

Pus11 Cas9-KO Strategy

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Overview

Target Gene Name

- Pust1

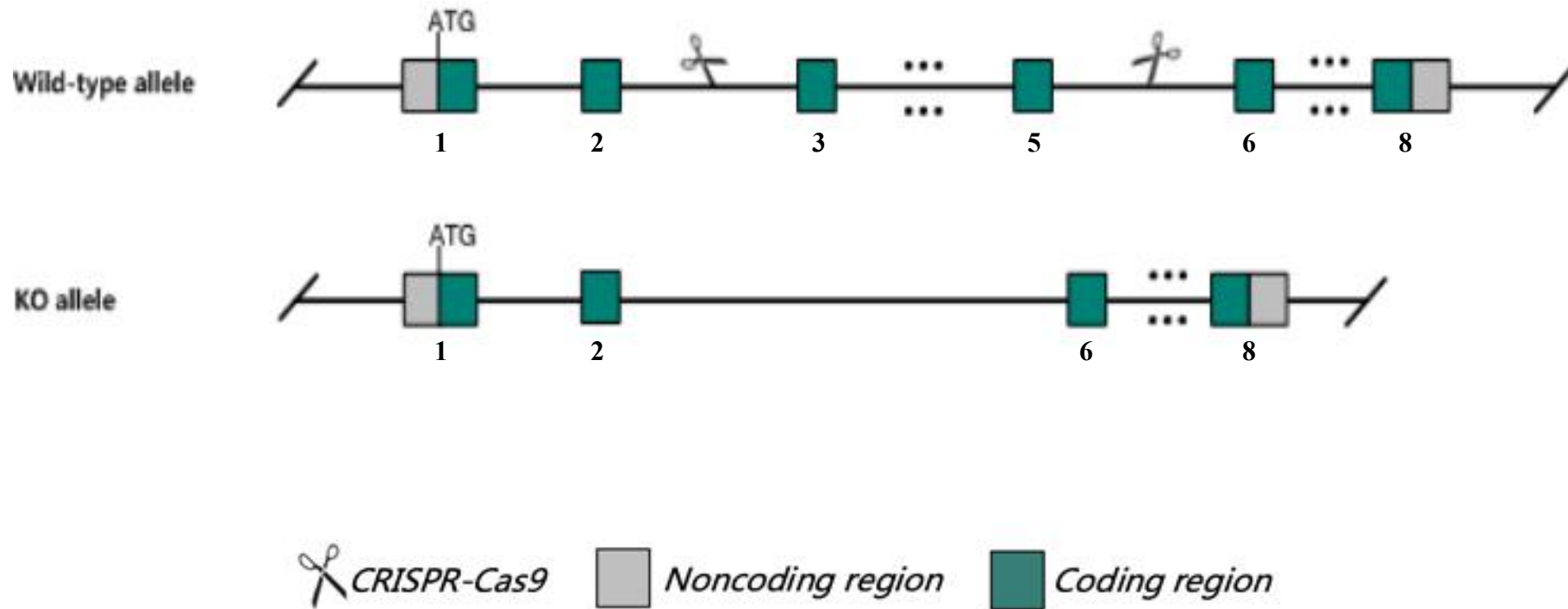
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Technical Information

- The *Pusl1* gene has 7 transcripts. According to the structure of *Pusl1* gene, exon3-exon5 of *Pusl1*-201 (ENSMUST00000097737.5) transcript is recommended as the knockout region. The region contains 509bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Pusl1* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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

Pusl1 pseudouridylate synthase-like 1 [*Mus musculus* (house mouse)]

Gene ID: 433813, updated on 23-Nov-2023

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Summary

Official Symbol	Pusl1 provided by MGI
Official Full Name	pseudouridylate synthase-like 1 provided by MGI
Primary source	MGI:MGI:3047787
See related	Ensembl:ENSMUSG00000051557 AllianceGenome:MGI:3047787
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	2810021I11Rik
Summary	Predicted to enable pseudouridine synthase activity. Predicted to be involved in tRNA pseudouridine synthesis. Predicted to act upstream of or within tRNA processing. Predicted to be located in mitochondrion. Orthologous to human PUSL1 (pseudouridine synthase like 1). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Ubiquitous expression in ovary adult (RPKM 20.1), adrenal adult (RPKM 18.8) and 28 other tissues See more
Orthologs	human all
NEW	Try the new Gene table Try the new Transcript table

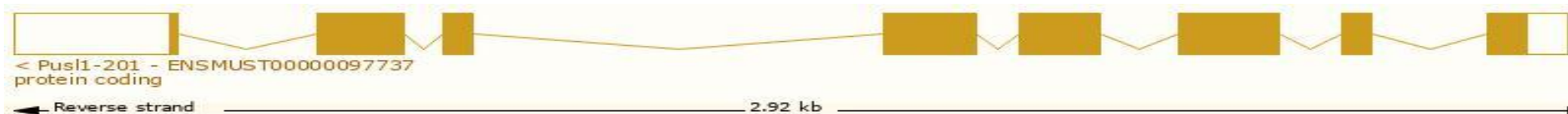
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

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

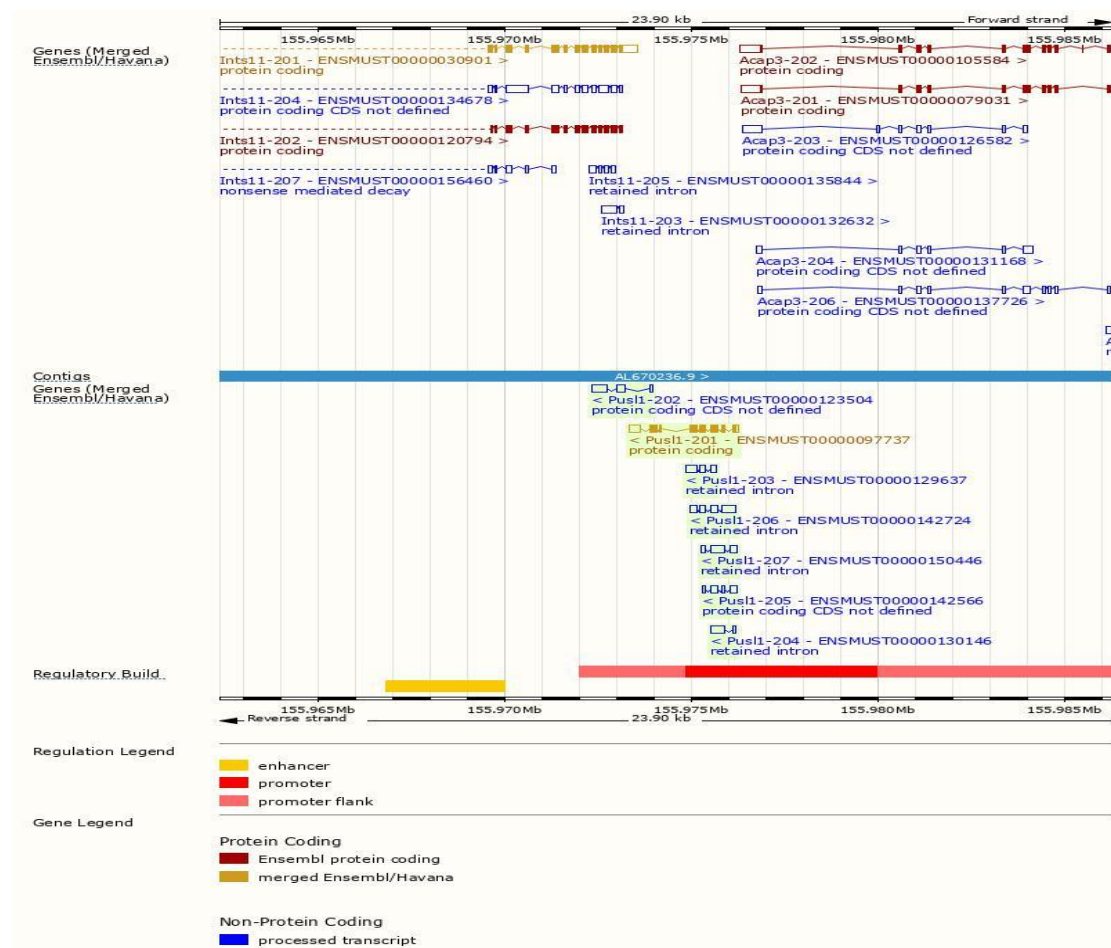
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000097737.5	Pusl1-201	1243	291aa	Protein coding	CCDS51404	A2ADA5	Ensembl Canonical Gencode basic APPRIS P1 TSL:5
ENSMUST00000123504.2	Pusl1-202	714	No protein	Protein coding CDS not defined		-	TSL:5
ENSMUST00000142566.2	Pusl1-205	508	No protein	Protein coding CDS not defined		-	TSL:3
ENSMUST00000142724.8	Pusl1-206	883	No protein	Retained intron		-	TSL:5
ENSMUST00000150446.8	Pusl1-207	673	No protein	Retained intron		-	TSL:3
ENSMUST00000129637.8	Pusl1-203	598	No protein	Retained intron		-	TSL:2
ENSMUST00000130146.2	Pusl1-204	462	No protein	Retained intron		-	TSL:2

The strategy is based on the design of *Pusl1*-201 transcript, the transcription is shown below:

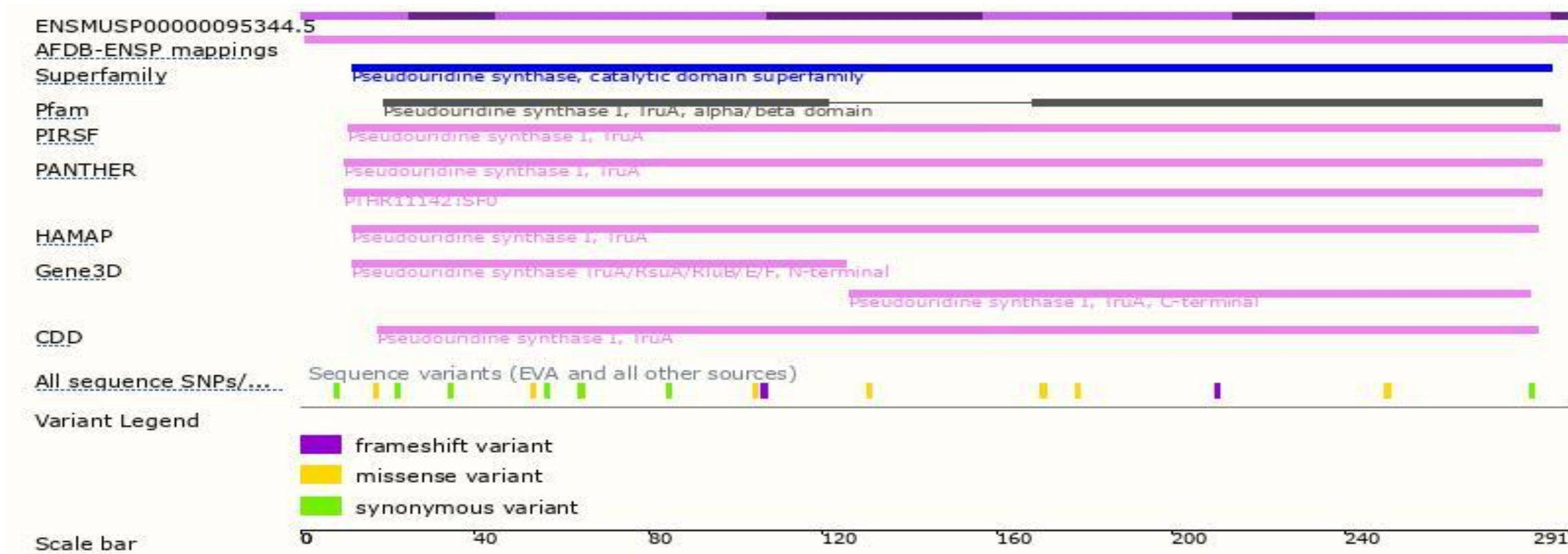


Source: <https://www.ensembl.org>

Genomic Information



Protein Information



Important Information

- The KO region is about 0.5 kb away from the 5' end of the *Acap3* and is about 1.5 kb away from the 3' end of the *Ints11*, which may affect the regulation of these gene.
- *Pusl1* is located on Chr4. 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.
- 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.

Reference

