Ptpn2 Cas9-CKO Strategy

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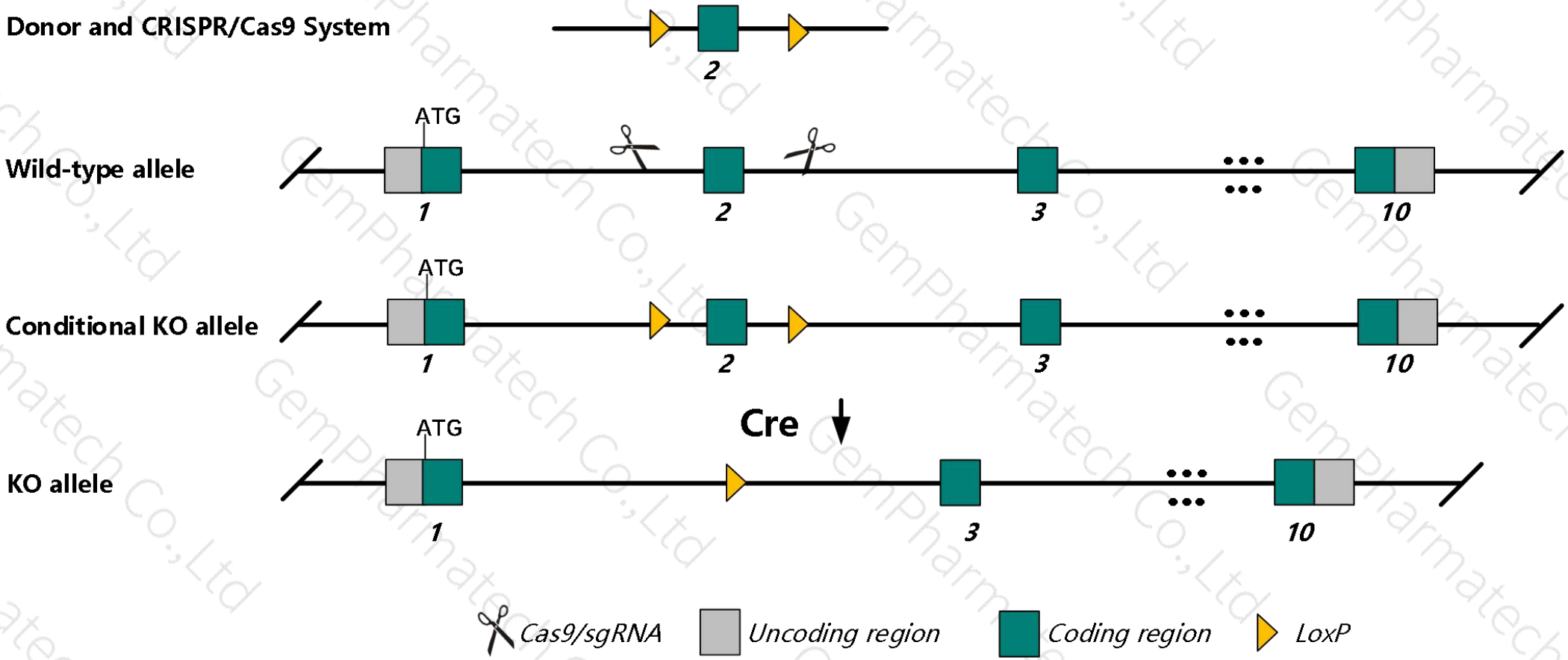
Project Overview

Project Name	***Ptpn2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptpn2* gene. The schematic diagram is as follows:



Technical routes

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- The *Ptpn2* gene has 4 transcripts. According to the structure of *Ptpn2* gene, exon2 of *Ptpn2-201* (ENSMUST00000025420.13) transcript is recommended as the knockout region.The region contains 91bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ptpn2* gene. The brief process is as follows:gRNA was transcribed in vitro, donor was constructed.Cas9, gRNA 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

- According to the existing MGI data,mice homozygous for disruptions in this gene have a reduced life span, abnormalities of the hematopoietic system and an increased succeptibility to inflammatory disease.

- The *Ptpn2* gene is located on the Chr18. 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）

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Ptpn2 protein tyrosine phosphatase, non-receptor type 2 [*Mus musculus* (house mouse)]

Gene ID: 19255, updated on 12-Aug-2019

Summary

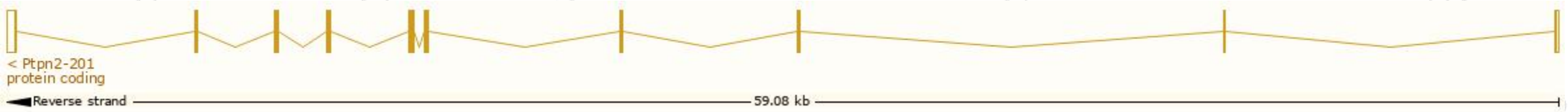
Official Symbol	Ptpn2 provided by MGI
Official Full Name	protein tyrosine phosphatase, non-receptor type 2 provided by MGI
Primary source	MGI:MGI:97806
See related	Ensembl:ENSMUSG00000024539
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ptpt; TC-PTP; AI325124
Expression	Ubiquitous expression in CNS E11.5 (RPKM 3.3), CNS E14 (RPKM 3.0) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

The gene has 4 transcripts,all transcripts are shown below:

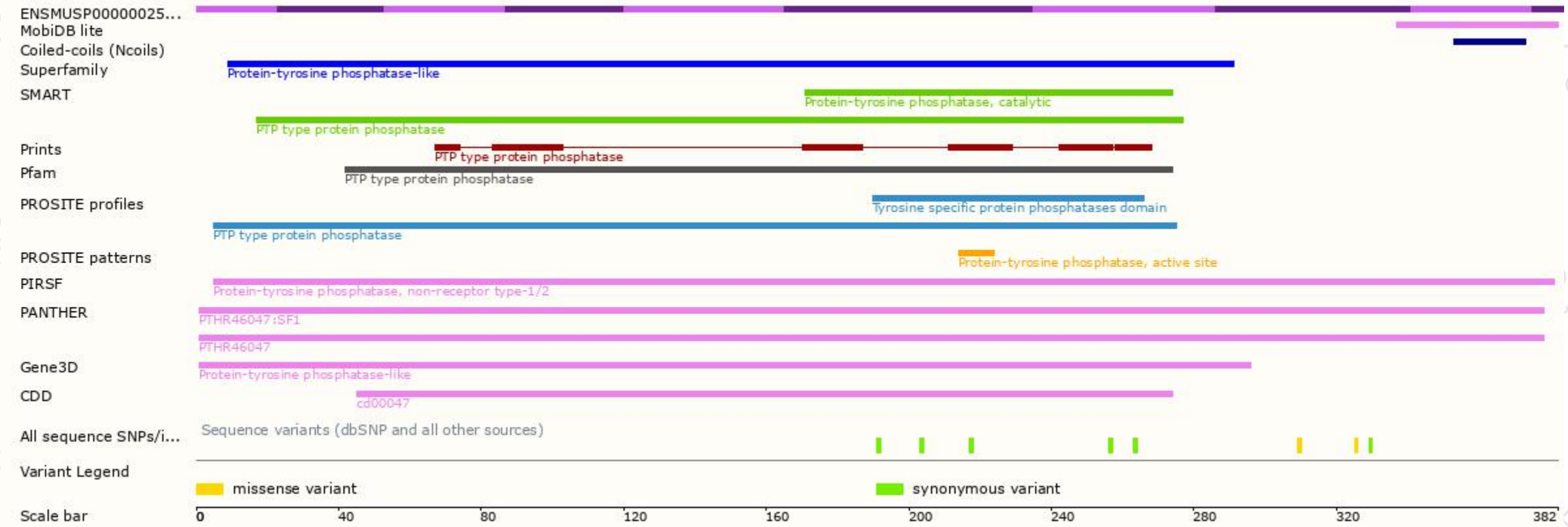
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptpn2-203	ENSMUST00000122412.1	2667	406aa	Protein coding	CCDS50311	Q06180	TSL:1 GENCODE basic APPRIS ALT2
Ptpn2-201	ENSMUST00000025420.13	1568	382aa	Protein coding	CCDS37851	Q06180	TSL:1 GENCODE basic APPRIS P3
Ptpn2-202	ENSMUST00000120934.7	1497	363aa	Protein coding	-	D3Z6W2	TSL:5 GENCODE basic APPRIS ALT2
Ptpn2-204	ENSMUST00000128169.1	760	No protein	lncRNA	-	-	TSL:3

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

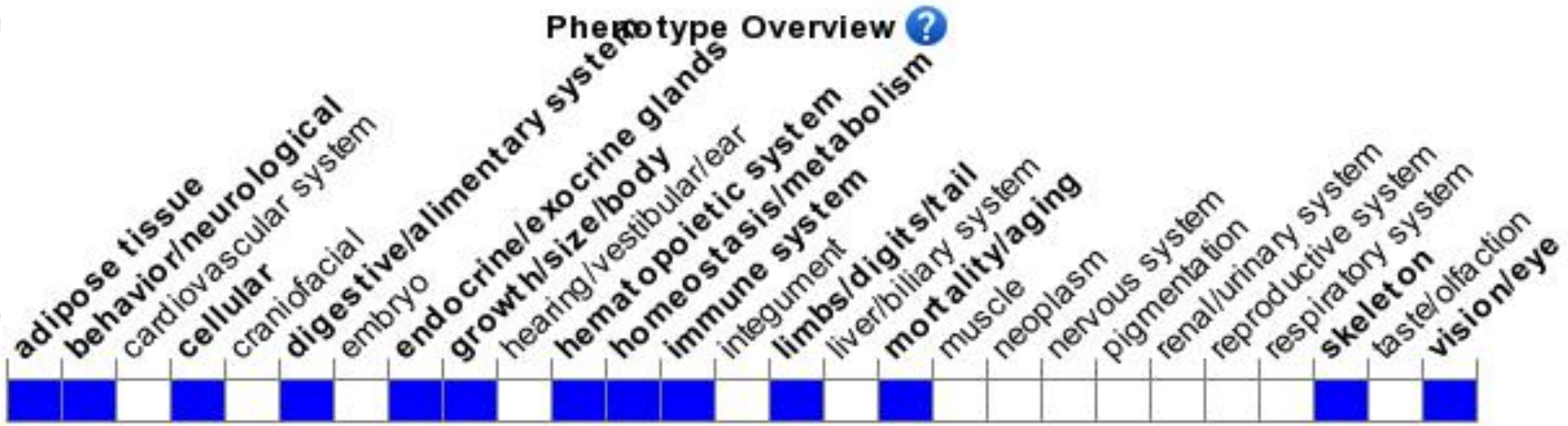


Genomic location distribution

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/).

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

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