

Cops8 Cas9-CKO Strategy

Designer: Xueting Zhang

Reviewer: Daohua Shen

Design Date: 2020-6-10

Project Overview

Project Name

Cops8

Project type

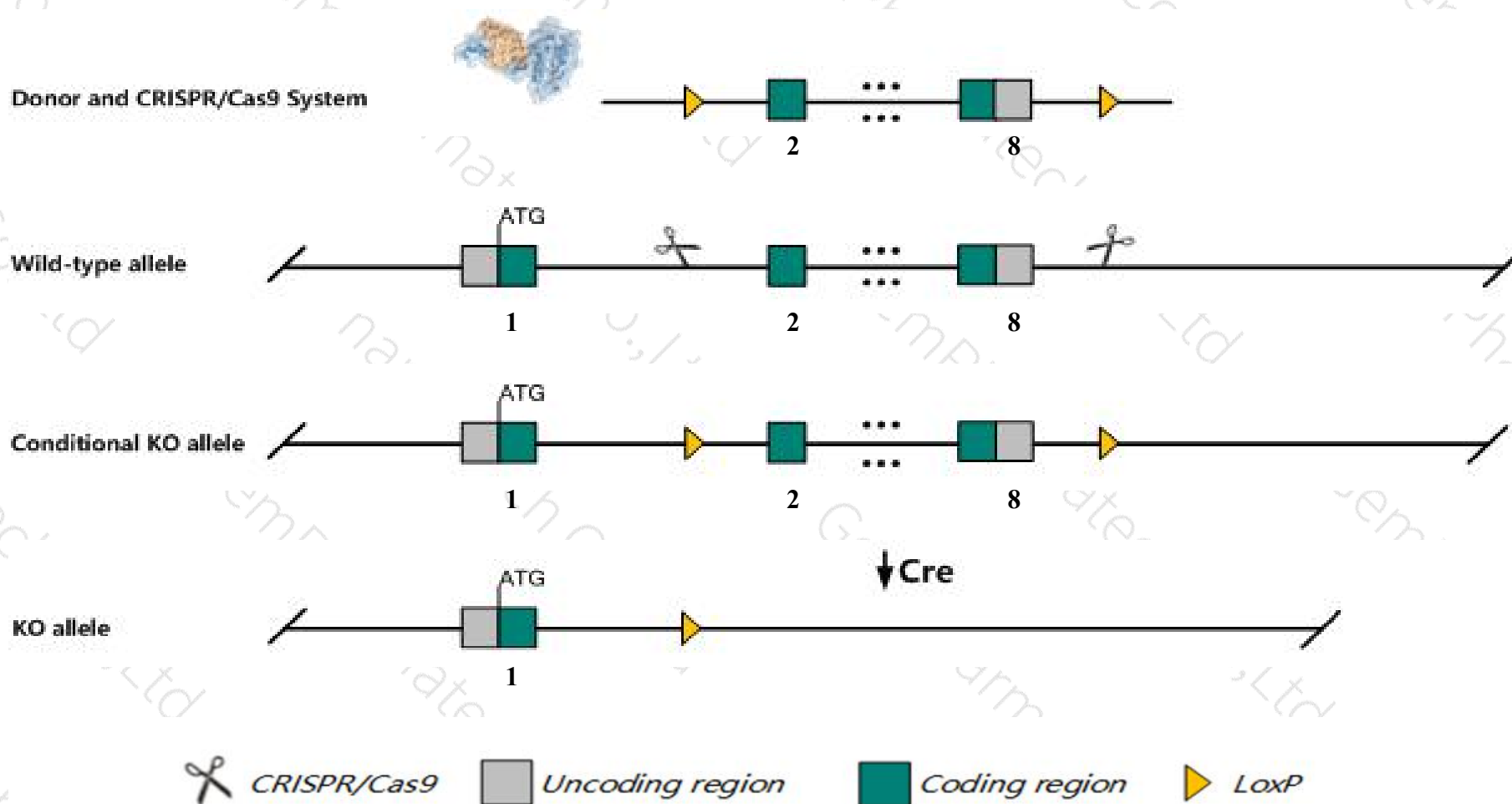
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cops8* gene. The schematic diagram is as follows:



- The *Cops8* gene has 9 transcripts. According to the structure of *Cops8* gene, exon2-exon8 of *Cops8-201* (ENSMUST00000036153.11) transcript is recommended as the knockout region. The region contains most of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cops8* 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, mice homozygous for a null allele exhibit embryonic lethality, reduced embryonic size and growth, and reduced to absent outgrowth of the inner cell mass of E3.5 embryos.
- The *Cops8* gene is located on the Chr1. 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)

Cops8 COP9 signalosome subunit 8 [Mus musculus (house mouse)]

Gene ID: 108679, updated on 13-Mar-2020

Summary



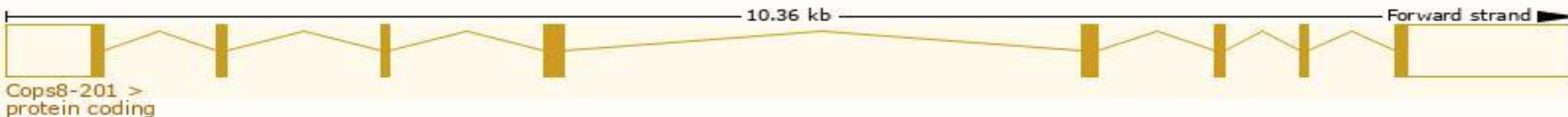
Official Symbol	Cops8 provided by MGI
Official Full Name	COP9 signalosome subunit 8 provided by MGI
Primary source	MGI:MGI:1915363
See related	Ensembl:ENSMUSG00000034432
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9430009J09Rik, AA408242, Csn8, Sgn8
Expression	Ubiquitous expression in CNS E18 (RPKM 39.3), CNS E11.5 (RPKM 39.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

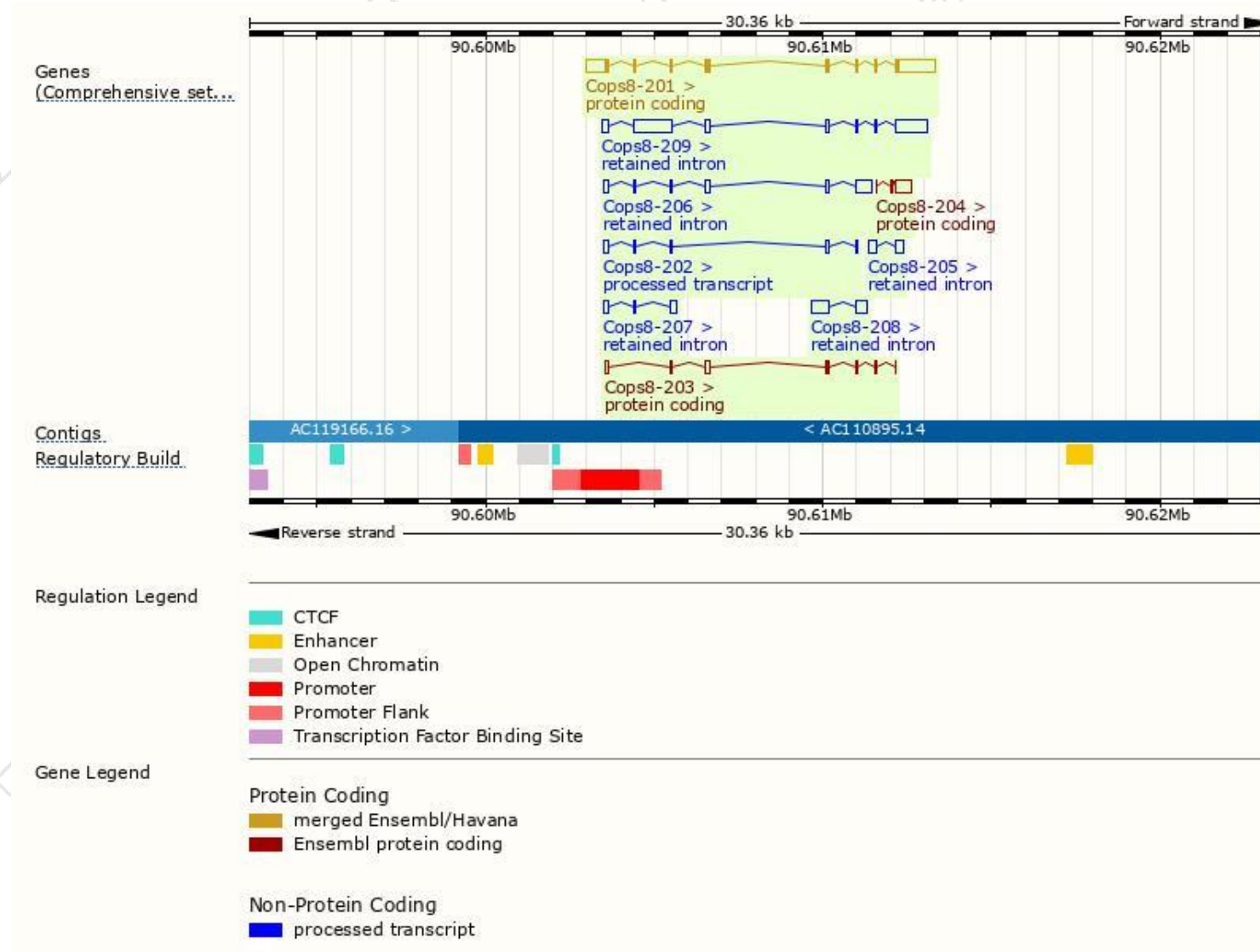
The gene has 9 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cops8-201	ENSMUST00000036153.11	2287	209aa	Protein coding	CCDS15153	Q8VBV7	TSL:1 GENCODE basic APPRIS P1
Cops8-204	ENSMUST00000186882.1	513	5aa	Protein coding	-	-	CDS 5' incomplete TSL:5
Cops8-203	ENSMUST00000186750.1	508	80aa	Protein coding	-	A0A087WPM5	CDS 3' incomplete TSL:5
Cops8-202	ENSMUST00000186152.6	420	No protein	Processed transcript	-	-	TSL:5
Cops8-209	ENSMUST00000191510.6	2593	No protein	Retained intron	-	-	TSL:1
Cops8-206	ENSMUST00000189309.6	1003	No protein	Retained intron	-	-	TSL:2
Cops8-208	ENSMUST00000190700.1	901	No protein	Retained intron	-	-	TSL:2
Cops8-205	ENSMUST00000189107.1	462	No protein	Retained intron	-	-	TSL:2
Cops8-207	ENSMUST00000190057.6	395	No protein	Retained intron	-	-	TSL:2

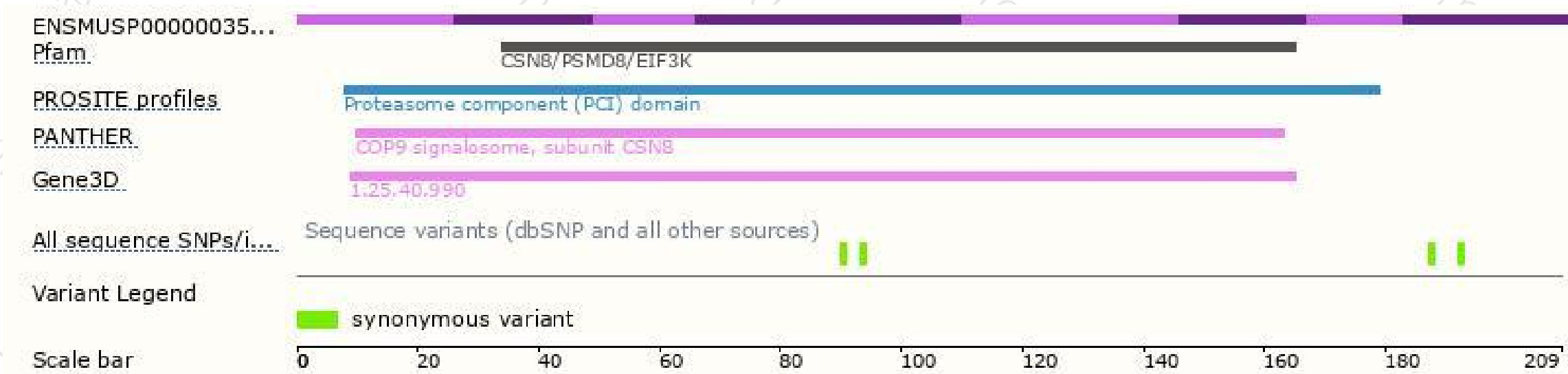
The strategy is based on the design of *Cops8-201* transcript, the transcription is shown below:



Genomic location distribution

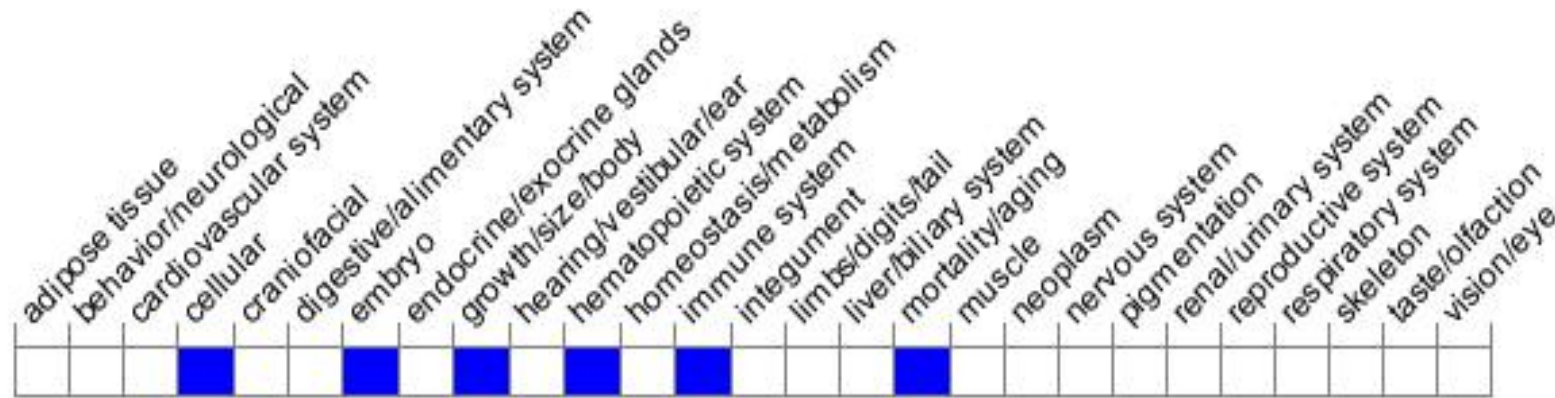


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview



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, mice homozygous for a null allele exhibit embryonic lethality, reduced embryonic size and growth, and reduced to absent outgrowth of the inner cell mass of E3.5 embryos.

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

Tel: 400-9660890

