

Psma4 Cas9-CKO Strategy

Designer:

JiaYu

Reviewer:

Xiaojing Li

Design Date:

2020-3-19

Project Overview

Project Name

Psma4

Project type

Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

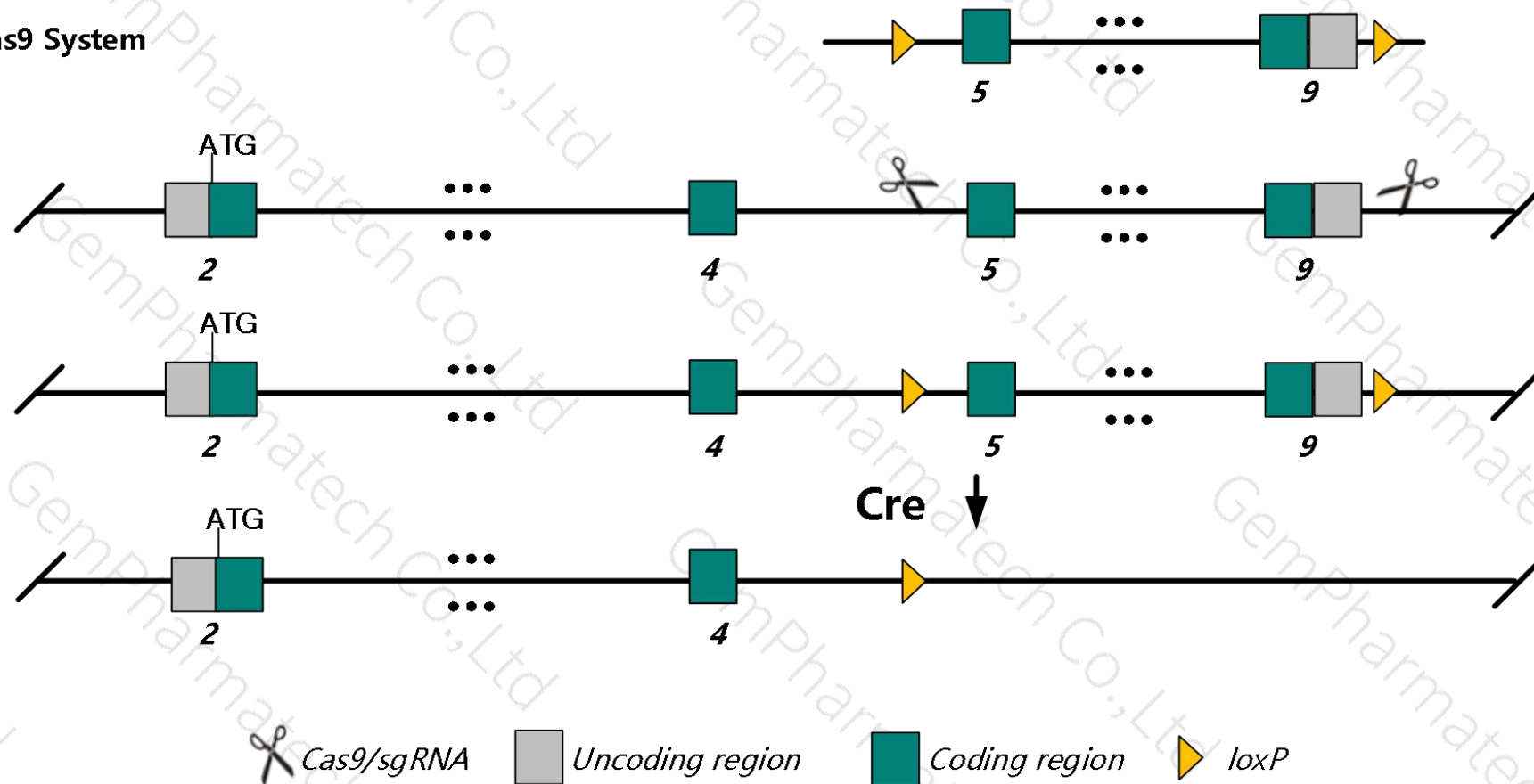
This model will use CRISPR/Cas9 technology to edit the *Psma4* gene. The schematic diagram is as follows:

Donor and CRISPR/Cas9 System

Wild-type allele

Floxed allele

KO allele



- The *Pσμα4* gene has 7 transcripts. According to the structure of *Pσμα4* gene, exon5-exon9 of *Pσμα4-201* (ENSMUST00000034848.13) 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 *Pσμα4* 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.

- The flox region is about 3 kb away from the 5th end of the AY074887 gene, which may affect the regulation of this gene.
- The *Pσμα4* gene is located on the Chr9. 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)

Psma4 proteasome subunit alpha 4 [*Mus musculus* (house mouse)]

Gene ID: 26441, updated on 13-Mar-2020

Summary

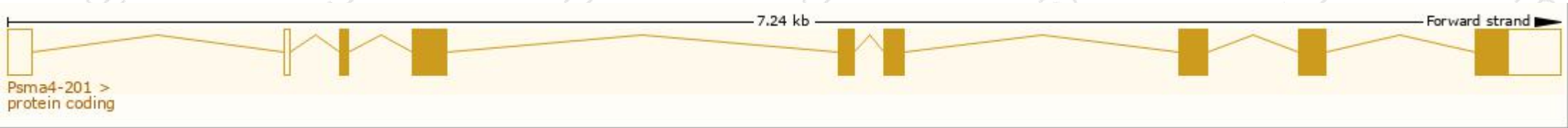
Official Symbol	Psma4 provided by MGI
Official Full Name	proteasome subunit alpha 4 provided by MGI
Primary source	MGI:MGI:1347060
See related	Ensembl:ENSMUSG00000032301
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C9
Expression	Ubiquitous expression in placenta adult (RPKM 71.5), CNS E11.5 (RPKM 59.3) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

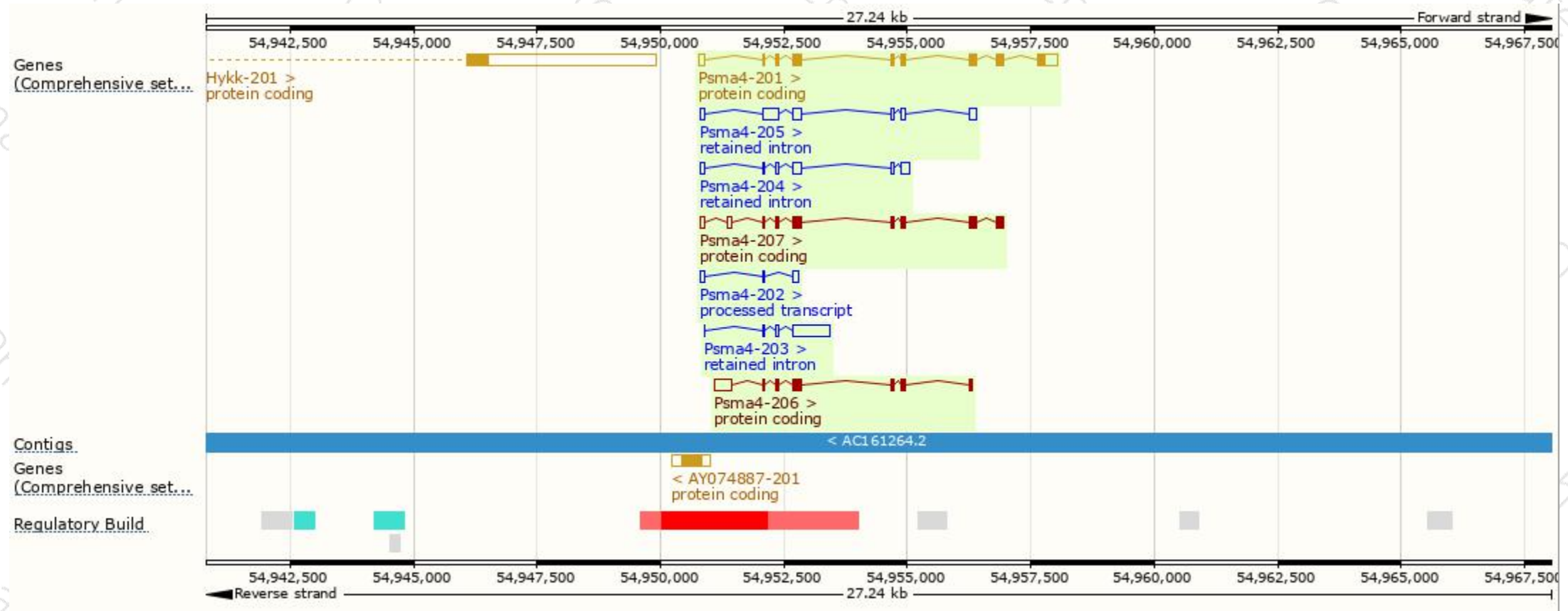
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Psma4-201	ENSMUST00000034848.13	1165	261aa	Protein coding	CCDS40643	Q9R1P0	TSL:1 GENCODE basic APPRIS P1
Psma4-207	ENSMUST00000172407.7	828	210aa	Protein coding	-	E9PW69	CDS 3' incomplete TSL:3
Psma4-206	ENSMUST00000171900.1	768	139aa	Protein coding	-	E9Q0X0	CDS 3' incomplete TSL:3
Psma4-202	ENSMUST00000163960.7	244	No protein	Processed transcript	-	-	TSL:5
Psma4-205	ENSMUST00000171578.7	868	No protein	Retained intron	-	-	TSL:3
Psma4-203	ENSMUST00000164679.1	832	No protein	Retained intron	-	-	TSL:2
Psma4-204	ENSMUST00000169008.7	562	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Psma4-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

Tel: 400-9660890

