

Stn1 Cas9-CKO Strategy

Designer: Shanhong Tao

Reviewer: Longyun Hu

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Overview

Target Gene Name

- Stn1

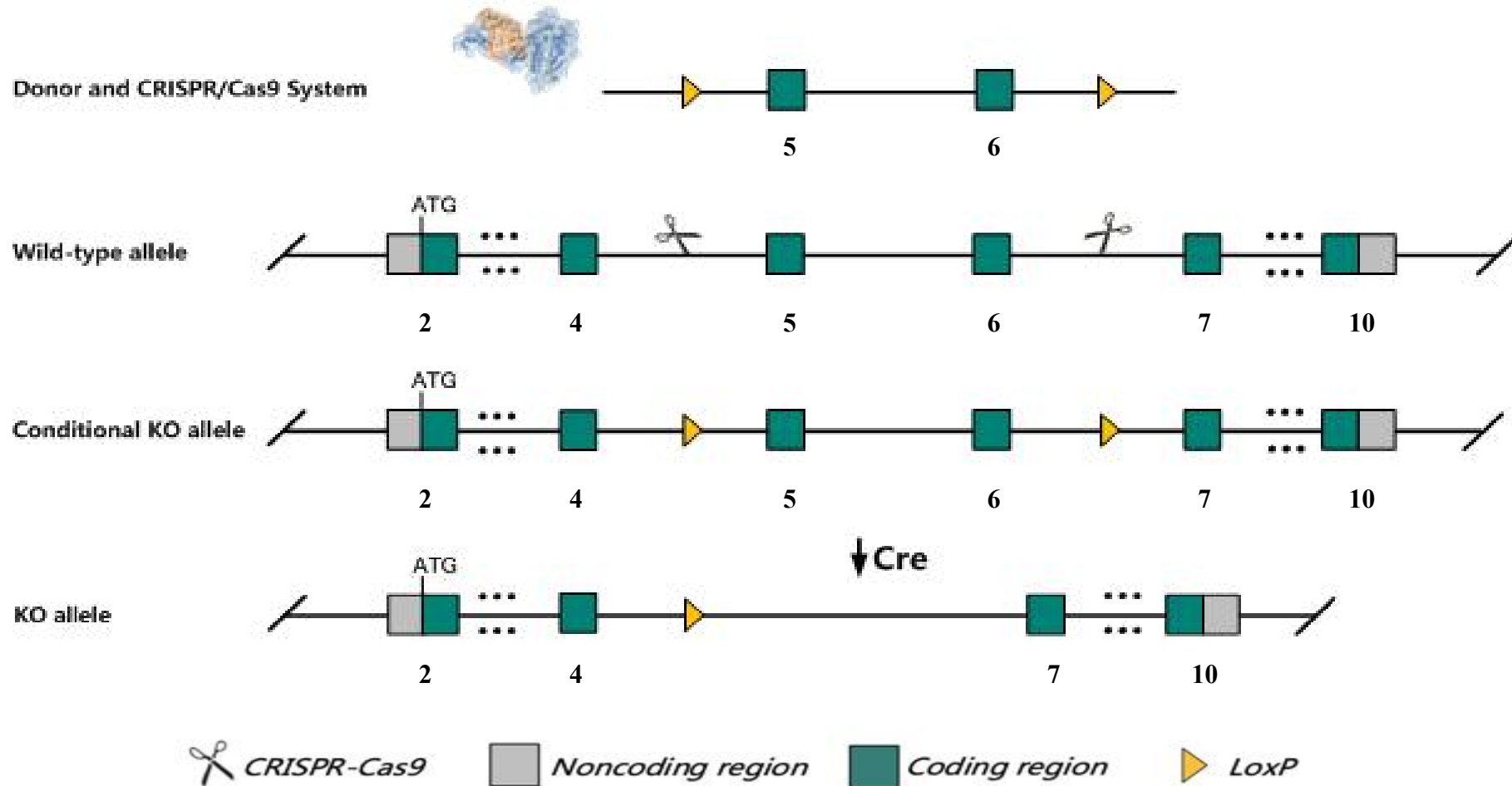
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Stn1* gene.

Technical Information

- The *Stn1* gene has 10 transcripts. According to the structure of *Stn1* gene, exon5-exon6 of *Stn1*-201 (ENSMUST00000049369.16) transcript is recommended as the knockout region. The region contains 292bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Stn1* 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 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.
- 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.

Gene Information

Stn1 STN1, CST complex subunit [*Mus musculus* (house mouse)]

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Gene ID: 108689, updated on 11-Apr-2024

Summary



Official Symbol	Stn1 provided by MGI
Official Full Name	STN1, CST complex subunit provided by MGI
Primary source	MGI:MGI:1915581
See related	Ensembl:ENSMUSG00000042694 AllianceGenome:MGI:1915581
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	AAF44; Obfc 1; AAF-44; RPA-32; 0610009H20Rik; 2310057J23Rik
Summary	Enables single-stranded DNA binding activity and telomeric DNA binding activity. Involved in positive regulation of DNA replication. Located in chromosome, telomeric region and nucleus. Part of CST complex. Orthologous to human STN1 (STN1 subunit of CST complex). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Ubiquitous expression in limb E14.5 (RPKM 8.0), CNS E11.5 (RPKM 7.4) 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 10 transcripts, all transcripts are shown below:

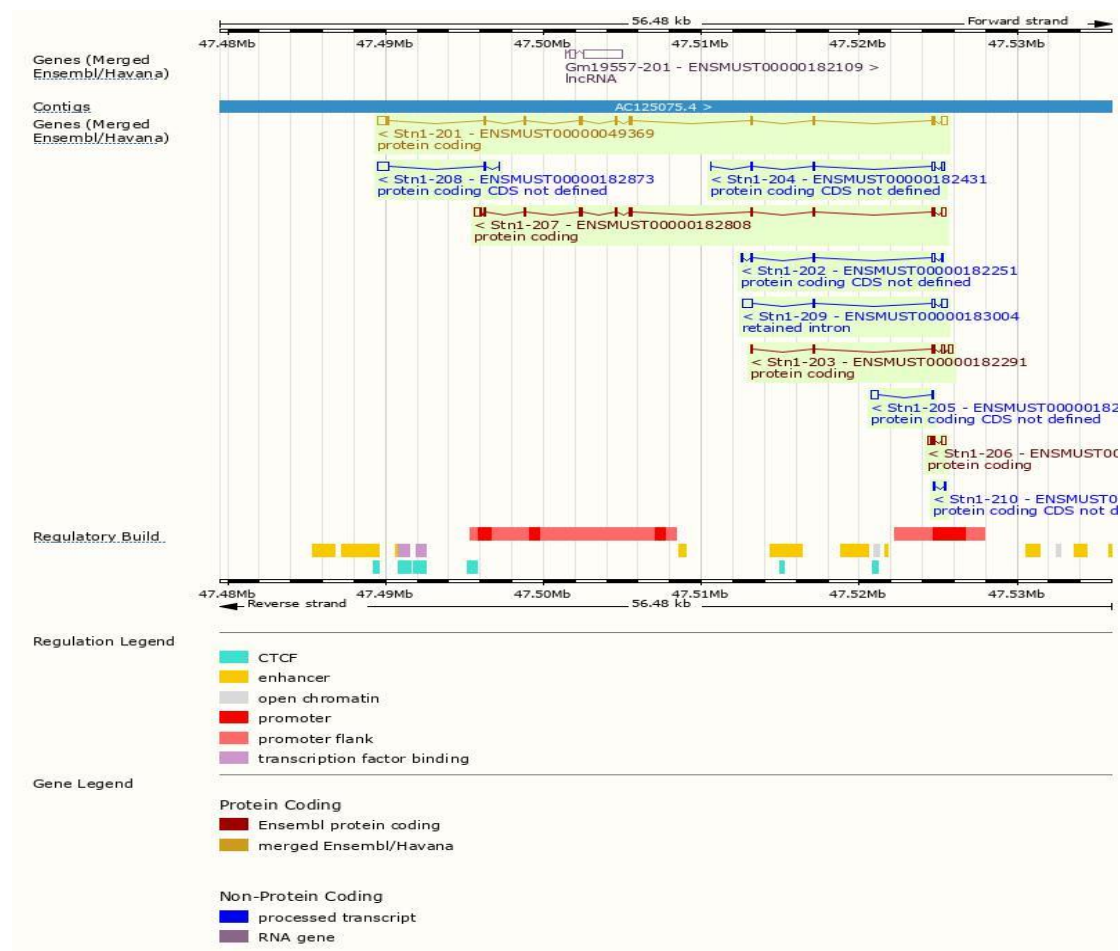
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000049369.16	Stn1-201	1992	378aa	Protein coding	CCDS29892	Q8K2X3	Ensembl Canonical Gencode basic APPRIS P1 TSL:1
ENSMUST00000182808.8	Stn1-207	1618	351aa	Protein coding		Q3UXU8	Gencode basic TSL:1
ENSMUST00000182291.2	Stn1-203	748	99aa	Protein coding		S4R297	TSL:3 CDS 3' incomplete
ENSMUST00000182714.2	Stn1-206	690	87aa	Protein coding		A0A494B9T6	Gencode basic TSL:2
ENSMUST00000182873.2	Stn1-208	802	No protein	Protein coding CDS not defined		-	TSL:1
ENSMUST00000182431.8	Stn1-204	558	No protein	Protein coding CDS not defined		-	TSL:2
ENSMUST00000182251.8	Stn1-202	523	No protein	Protein coding CDS not defined		-	TSL:3
ENSMUST00000182654.2	Stn1-205	430	No protein	Protein coding CDS not defined		-	TSL:2
ENSMUST00000183283.2	Stn1-210	132	No protein	Protein coding CDS not defined		-	TSL:1
ENSMUST00000183004.2	Stn1-209	1107	No protein	Retained intron		-	TSL:1

The strategy is based on the design of *Stn1*-201 transcript, the transcription is shown below:

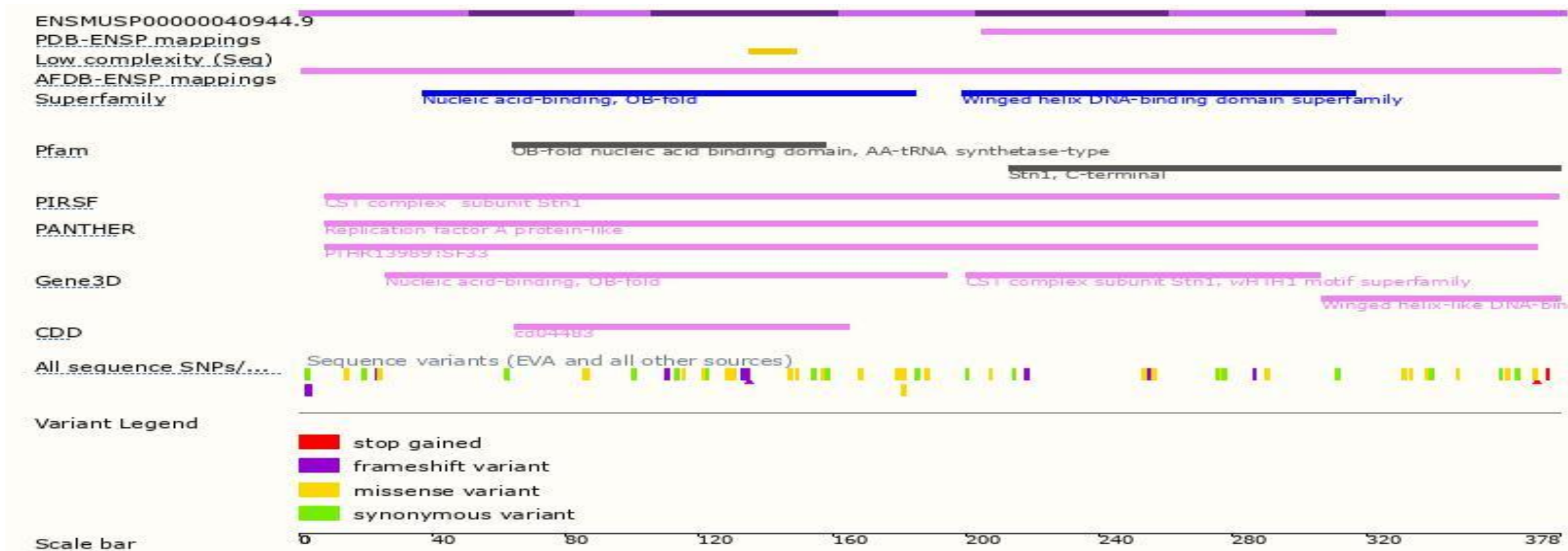


Source: <https://www.ensembl.org>

Genomic Information



Protein Information



Important Information

- *Gm19557* gene will be destroyed , the effect is unknown.
- Approximately 28% amino acid residues remain at the N-terminus after mating and breeding with Cre mice, which may retain some function.
- This strategy didn't destroy the transcripts *Stn1*-203 and *Stn1*-206, and the effect is unknown.
- Both loxp are located in the promoter region of the *Stn1* gene, this strategy may influence the regulatory function of the *Stn1* gene.
- *Stn1* is located on Chr19. 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 risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.