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Csmd2 Cas9-CKO Strategy

Designer: Xiangli Bian

Reviewer: Yao Yu

Design Date: 2023-3-21

Overview

Target Gene Name

- *Csmd2*

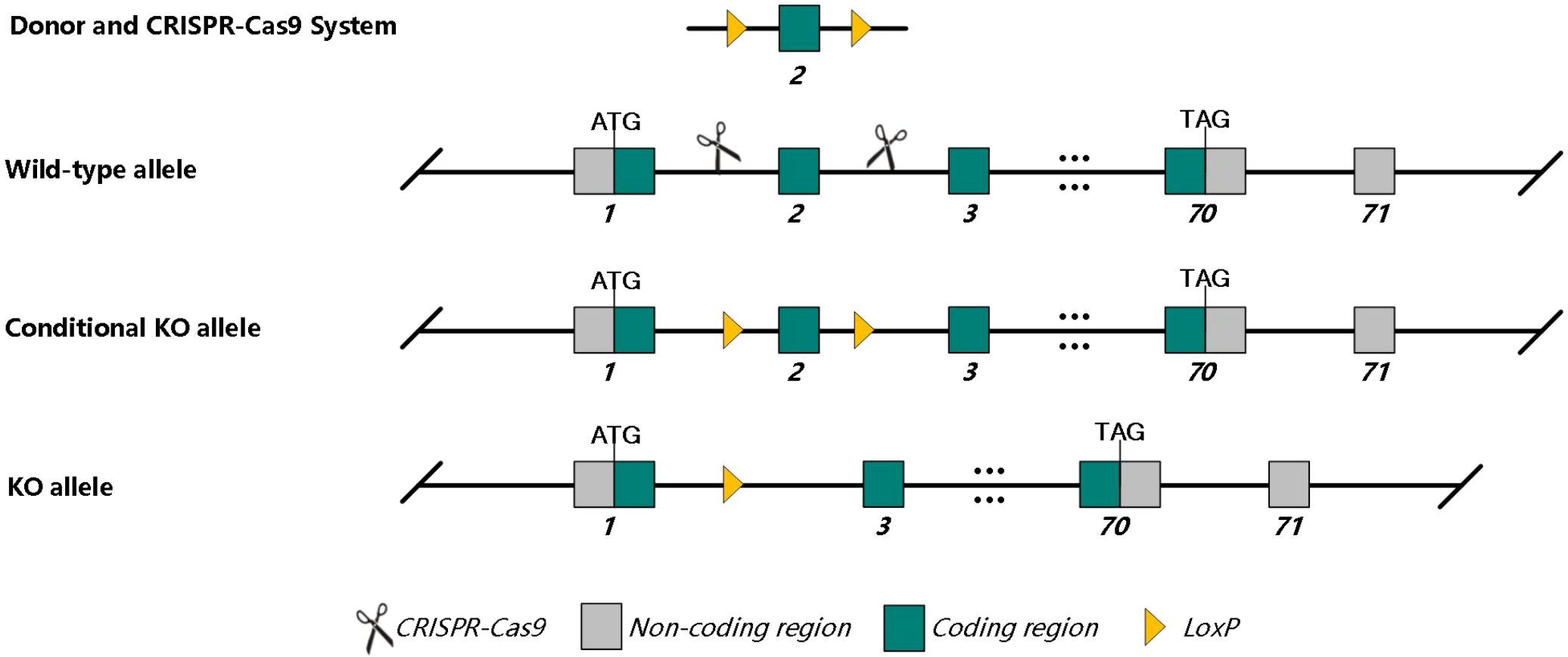
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Csmd2* gene.

Technical Information

- The *Csmd2* gene has 6 transcripts. According to the structure of *Csmd2* gene, exon 2 of *Csmd2*-205 (ENSMUST00000184063.3) is recommended as the knockout region. The region contains 217 bp of coding sequence. Knocking out the region will result in disruption of gene function.
- In this project we use CRISPR-Cas9 technology to modify *Csmd2* 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

Csmd2 CUB and Sushi multiple domains 2 [*Mus musculus* (house mouse)]

Download Datasets

Gene ID: 329942, updated on 26-Sep-2022

Summary

Official Symbol	Csmd2 provided by MGI
Official Full Name	CUB and Sushi multiple domains 2 provided by MGI
Primary source	MGI:MGI:2386401
See related	Ensembl:ENSMUSG00000028804 AllianceGenome:MGI:2386401
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm139
Summary	Is expressed in central nervous system and ganglia. Orthologous to human CSMD2 (CUB and Sushi multiple domains 2). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Biased expression in CNS E18 (RPKM 4.4), whole brain E14.5 (RPKM 3.9) and 6 other tissues See more
Orthologs	human all

NEW **Try the new Gene table**
Try the new Transcript table

Genomic context

Location: 4; 4 D2.2

See Csmd2 in Genome Data Viewer

Exon count: 72

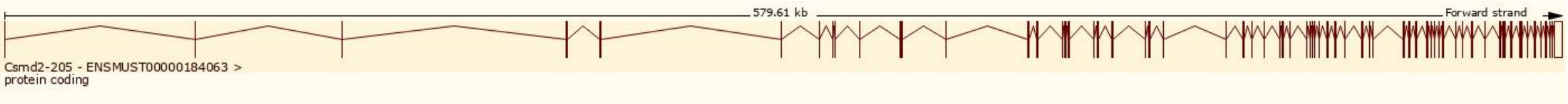
https://www.ncbi.nlm.nih.gov/gene/329942

Transcript Information

The gene has 6 transcripts, all transcripts are shown below:

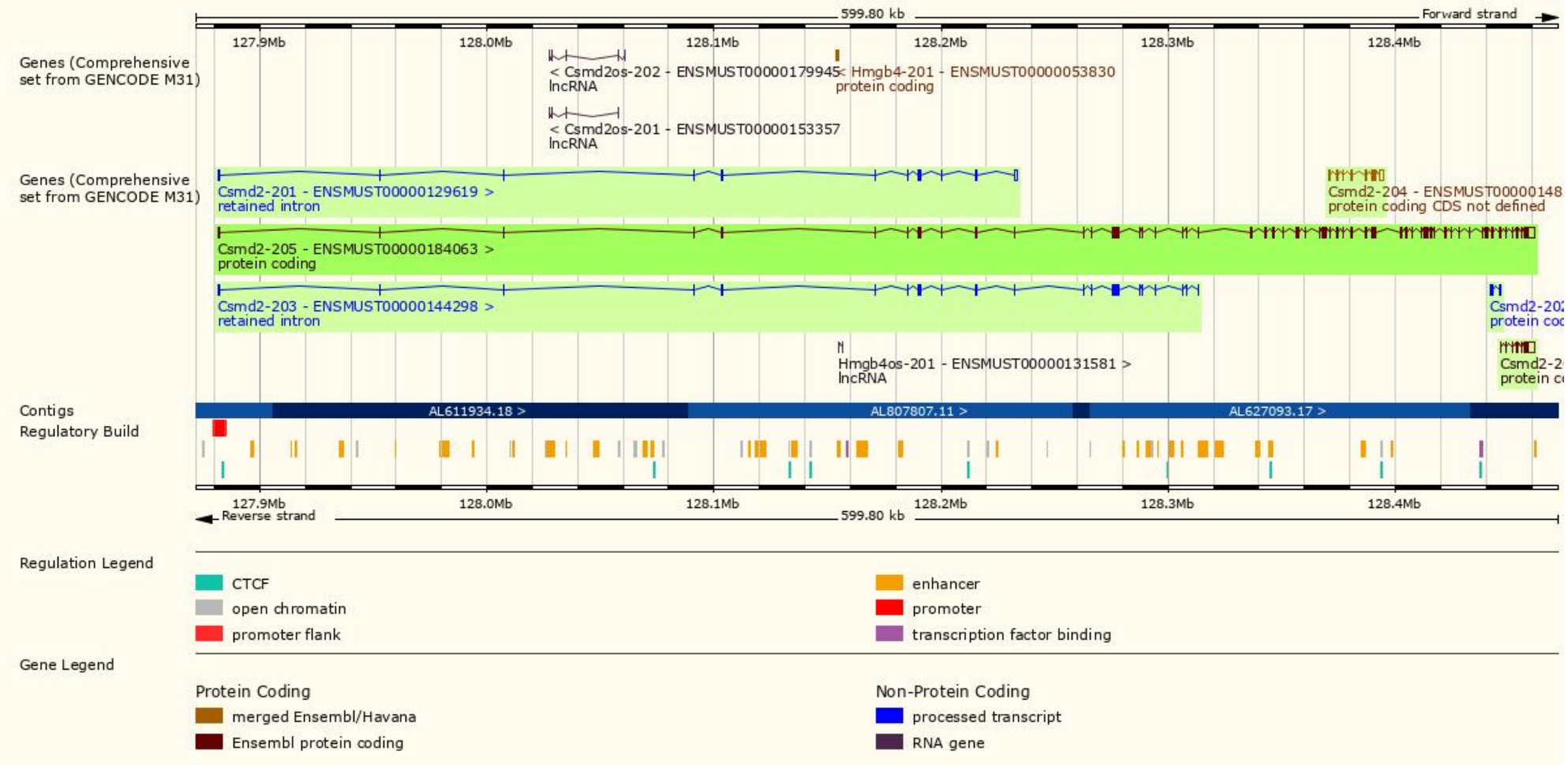
Transcript ID	Name ▲	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000129619.8	Csmd2-201	3034	No protein	Retained intron		-	TSL:1
ENSMUST00000139561.2	Csmd2-202	686	No protein	Protein coding CDS not defined		-	TSL:3
ENSMUST00000144298.2	Csmd2-203	4104	No protein	Retained intron		-	TSL:1
ENSMUST00000148247.2	Csmd2-204	3320	No protein	Protein coding CDS not defined		-	TSL:1
ENSMUST00000184063.3	Csmd2-205	13555	3611aa	Protein coding	CCDS84795	V9GX34	Ensembl Canonical GENCODE basic APPRIS P1 TSL:5
ENSMUST00000221199.2	Csmd2-206	3601	302aa	Protein coding		A0A1Y7VP35	TSL:5 CDS 5' incomplete

The strategy is based on the design of *Csmd2*-205 transcript, the transcription is shown below:



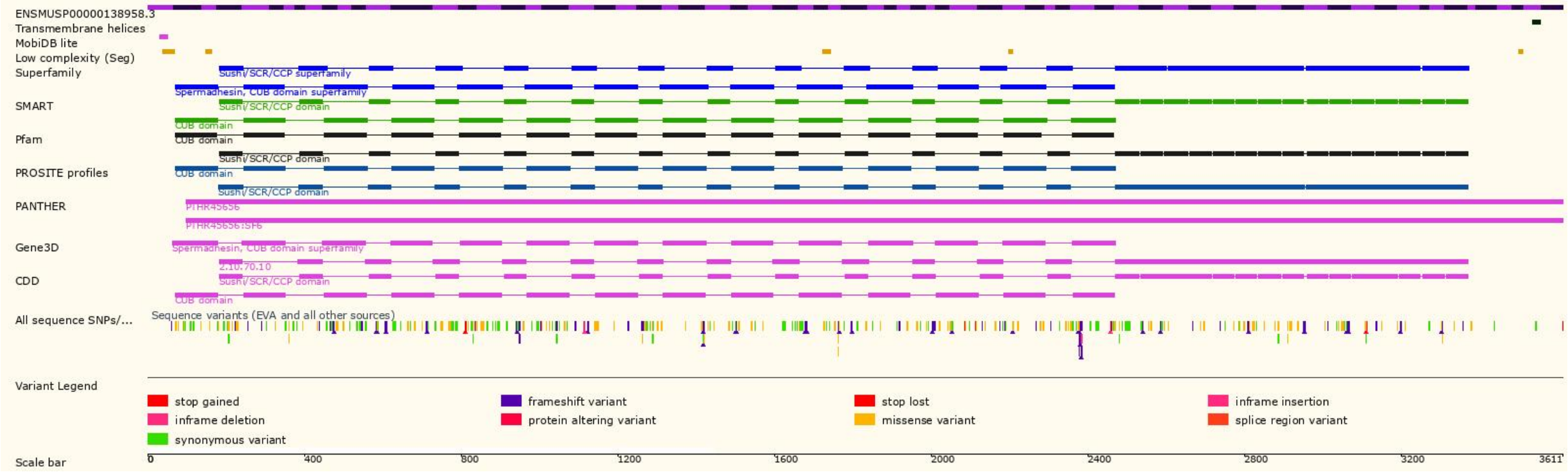
Source: http://asia.ensembl.org/

Genomic Information



Source:http://asia.ensembl.org/

Protein Information



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

Important Information

- Transcript *Csmd2*-202, *Csmd2*-204 and *Csmd2*-206 may not be affected.
- *Csmd2* is located on Chr 4. 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.