

Prpcp Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Prcp

Project type

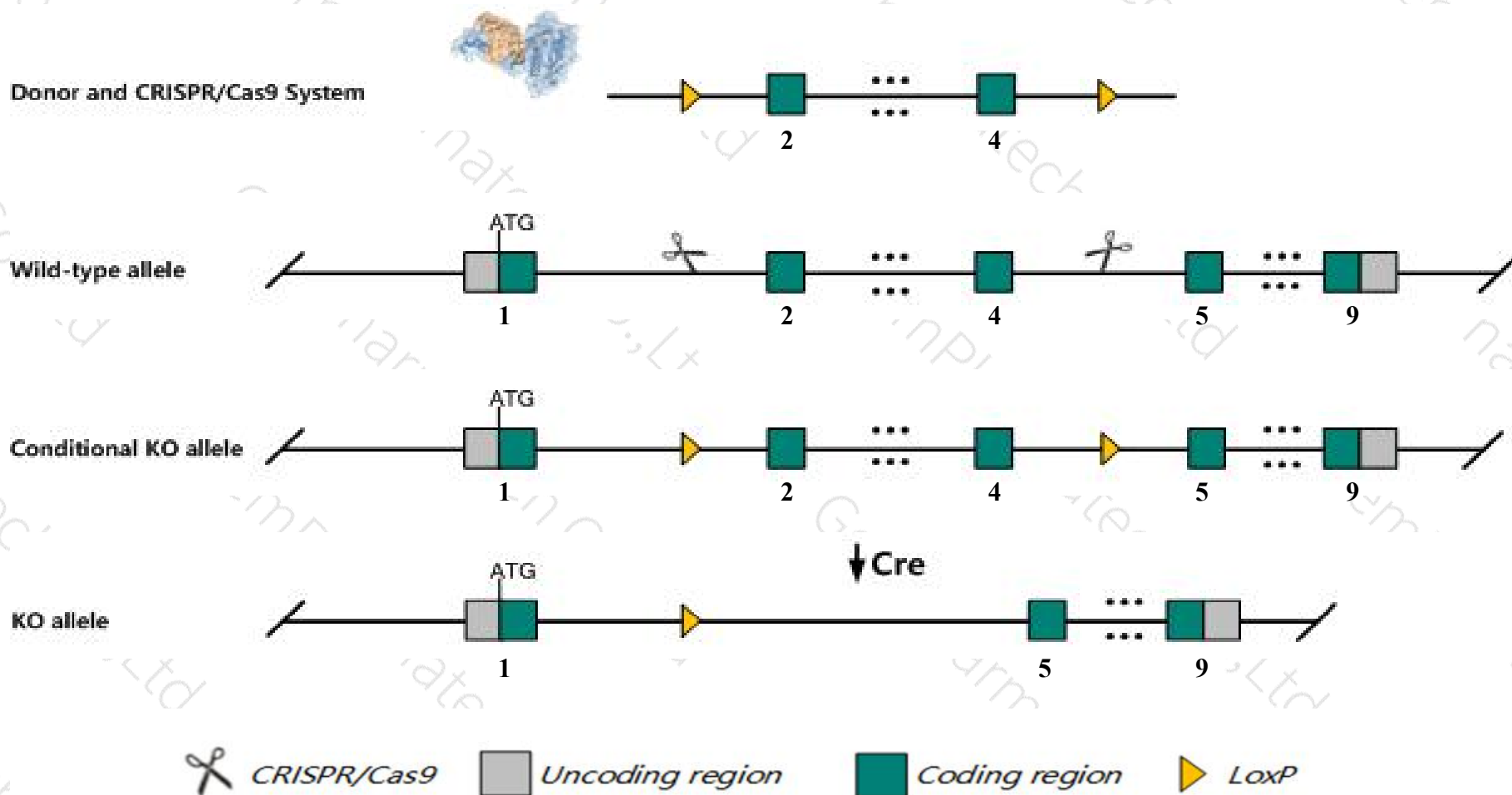
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Prcp* gene has 5 transcripts. According to the structure of *Prcp* gene, exon2-exon4 of *Prcp-201* (ENSMUST00000076052.7) transcript is recommended as the knockout region. The region contains 425bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prcp* 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 gene trap allele exhibit decreased body length, weight, and fat pads with resistance to diet-induced obesity.
- The floxed region contains *9530078K11Rik-201* (TEC, No protein) gene, so the insertion of loxp and after mating with Cre mice may affect the *9530078K11Rik-201* gene.
- The *Prpcp* gene is located on the Chr7. 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.

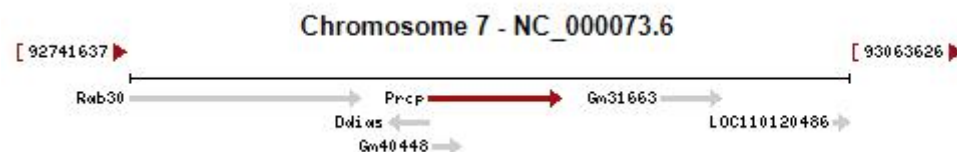
Gene information (NCBI)

Prp1 prolylcarboxypeptidase (angiotensinase C) [*Mus musculus* (house mouse)]

Gene ID: 72461, updated on 10-Oct-2019

Summary

Official Symbol	Prp1 provided by MGI
Official Full Name	prolylcarboxypeptidase (angiotensinase C) provided by MGI
Primary source	MGI:MGI:1919711
See related	Ensembl:ENSMUSG00000061119
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	PCP; HUMPCP; AI451719; 2510048K03Rik; 2610104A14Rik
Expression	Ubiquitous expression in mammary gland adult (RPKM 12.8), placenta adult (RPKM 12.5) and 28 other tissues See more
Orthologs	human all

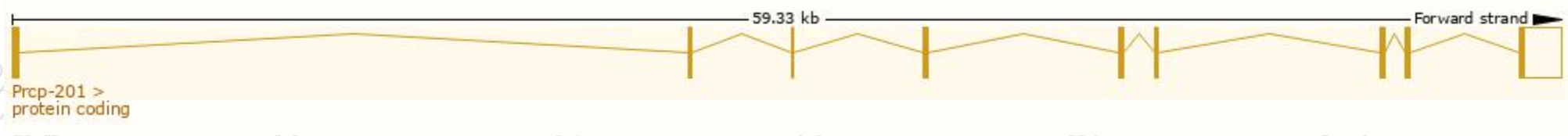


Transcript information (Ensembl)

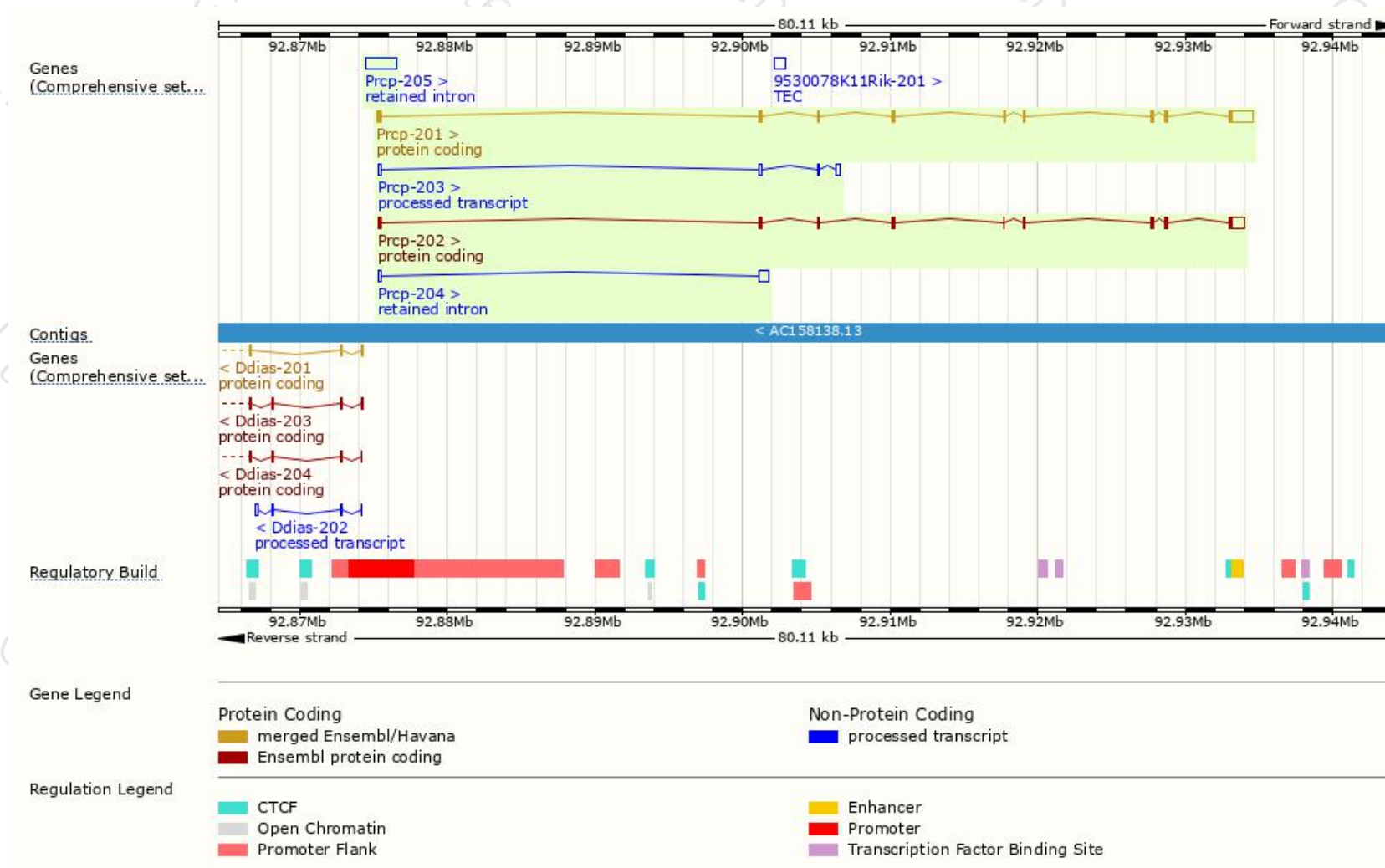
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prctp-201	ENSMUST00000076052.7	2967	491aa	Protein coding	CCDS21452	Q7TMR0	TSL:1 GENCODE basic APPRIS P1
Prctp-202	ENSMUST00000207594.1	2245	456aa	Protein coding	-	A0A140LHY2	TSL:1 GENCODE basic
Prctp-203	ENSMUST00000207992.1	687	No protein	Processed transcript	-	-	TSL:2
Prctp-205	ENSMUST00000208686.1	2093	No protein	Retained intron	-	-	TSL:NA
Prctp-204	ENSMUST00000208103.1	790	No protein	Retained intron	-	-	TSL:1

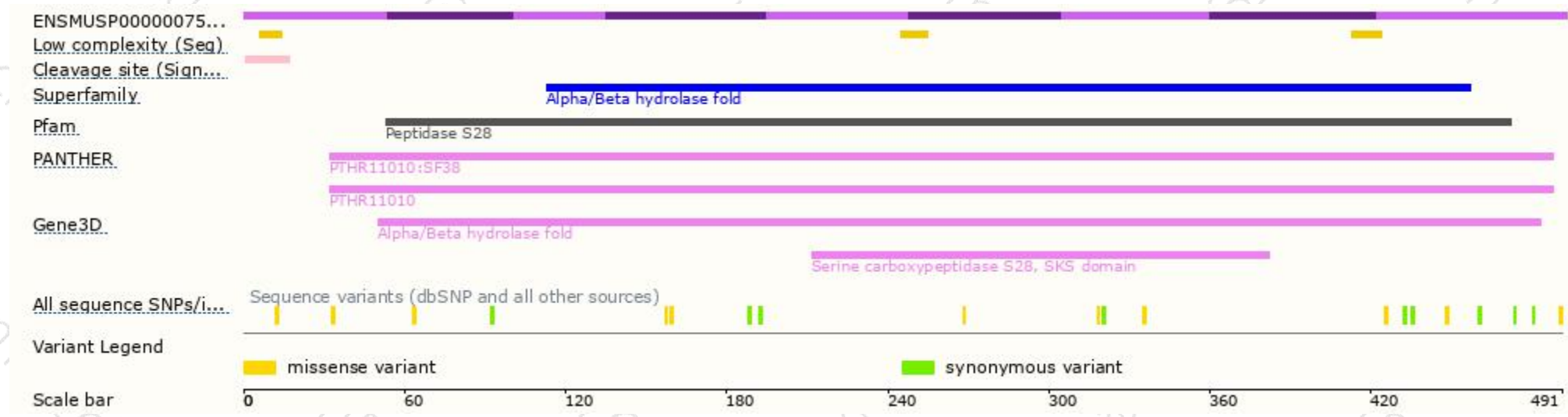
The strategy is based on the design of *Prctp-201* transcript,The transcription is shown below



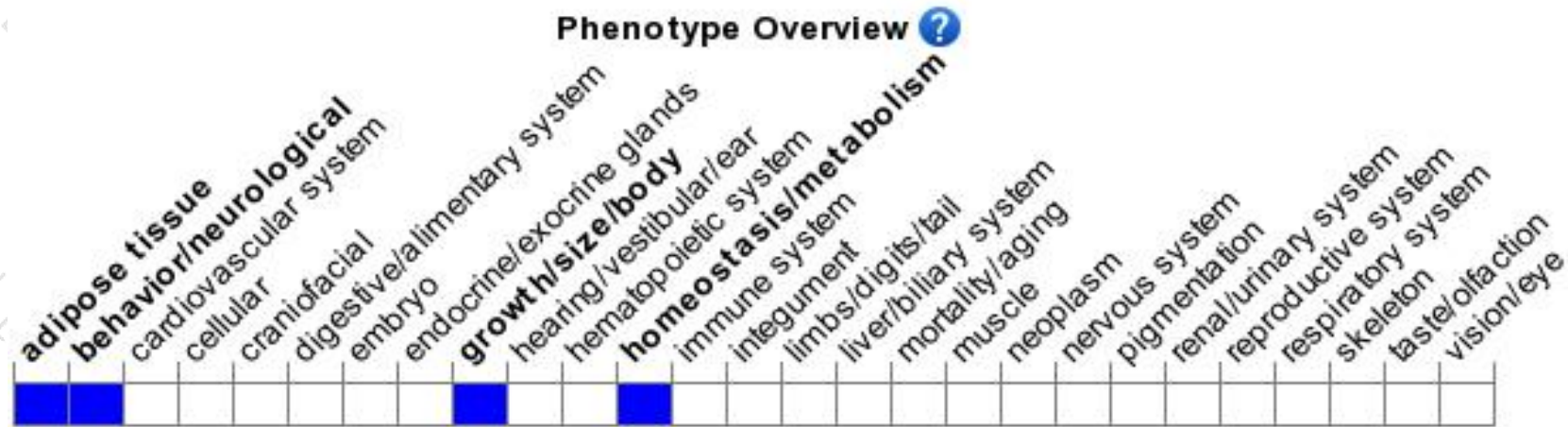
Genomic location distribution



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 gene trap allele exhibit decreased body length, weight, and fat pads with resistance to diet-induced obesity.

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

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