

Camk1 Cas9-CKO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

Design Date:

2020-2-11

Project Overview

Project Name

Camk1

Project type

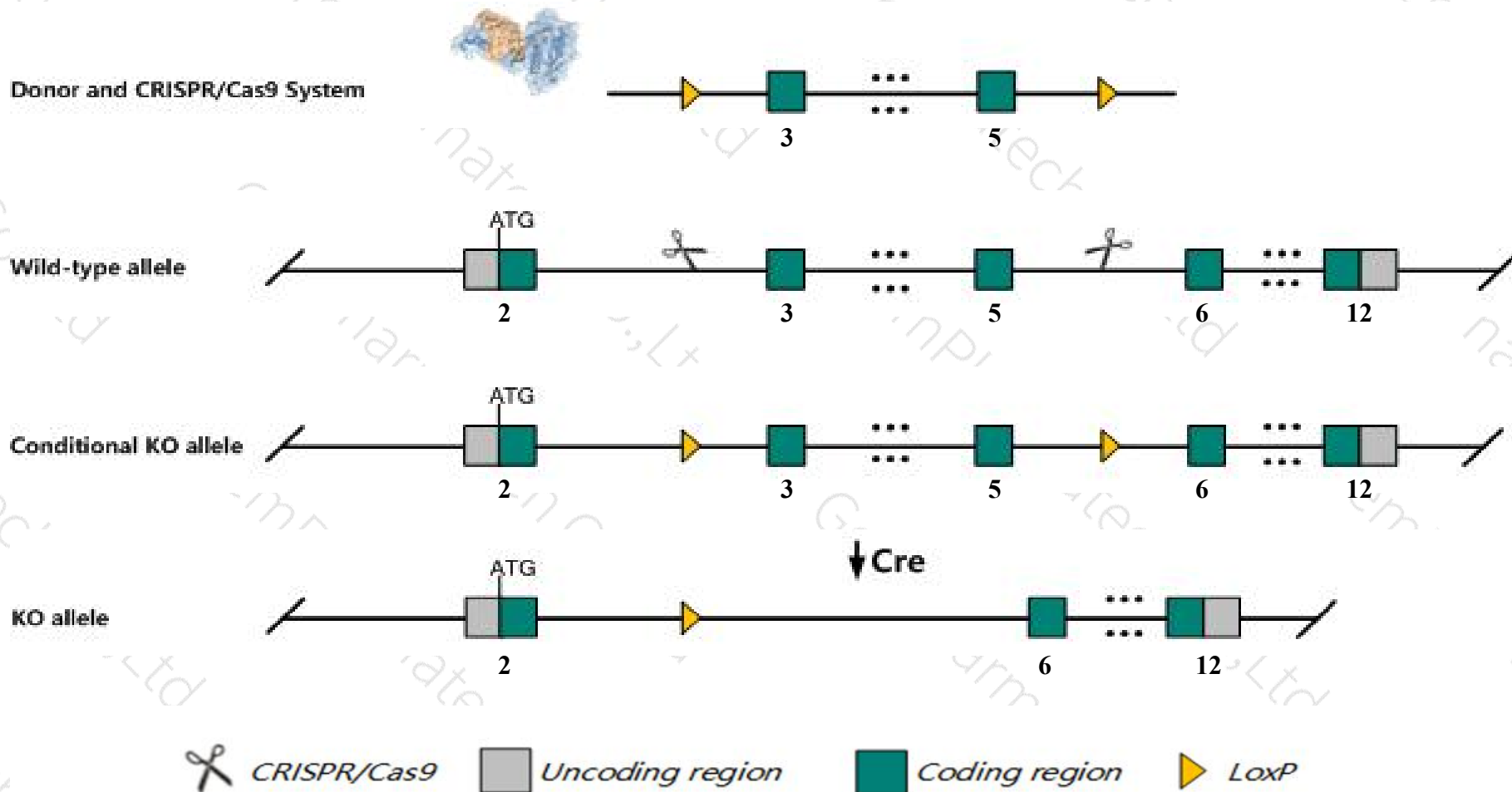
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Camk1* gene. The schematic diagram is as follows:



- The *Camk1* gene has 6 transcripts. According to the structure of *Camk1* gene, exon3-exon5 of *Camk1-201* (ENSMUST00000032409.14) transcript is recommended as the knockout region. The region contains 346bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Camk1* 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

- The *Camk1* gene is located on the Chr6. 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)

Camk1 calcium/calmodulin-dependent protein kinase I [Mus musculus (house mouse)]

Gene ID: 52163, updated on 31-Jan-2019

Summary



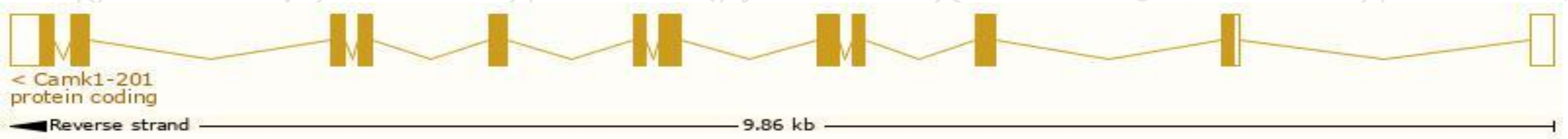
Official Symbol	Camk1 provided by MGI
Official Full Name	calcium/calmodulin-dependent protein kinase I provided by MGI
Primary source	MGI:MGI:1098535
See related	Ensembl:ENSMUSG00000030272
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI505105, CaMKIalpha, D6Erd263e
Expression	Ubiquitous expression in subcutaneous fat pad adult (RPKM 35.3), frontal lobe adult (RPKM 32.7) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

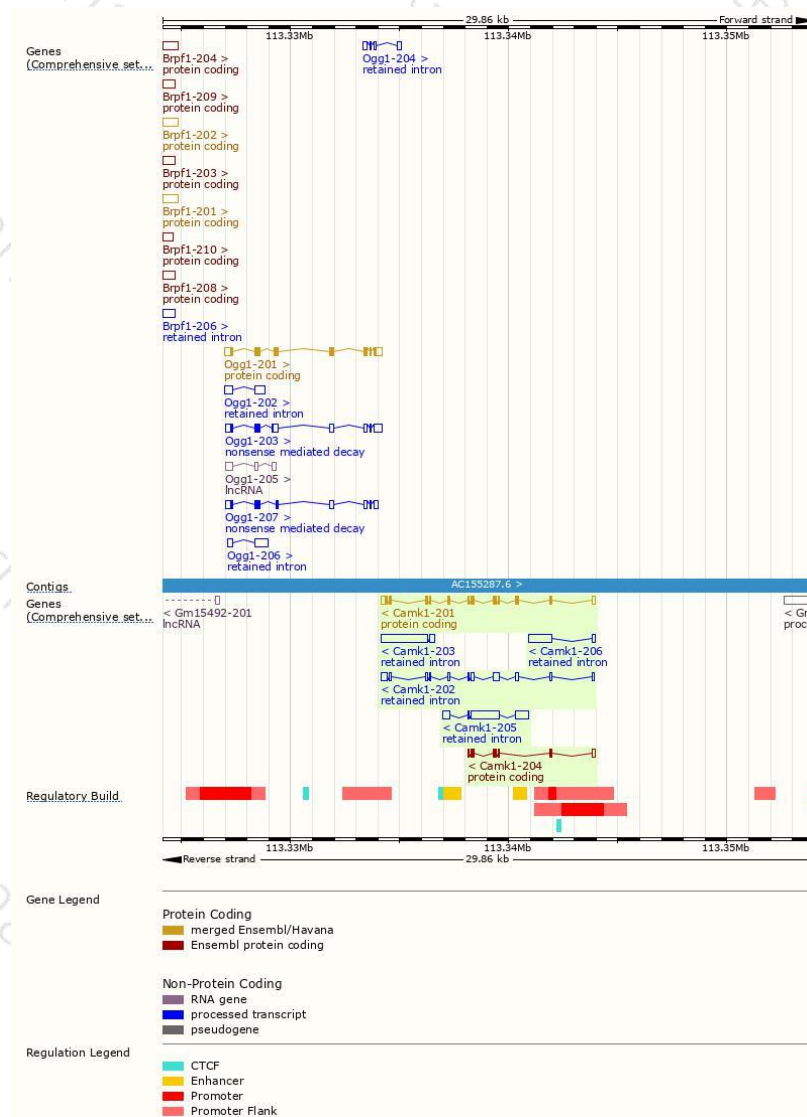
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Camk1-201	ENSMUST00000032409.14	1496	374aa	Protein coding	CCDS20415	Q3UY68 Q91YS8	TSL:1 GENCODE basic APPRIS P1
Camk1-204	ENSMUST00000155543.1	663	162aa	Protein coding	-	D3Z368	CDS 3' incomplete TSL:5
Camk1-203	ENSMUST00000153067.1	2398	No protein	Retained intron	-	-	TSL:1
Camk1-205	ENSMUST00000156512.6	2359	No protein	Retained intron	-	-	TSL:5
Camk1-202	ENSMUST00000149497.3	1486	No protein	Retained intron	-	-	TSL:1
Camk1-206	ENSMUST00000156853.1	1208	No protein	Retained intron	-	-	TSL:1

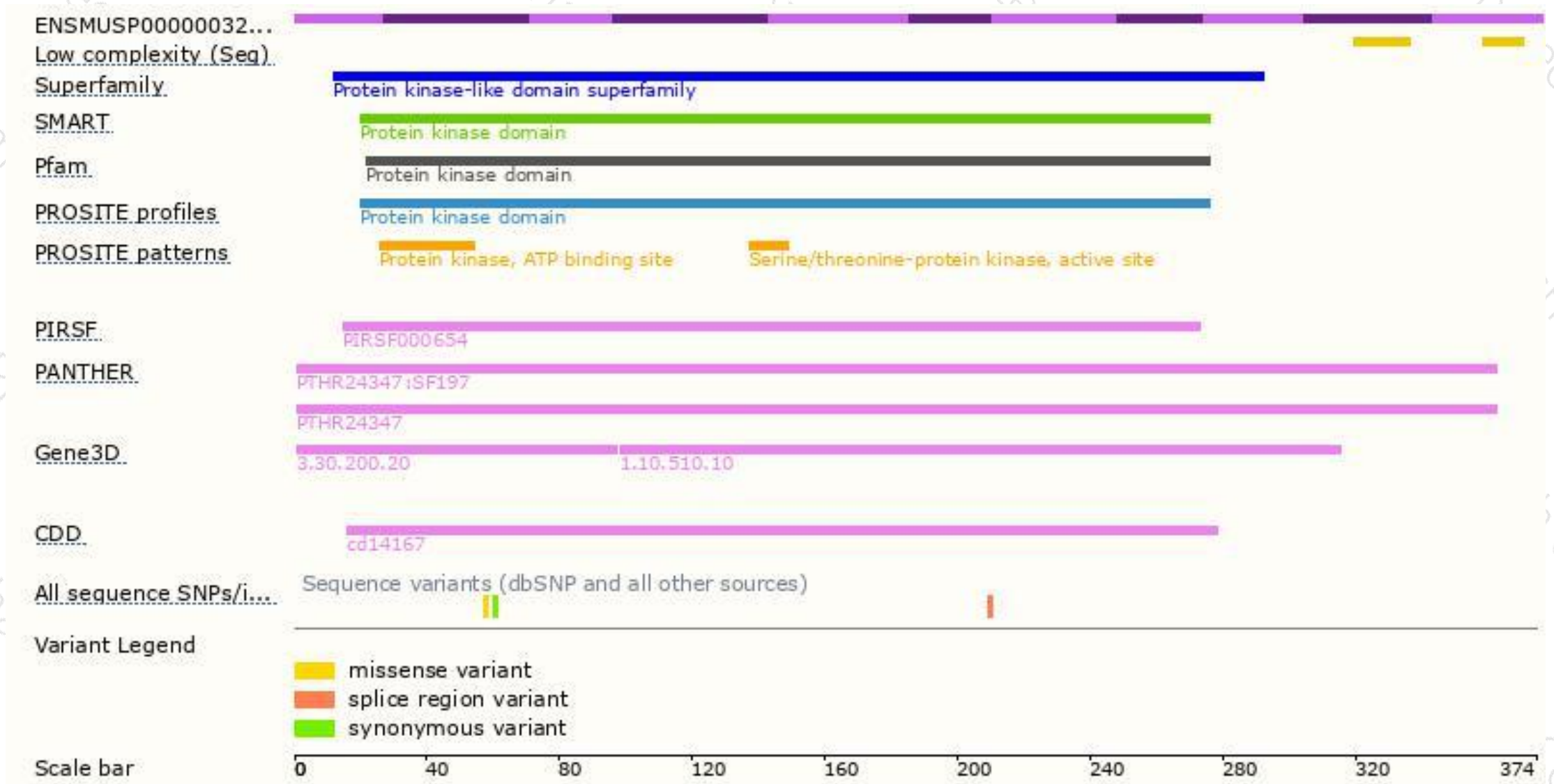
The strategy is based on the design of *Camk1-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

Tel: 400-9660890

