

Ptpnrn2 Cas9-CKO Strategy

Designer:

Ruirui Zhang

Reviewer:

Huimin Su

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Project Overview

Project Name

Ptprn2

Project type

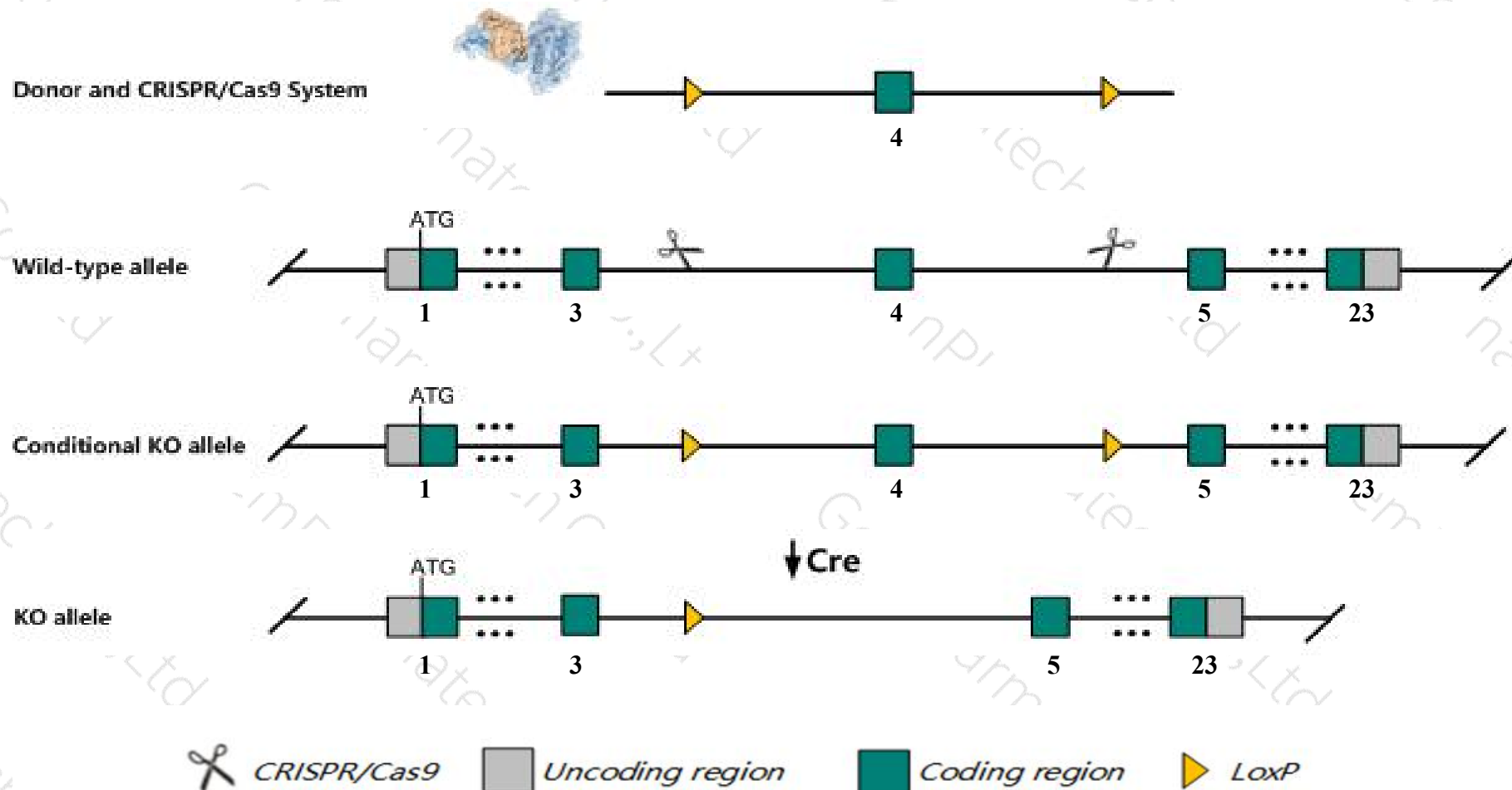
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptprn2* gene. The schematic diagram is as follows:



- The *Ptprn2* gene has 5 transcripts. According to the structure of *Ptprn2* gene, exon4 of *Ptprn2-201* (ENSMUST00000070733.8) transcript is recommended as the knockout region. The region contains 103bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ptprn2* 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, Homozygous null mice display impaired glucose tolerance but normal fasting and non-fasting blood glucose and insulin levels.
- The *Ptprn2* gene is located on the Chr12. 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)

Ptprn2 protein tyrosine phosphatase, receptor type, N polypeptide 2 [*Mus musculus* (house mouse)]

Gene ID: 19276, updated on 12-Aug-2019

Summary



Official Symbol	Ptprn2 provided by MGI
Official Full Name	protein tyrosine phosphatase, receptor type, N polypeptide 2 provided by MGI
Primary source	MGI:MGI:107418
See related	Ensembl:ENSMUSG00000056553
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	PhoI; PTP-NP; IA2beta; phogrin; mKIAA0387; 4930425H11Rik
Expression	Biased expression in cortex adult (RPKM 41.7), frontal lobe adult (RPKM 37.3) and 11 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

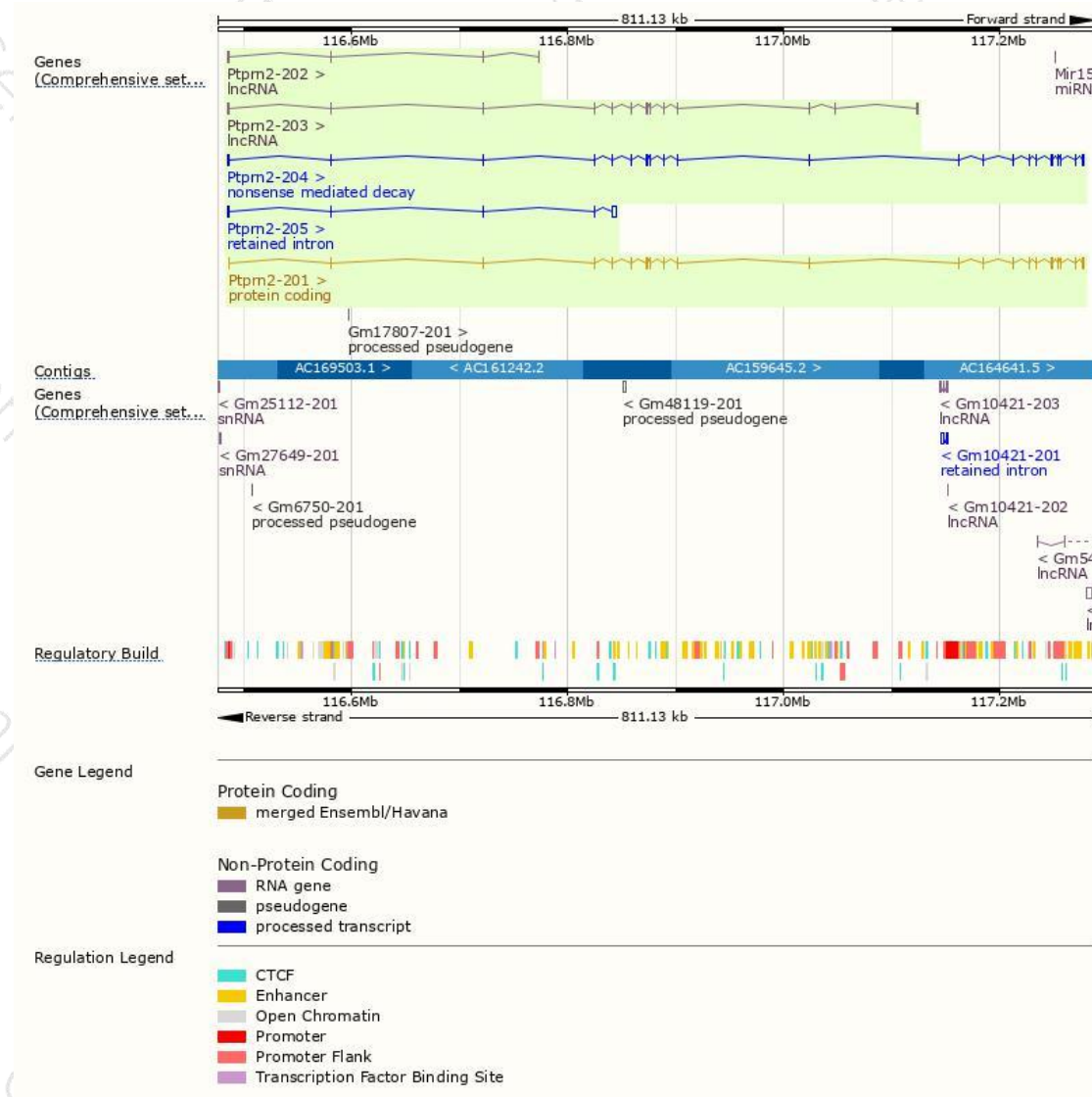
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptpn2-201	ENSMUST00000070733.8	3201	1001aa	Protein coding	CCDS36576	P80560	TSL:1 Gencode basic APPRIS P1
Ptpn2-204	ENSMUST00000190247.6	3458	934aa	Nonsense mediated decay	-	Q3UU93	TSL:1
Ptpn2-205	ENSMUST00000191106.1	4218	No protein	Retained intron	-	-	TSL:1
Ptpn2-203	ENSMUST00000189009.6	2873	No protein	lncRNA	-	-	TSL:1
Ptpn2-202	ENSMUST00000185505.6	980	No protein	lncRNA	-	-	TSL:1

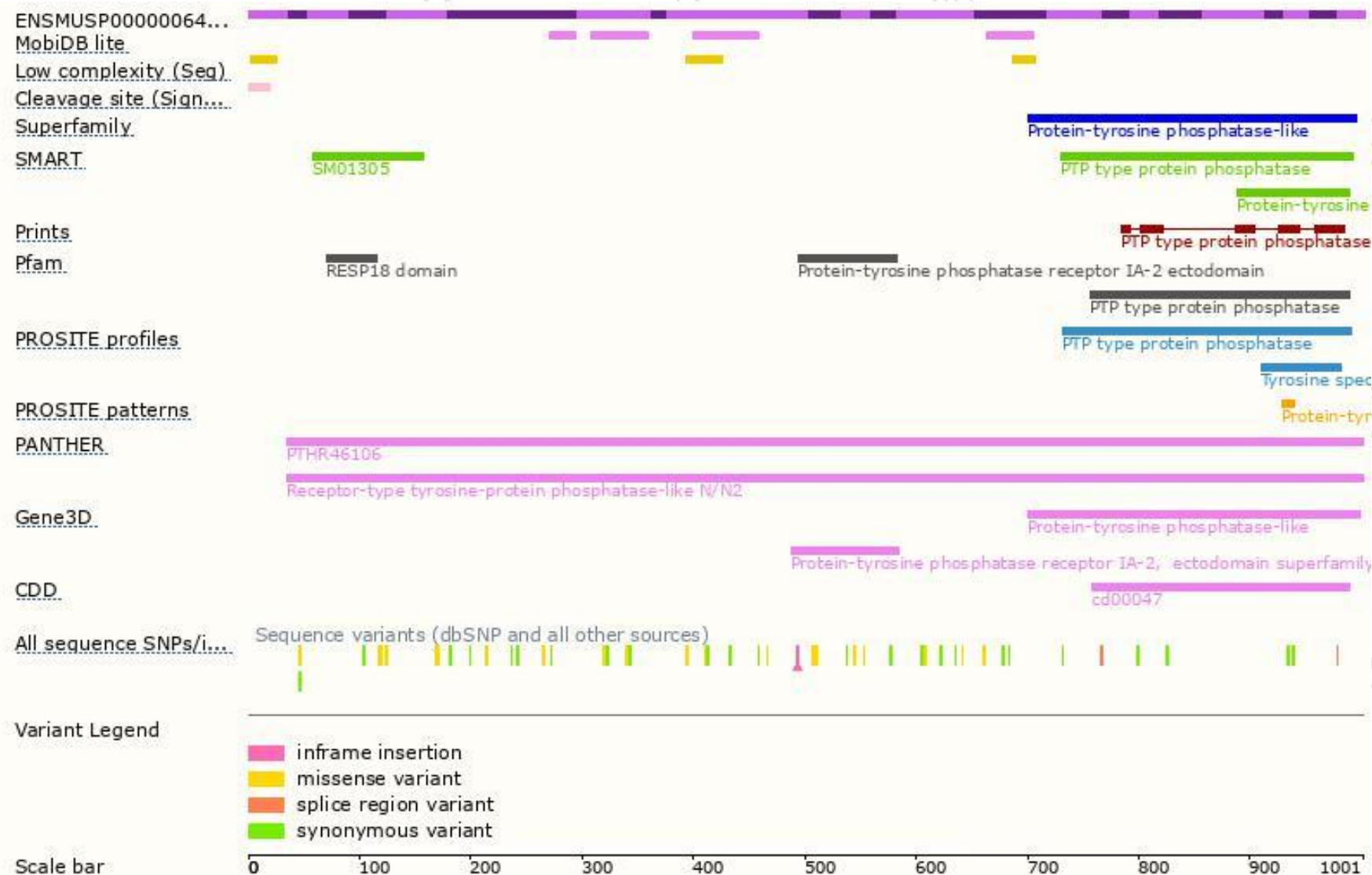
The strategy is based on the design of *Ptpn2-201* transcript,The transcription is shown below



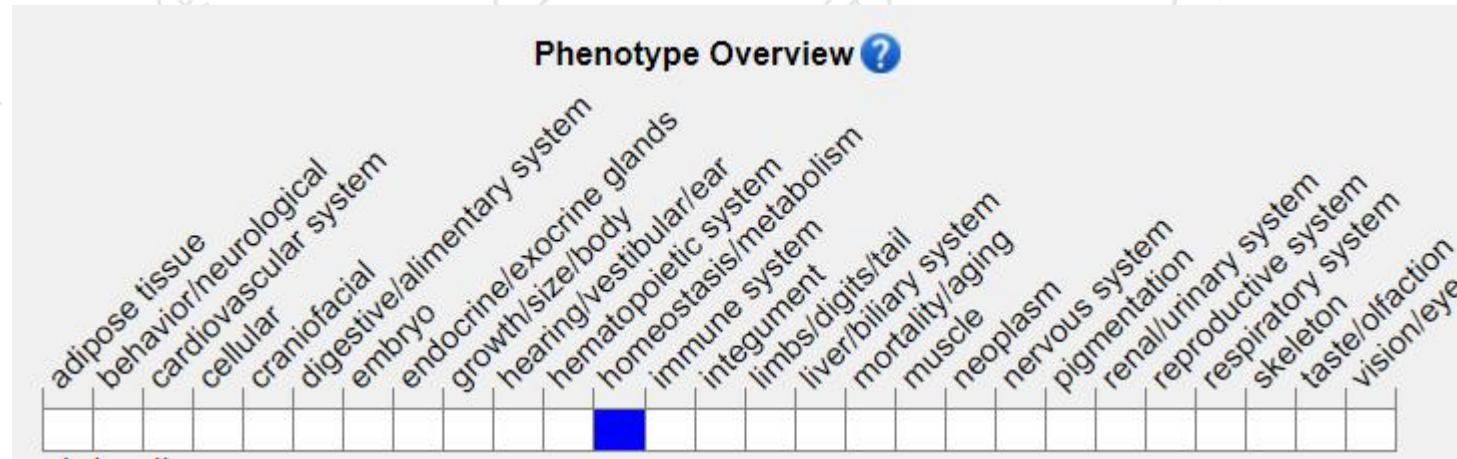
Genomic location distribution



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, Homozygous null mice display impaired glucose tolerance but normal fasting and non-fasting blood glucose and insulin levels.

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

Tel: 400-9660890

