

Tpst1 Cas9-CKO Strategy

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Design Date:

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Project Overview

Project Name

Tpst1

Project type

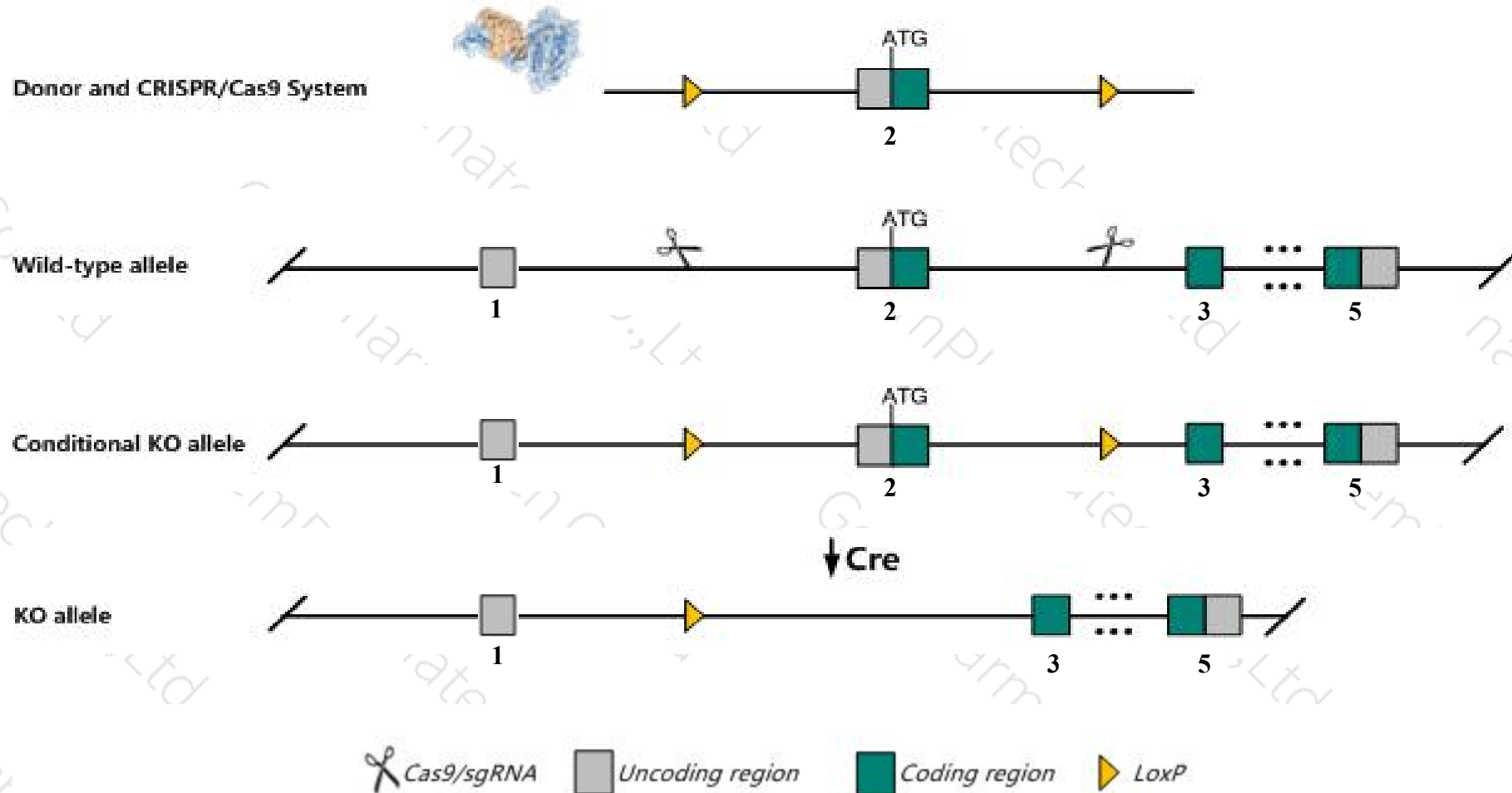
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tpst1* gene. The schematic diagram is as follows:



Technical routes

- The *Tpst1* gene has 4 transcripts. According to the structure of *Tpst1* gene, exon2 of *Tpst1-201* (ENSMUST00000040721.8) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tpst1* 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.

- According to the existing MGI data, Homozygous null mice exhibit reduced body weight but develop normally. Homozygous females produce smaller sized litters than control females.
- The *Tpst1* gene is located on the Chr5. 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)

Tpst1 protein-tyrosine sulfotransferase 1 [*Mus musculus* (house mouse)]

Gene ID: 22021, updated on 12-Aug-2019

Summary

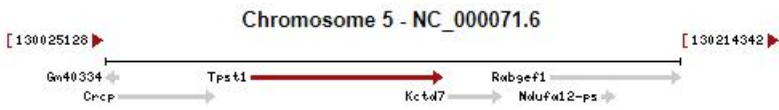
- Official Symbol** Tpst1 provided by [MGI](#)
- Official Full Name** protein-tyrosine sulfotransferase 1 provided by [MGI](#)
- Primary source** [MGI:MGI:1298231](#)
- See related** [Ensembl:ENSMUSG00000034118](#)
- Gene type** protein coding
- RefSeq status** VALIDATED
- Organism** [Mus musculus](#)
- Lineage** Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
- Also known as** R75054; Tango13a
- Expression** Ubiquitous expression in bladder adult (RPKM 26.6), testis adult (RPKM 22.6) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 5: 5 G1.3 [See Tpst1 in Genome Data Viewer](#)

Exon count: 7

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	5	NC_000071.6 (130073326..130135734)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	5	NC_000071.5 (130549196..130611602)

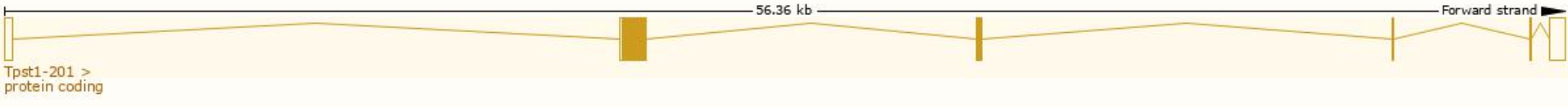


Transcript information (Ensembl)

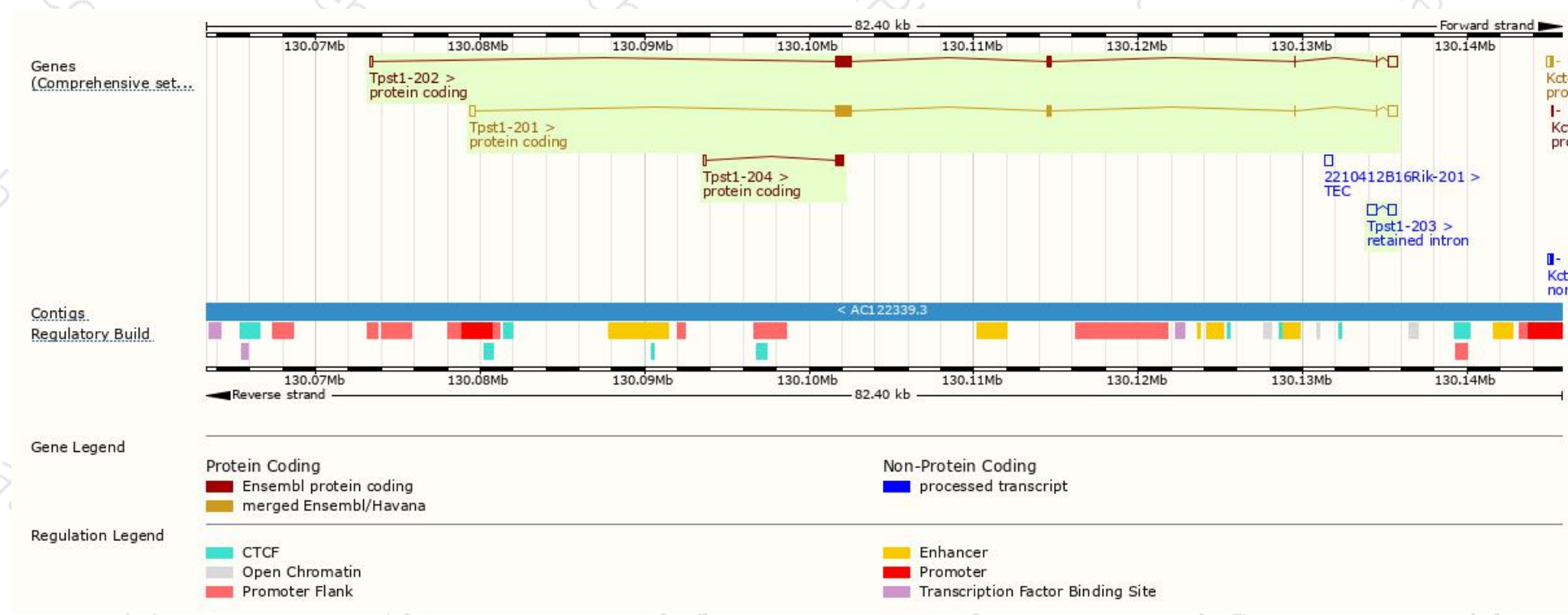
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tpst1-201	ENSMUST00000040721.8	2050	370aa	Protein coding	CCDS39293	O70281 Q4FK50	TSL:1 GENCODE basic APPRIS P1
Tpst1-202	ENSMUST00000118993.7	1867	370aa	Protein coding	CCDS39293	O70281 Q4FK50	TSL:1 GENCODE basic APPRIS P1
Tpst1-204	ENSMUST00000142838.1	589	120aa	Protein coding	-	D3Z1F4	CDS 3' incomplete TSL:2
Tpst1-203	ENSMUST00000128335.1	1047	No protein	Retained intron	-	-	TSL:2

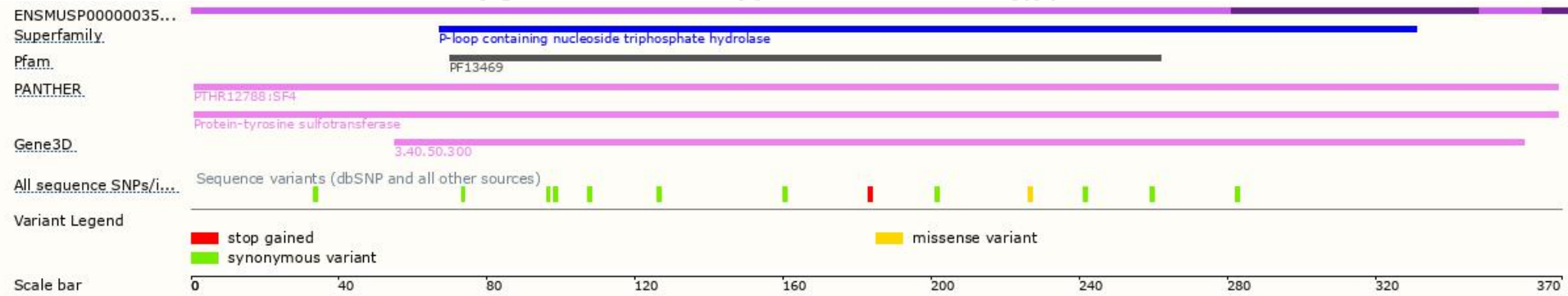
The strategy is based on the design of *Tpst1-201* transcript,The transcription is shown below



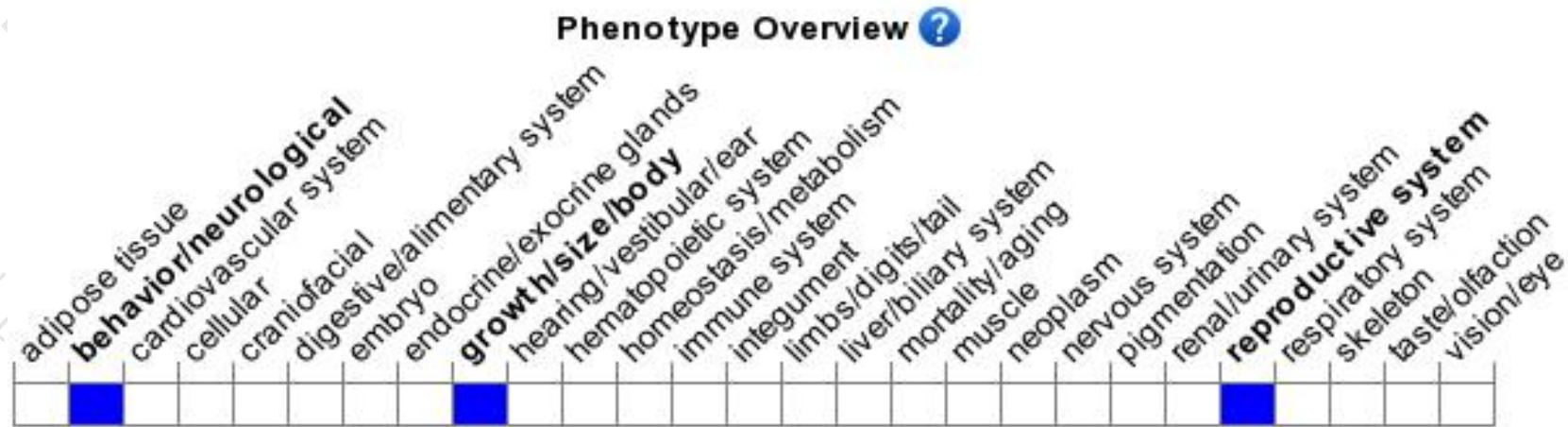
Genomic location distribution



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 null mice exhibit reduced body weight but develop normally. Homozygous females produce smaller sized litters than control females.

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

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