

Tymp Cas9-CKO Strategy

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Overview

Target Gene Name

- *Tymp*

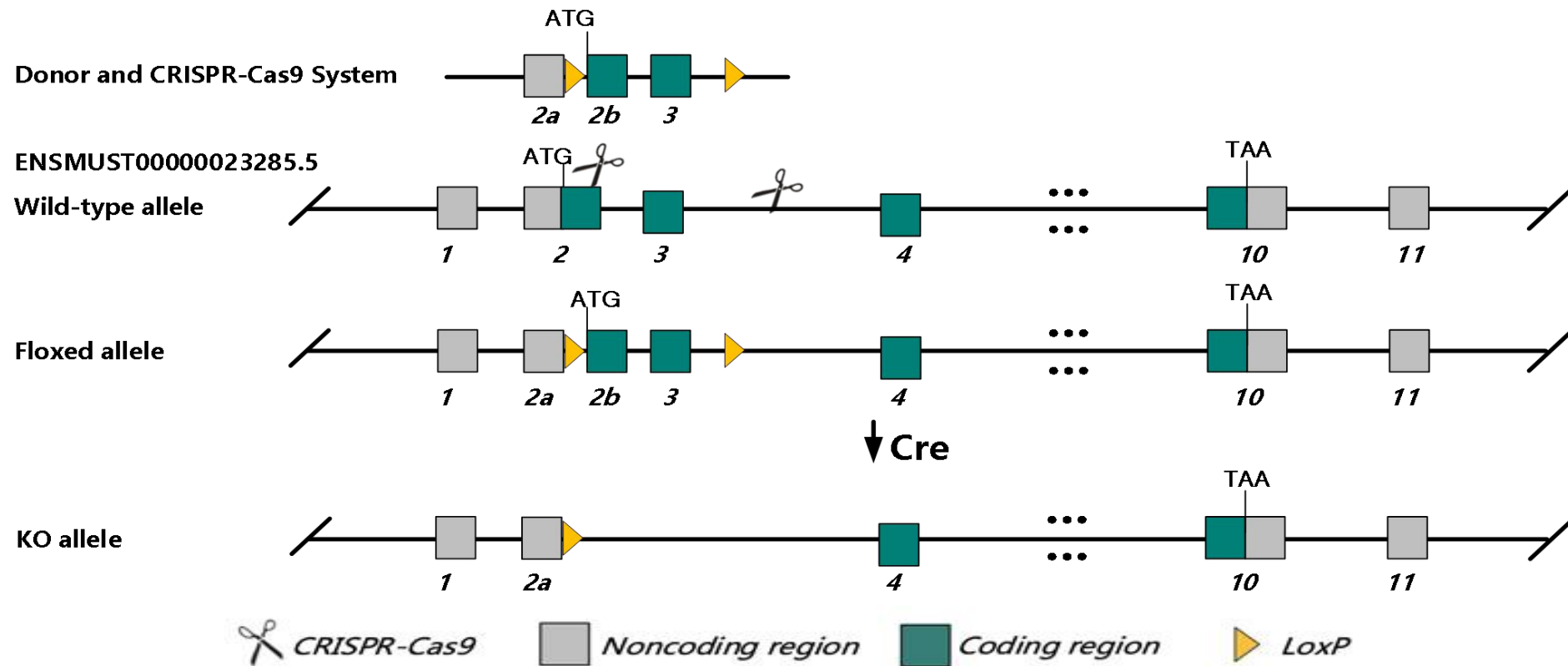
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



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

Technical Information

- The *Tymp* gene has 1 transcript. According to the structure of *Tymp* gene, exon 2-exon 3 of *Tymp-201* (ENSMUST00000023285.5) transcript is recommended as the knockout region. Knocking out the region will result in disruption of its function.
- In this project we use CRISPR-Cas9 technology to modify *Tymp* gene. The brief process is as follows: gRNAs and Donor were transcribed in vitro. Cas9 and gRNAs 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.

Gene Information

Tymp thymidine phosphorylase [*Mus musculus* (house mouse)]

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Gene ID: 72962, updated on 26-Sep-2022

Summary

Official Symbol	Tymp provided by MGI
Official Full Name	thymidine phosphorylase provided by MGI
Primary source	MGI:MGI:1920212
See related	Ensembl:ENSMUSG00000022615 AllianceGenome:MGI:1920212
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	TP; Ecgf1; PDECGF; Pdgfec; PD-ECGF; 2900072D10Rik
Summary	Enables thymidine phosphorylase activity. Involved in dTMP catabolic process. Predicted to be active in cytosol. Is expressed in alimentary system; axial skeleton; central nervous system; hindlimb; and retina. Used to study mitochondrial DNA depletion syndrome 1. Human ortholog(s) of this gene implicated in lung non-small cell carcinoma; mitochondrial DNA depletion syndrome 1; mitochondrial encephalomyopathy; pancreatic cancer; and transitional cell carcinoma. Orthologous to human TYMP (thymidine phosphorylase). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Broad expression in duodenum adult (RPKM 180.1), liver adult (RPKM 127.9) and 17 other tissues See more
Orthologs	human all
NEW	Try the new Gene table Try the new Transcript table

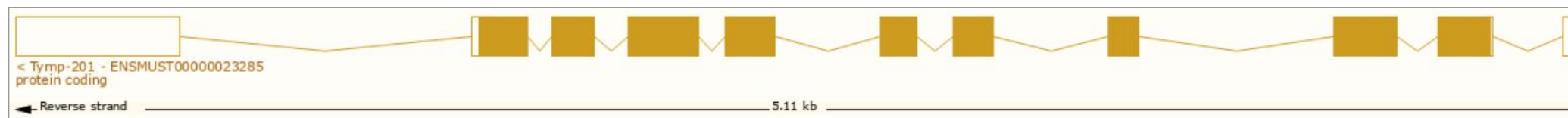
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

The gene has 1 transcript, all transcripts are shown below:

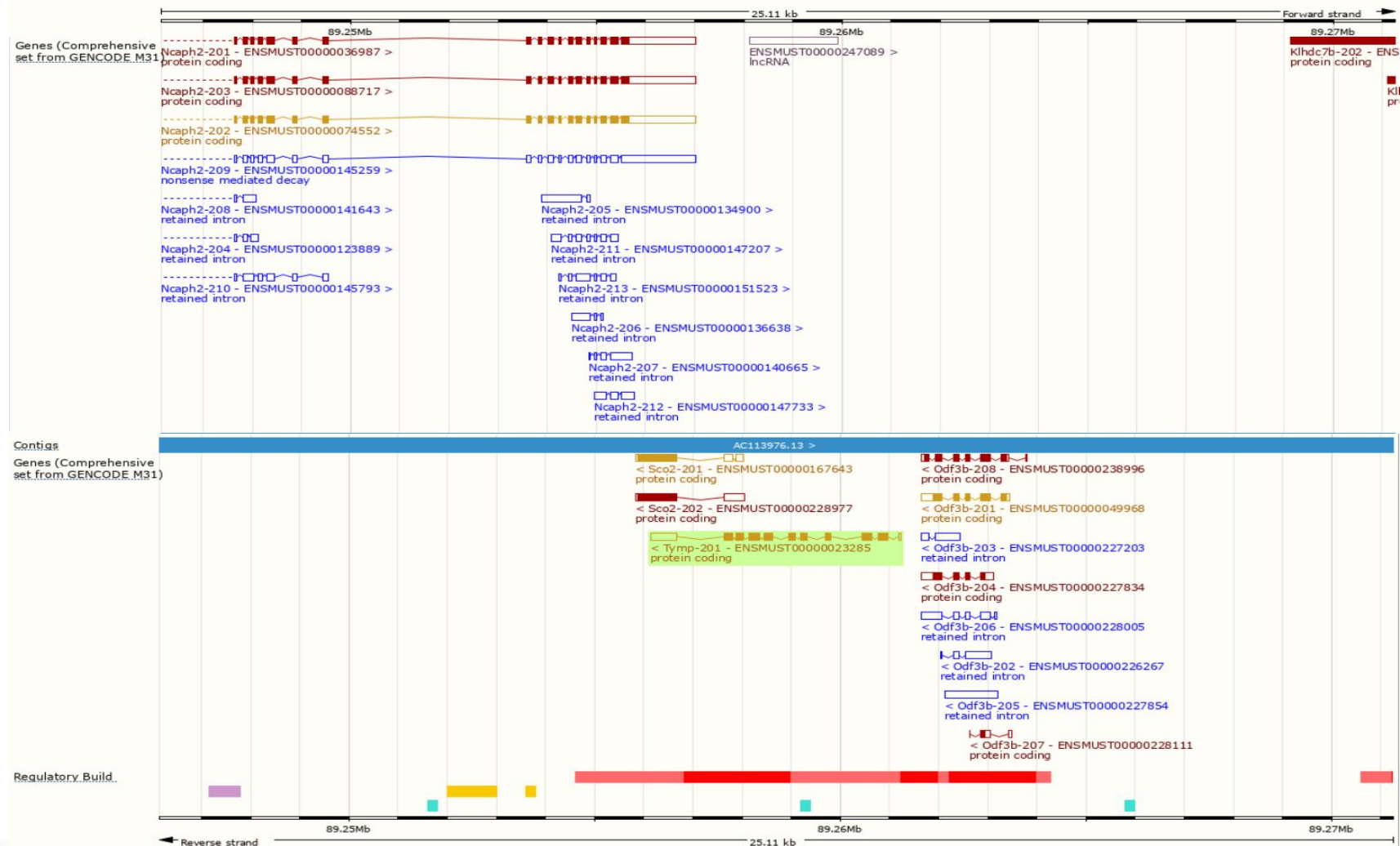
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000023285.5	Tymp-201	2037	471aa	Protein coding	CCDS27747	Q99N42	Ensembl Canonical Gencode basic APPRIS P1 TSL:1

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



Source: <https://www.ensembl.org>

Genomic Information



Important Information

- *Tymp* is located on Chr15. 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.
- The flox region is about 2 kb away from the 5th end of the *Sco2* gene, which may affect the regulation of this gene.
- The 5th loxp may affect the regulation of *Tymp* gene.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.