

Prtn3 Cas9-CKO Strategy

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Project Overview

Project Name

Prtn3

Project type

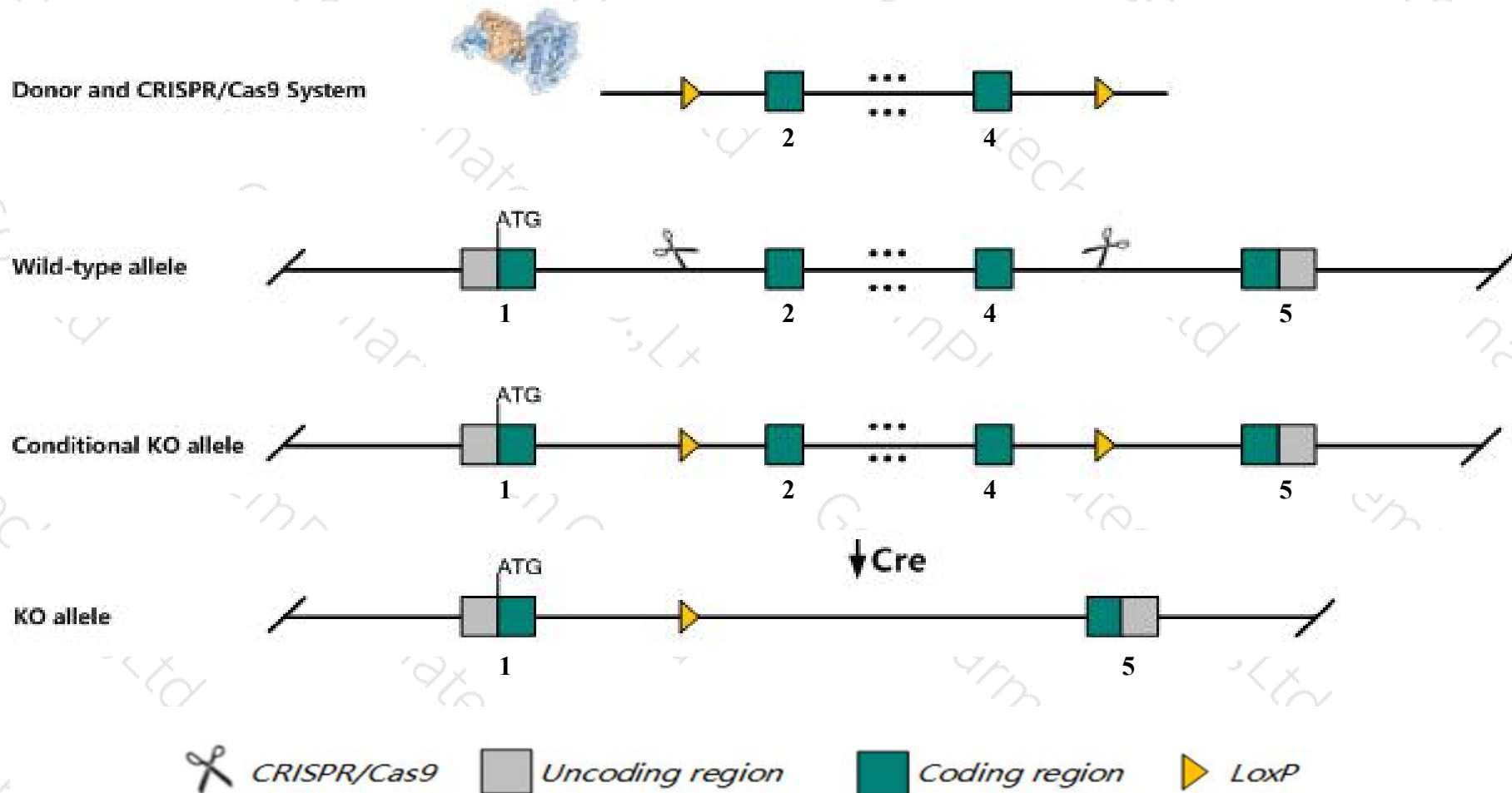
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prtn3* gene. The schematic diagram is as follows:



Technical routes

- The *Prtn3* gene has 6 transcripts. According to the structure of *Prtn3* gene, exon2-exon4 of *Prtn3-201* (ENSMUST00000006679.14) transcript is recommended as the knockout region. The region contains 539bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prtn3* 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 knock-out allele exhibit delayed neutrophil death and increased neutrophil accumulation at sites of inflammation in a murine model of peritonitis.
- The floxed region is near to the N-terminal of *Plppr3* and *Elane* and *Cfd* and *Gm19810* gene, this strategy may influence the regulatory function of the N-terminal of these gene.
- The *Prtn3* gene is located on the Chr10. 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)

Prtn3 proteinase 3 [Mus musculus (house mouse)]

Gene ID: 19152, updated on 31-Jan-2019

Summary



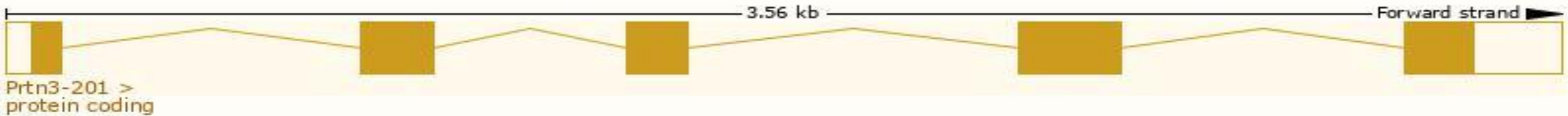
Official Symbol	Prtn3 provided by MGI
Official Full Name	proteinase 3 provided by MGI
Primary source	MGI:MGI:893580
See related	Ensembl:ENSMUSG000000057729
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	PR3, mPR3
Expression	Biased expression in liver E18 (RPKM 90.8), liver E14.5 (RPKM 70.6) and 3 other tissues See more

Transcript information (Ensembl)

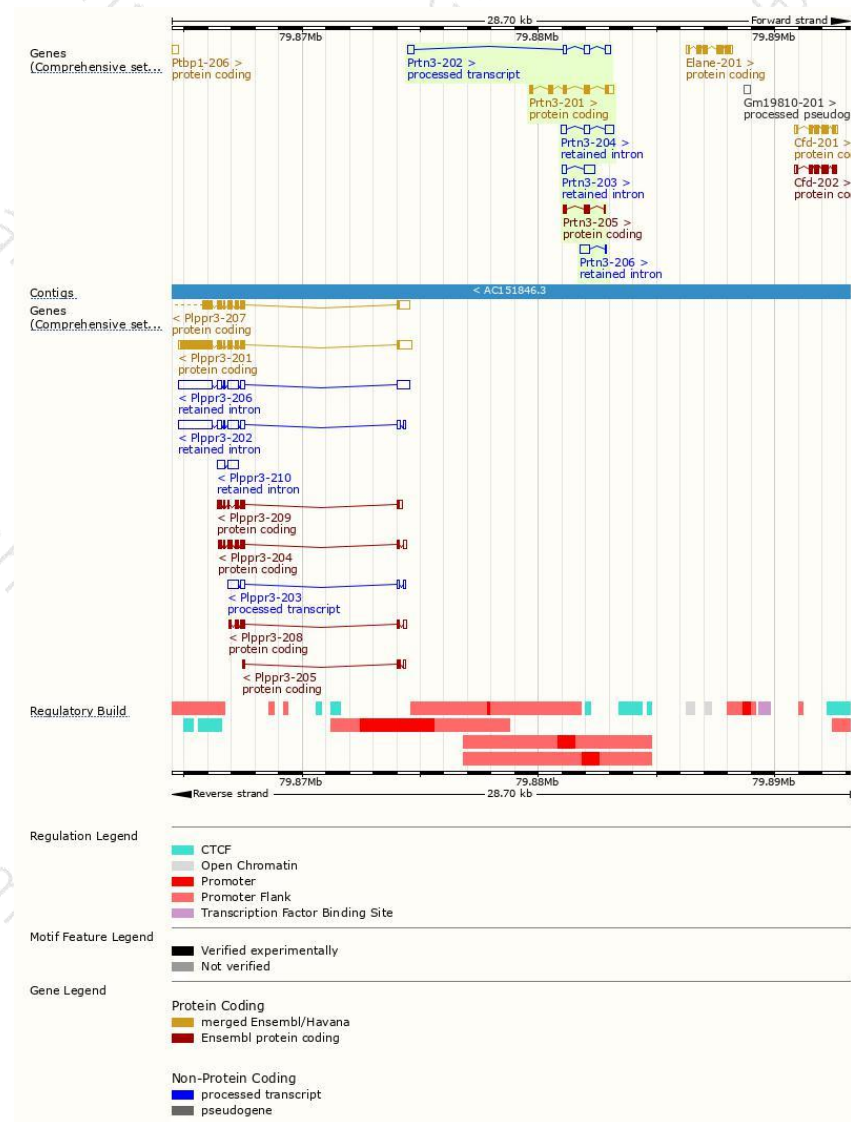
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prtn3-201	ENSMUST00000006679.14	1025	254aa	Protein coding	CCDS23993	A0A0R4IZY6	TSL:1 GENCODE basic APPRIS P1
Prtn3-205	ENSMUST00000166201.1	423	126aa	Protein coding	-	F6ZK01	CDS 5' incomplete TSL:3
Prtn3-202	ENSMUST00000163188.7	843	No protein	Processed transcript	-	-	TSL:5
Prtn3-204	ENSMUST00000165982.1	786	No protein	Retained intron	-	-	TSL:1
Prtn3-203	ENSMUST00000164134.1	629	No protein	Retained intron	-	-	TSL:2
Prtn3-206	ENSMUST00000171489.1	446	No protein	Retained intron	-	-	TSL:2

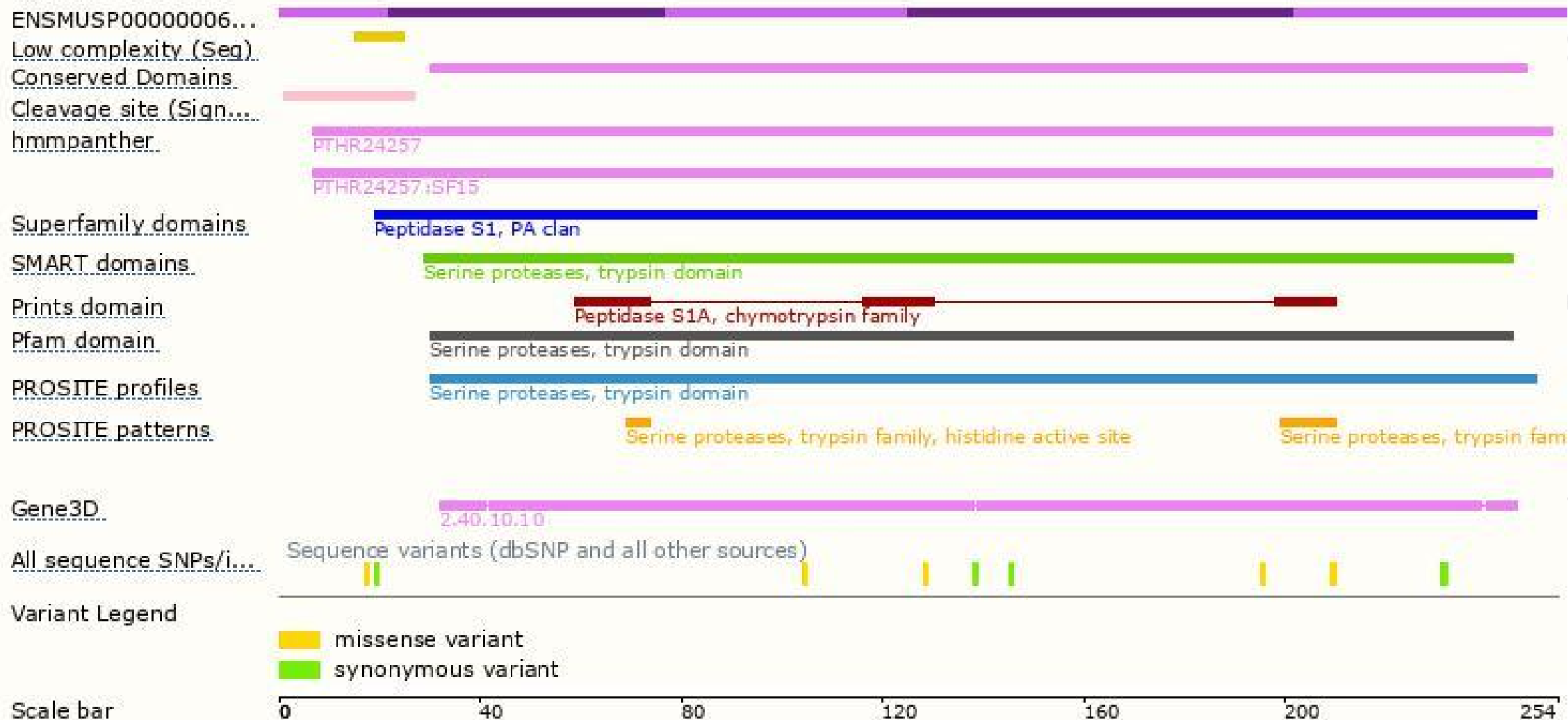
The strategy is based on the design of *Prtn3-201* transcript,The transcription is shown below



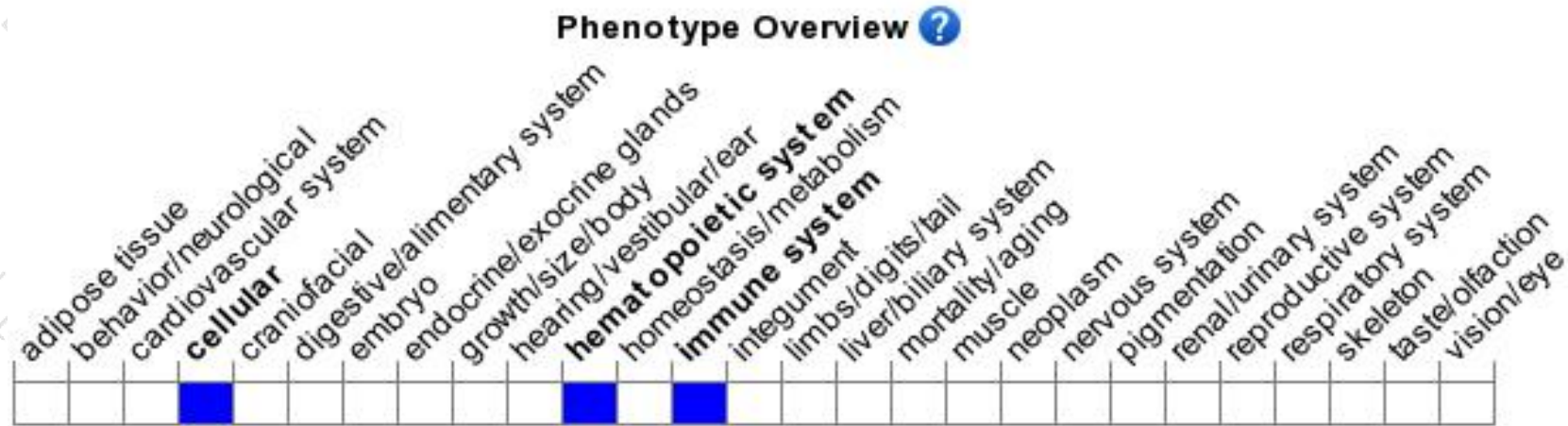
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for a knock-out allele exhibit delayed neutrophil death and increased neutrophil accumulation at sites of inflammation in a murine model of peritonitis.

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

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