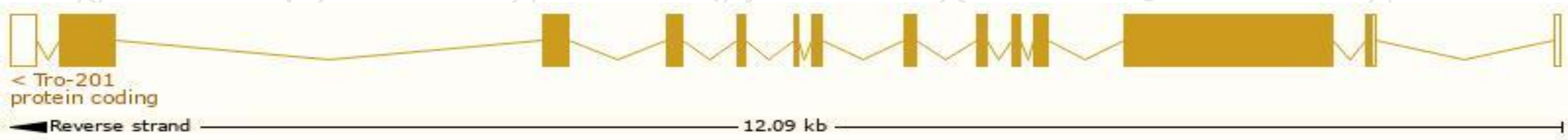
Official Symbol	Tro provided by MGI
Official Full Name	trophinin provided by MGI
Primary source	MGI:MGI:1928994
See related	Ensembl:ENSMUSG00000025272
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA409408, Maged3, Maged3l, Tnn, Trol, magphinin
Expression	Biased expression in CNS E18 (RPKM 39.5), whole brain E14.5 (RPKM 32.7) and 10 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

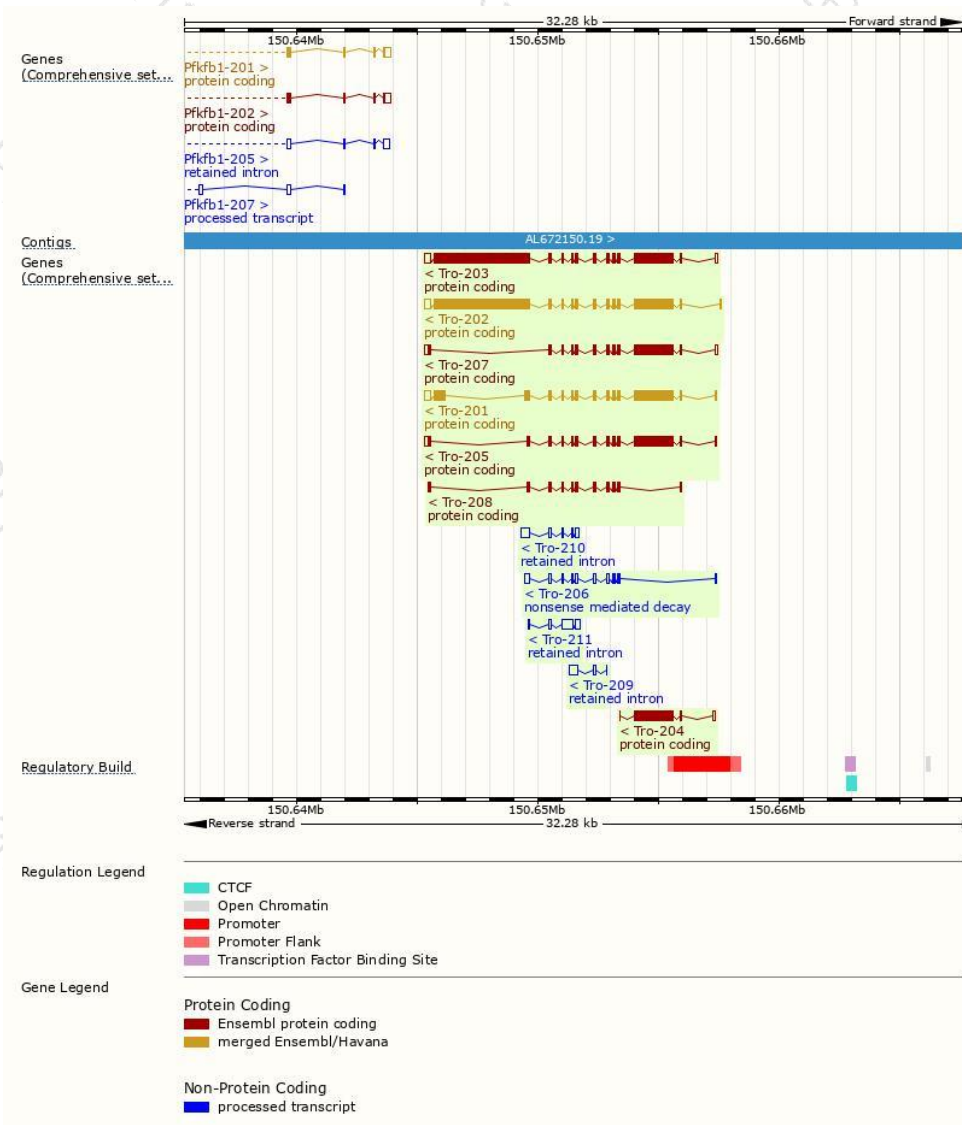
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tro-203	ENSMUST00000112709.7	6610	2087aa	Protein coding	CCDS30465	Q6DIC6	TSL:5 GENCODE basic APPRIS P3
Tro-202	ENSMUST00000087258.9	6559	2087aa	Protein coding	CCDS30465	Q6DIC6	TSL:1 GENCODE basic APPRIS P3
Tro-201	ENSMUST00000087253.10	3224	972aa	Protein coding	CCDS53221	E9Q886	TSL:1 GENCODE basic APPRIS ALT2
Tro-205	ENSMUST00000151403.8	2715	838aa	Protein coding	CCDS72448	E9Q098	TSL:1 GENCODE basic APPRIS ALT2
Tro-207	ENSMUST00000163969.7	2644	802aa	Protein coding	CCDS81183	E9Q160	TSL:1 GENCODE basic APPRIS ALT2
Tro-204	ENSMUST00000148604.1	1822	560aa	Protein coding	-	A2AFN3	CDS 3' incomplete TSL:1
Tro-208	ENSMUST00000164071.1	891	296aa	Protein coding	-	E9Q1Q4	TSL:5 GENCODE basic APPRIS ALT2
Tro-206	ENSMUST00000163450.7	888	35aa	Nonsense mediated decay	-	E9Q1E1	TSL:5
Tro-211	ENSMUST00000171775.1	832	No protein	Retained intron	-	-	TSL:5
Tro-210	ENSMUST00000169450.7	684	No protein	Retained intron	-	-	TSL:2
Tro-209	ENSMUST00000165192.1	427	No protein	Retained intron	-	-	TSL:5

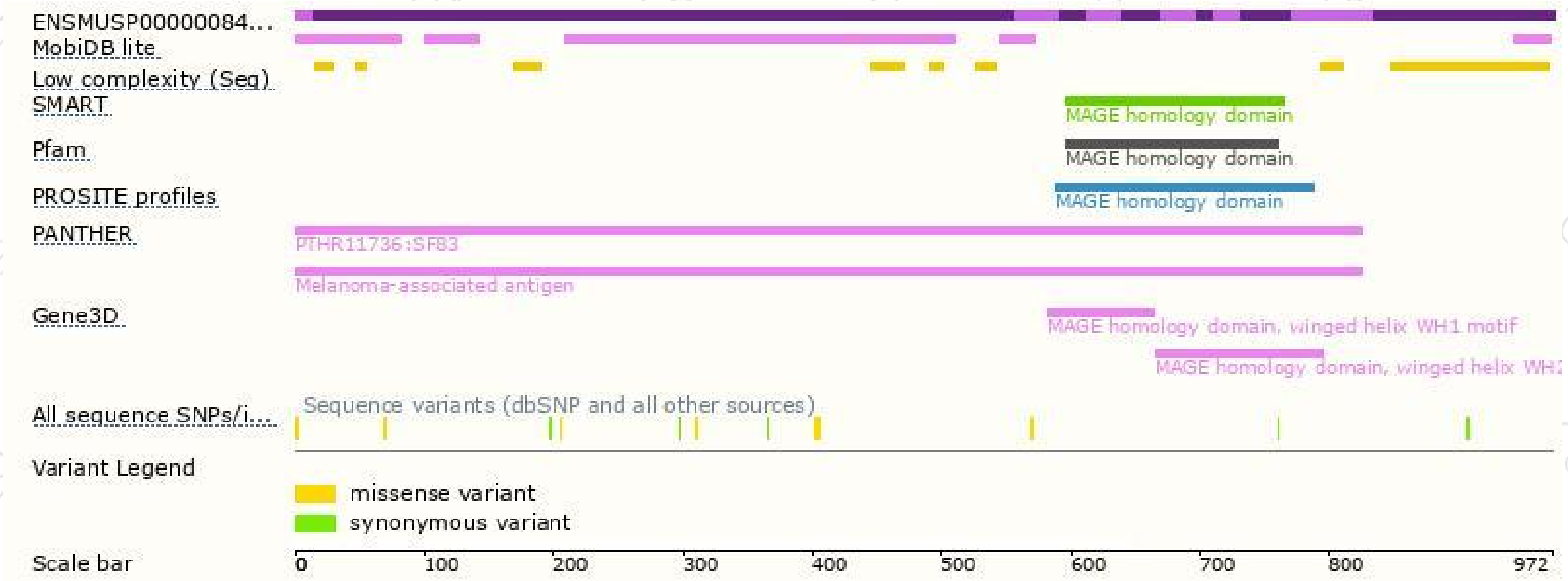
The strategy is based on the design of *Tro-201* transcript,the transcription is shown below:



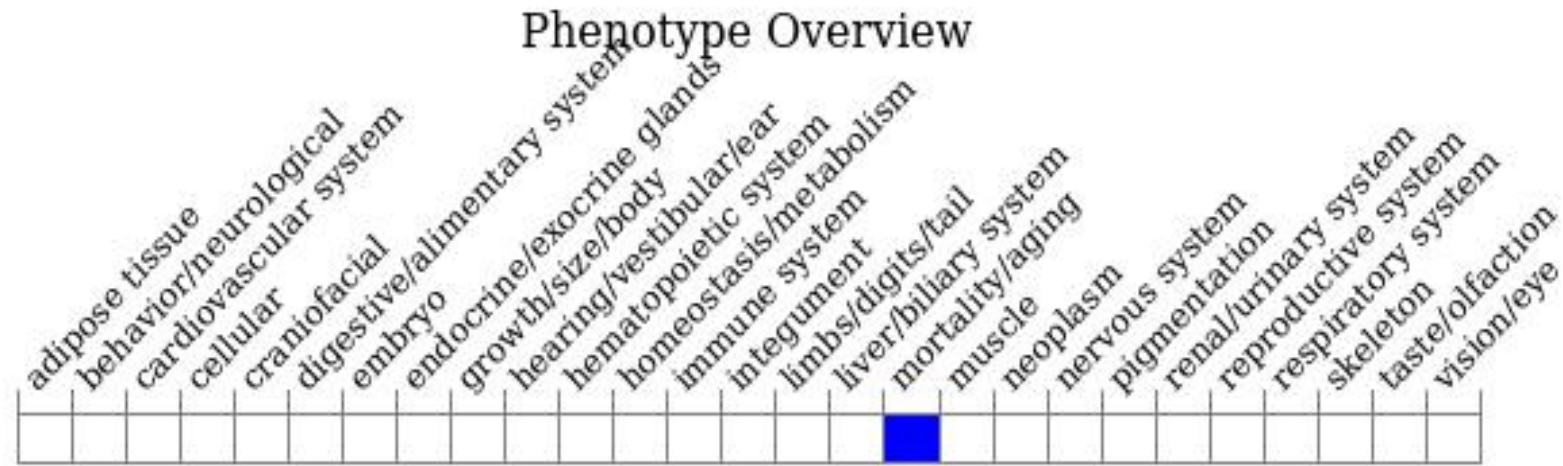
Genomic location distribution



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, homozygous female or hemizygous male mice on a mixed 129 and NIH black Swiss background are viable, fertile and elderly mice exhibit no disorders. On an inbred 129 background, homozygous female or hemizygous male mice show partial embryonic lethality between E3.5 and E8.5.

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

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