

Prune2 Cas9-CKO Strategy

Designer: Xueting Zhang

Reviewer: Yanhua Shen

Date: 2020-02-18

Project Overview

Project Name

Prune2

Project type

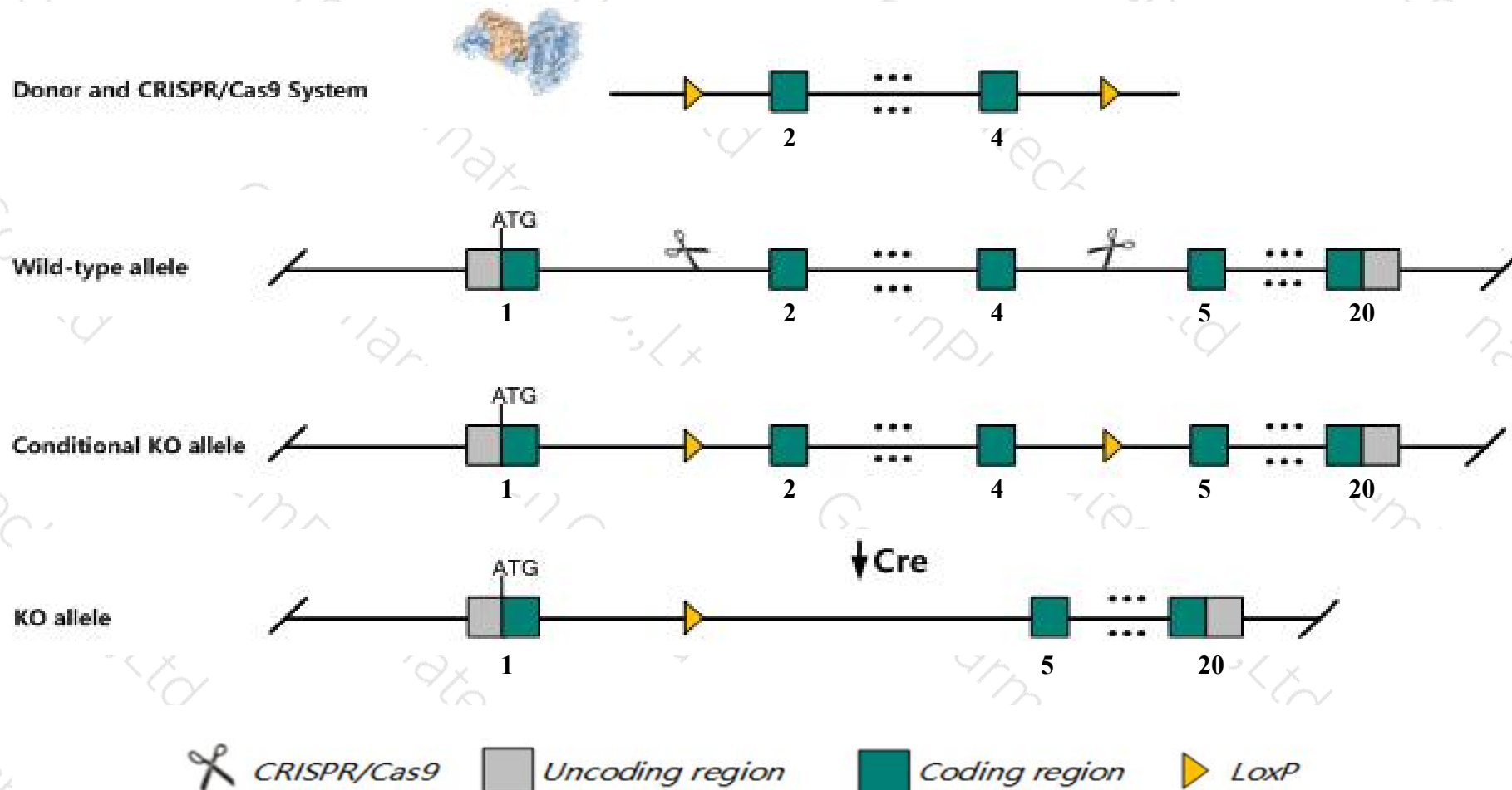
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prune2* gene. The schematic diagram is as follows:



- The *Prune2* gene has 9 transcripts. According to the structure of *Prune2* gene, exon2-exon4 of *Prune2*-201 (ENSMUST00000087689.4) transcript is recommended as the knockout region. The region contains 472bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prune2* 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.

Notice

- Transcript *Prune2*-203&204&206&208&209 may not be affected.
- The effect on transcript *Prune2*-202&207 is unknown.
- The *Prune2* gene is located on the Chr19. 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)

Prune2 prune homolog 2 [*Mus musculus* (house mouse)]

Gene ID: 353211, updated on 5-Nov-2019

Summary

- Official Symbol

Prune2 provided by [MGI](#)
- Official Full Name

prune homolog 2 provided by [MGI](#)
- Primary source

[MGI:MGI:1925004](#)
- See related

[Ensembl:ENSMUSG00000039126](#)
- 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

Bmcc1; mKIAA0367; 6330414G02Rik; A230083H22Rik; A330102H22Rik
- Expression

Biased expression in cerebellum adult (RPKM 10.0), frontal lobe adult (RPKM 5.5) and 10 other tissues [See more](#)
- Orthologs

[human](#) [all](#)

Genomic context

Location: 19; 19 B

See Prune2 in [Genome Data Viewer](#)

Exon count: 21

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	19	NC_000085.6 (16955668..17223963)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	19	NC_000085.5 (17030608..17298422)

Transcript information (Ensembl)

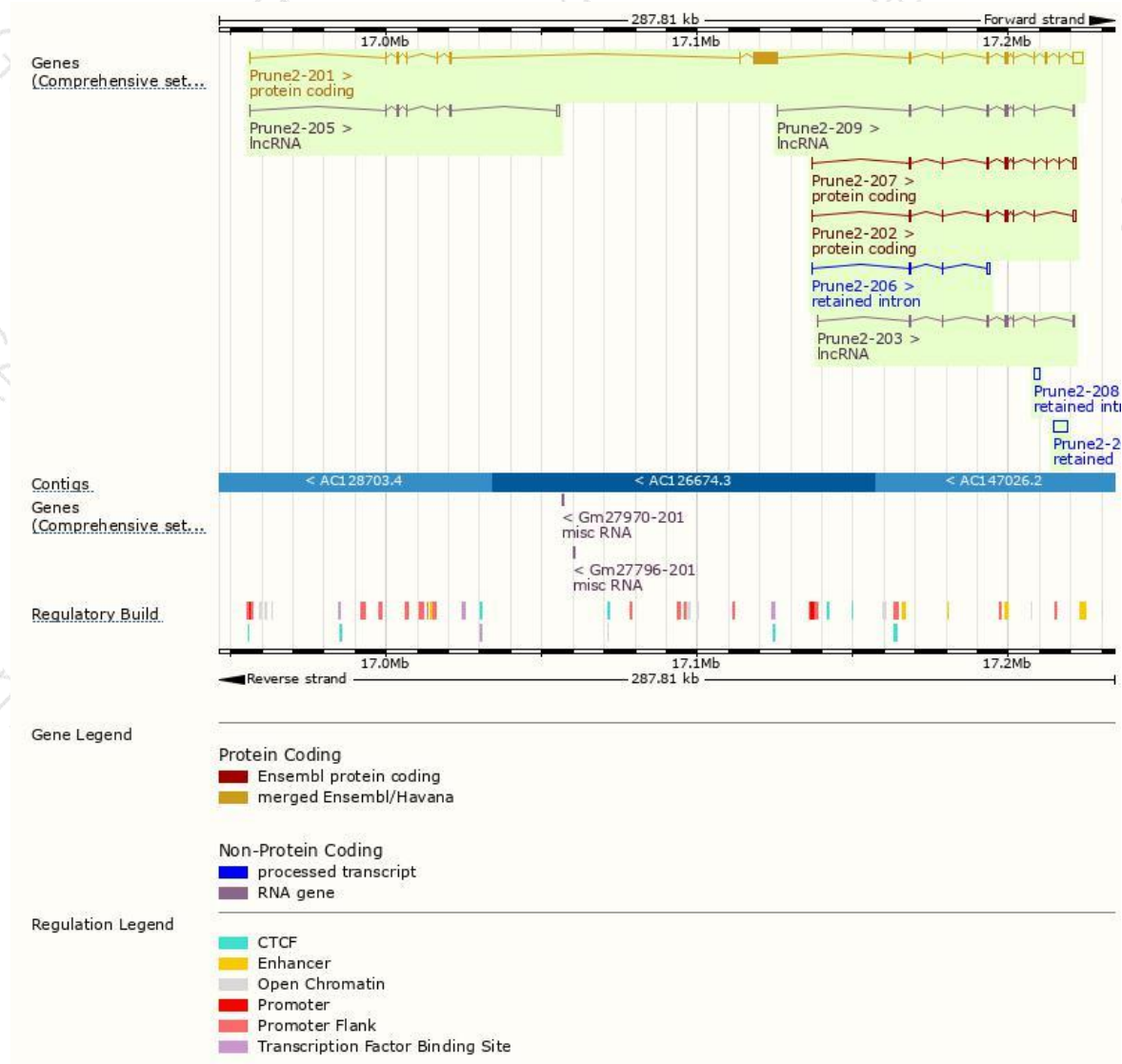
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prune2-201	ENSMUST00000087689.4	12512	3084aa	Protein coding	CCDS50400	Q52KR3	TSL:5 GENCODE basic APPRIS P1
Prune2-207	ENSMUST00000225351.1	2115	323aa	Protein coding	-	F8QPD5 Q52KR3	GENCODE basic
Prune2-202	ENSMUST00000223920.1	1803	294aa	Protein coding	-	Q52KR3	GENCODE basic
Prune2-204	ENSMUST00000224117.1	4448	No protein	Retained intron	-	-	
Prune2-208	ENSMUST00000225838.1	1881	No protein	Retained intron	-	-	
Prune2-206	ENSMUST00000224602.1	946	No protein	Retained intron	-	-	
Prune2-205	ENSMUST00000224145.1	1885	No protein	lncRNA	-	-	
Prune2-209	ENSMUST00000226052.1	1528	No protein	lncRNA	-	-	
Prune2-203	ENSMUST00000224059.1	1377	No protein	lncRNA	-	-	

The strategy is based on the design of *Prune2-201* transcript,The transcription is shown below



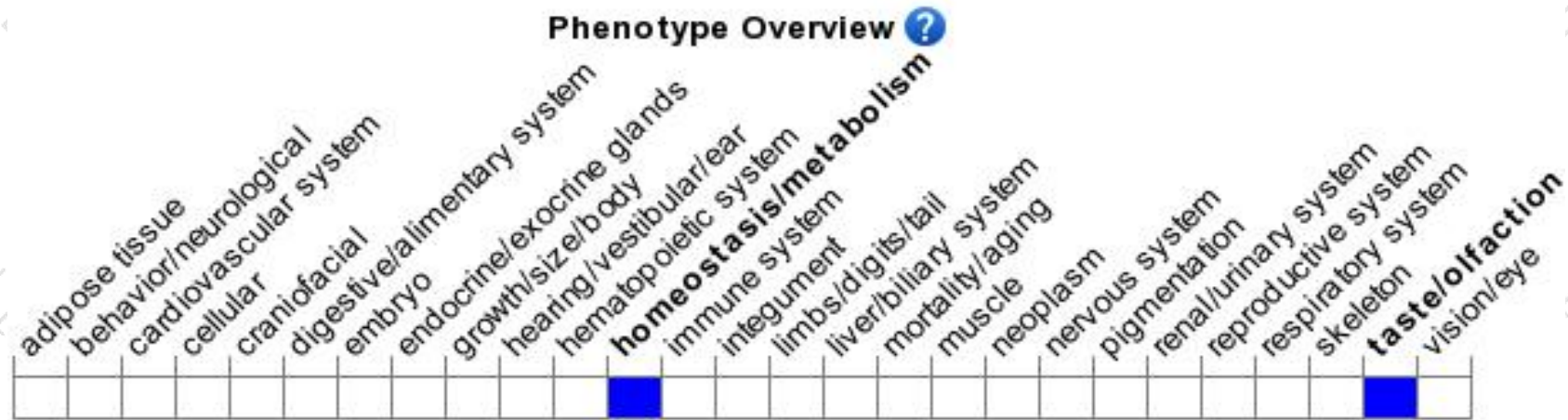
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

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

Tel: 400-9660890

