

Ptpn23 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Ptpn23

Project type

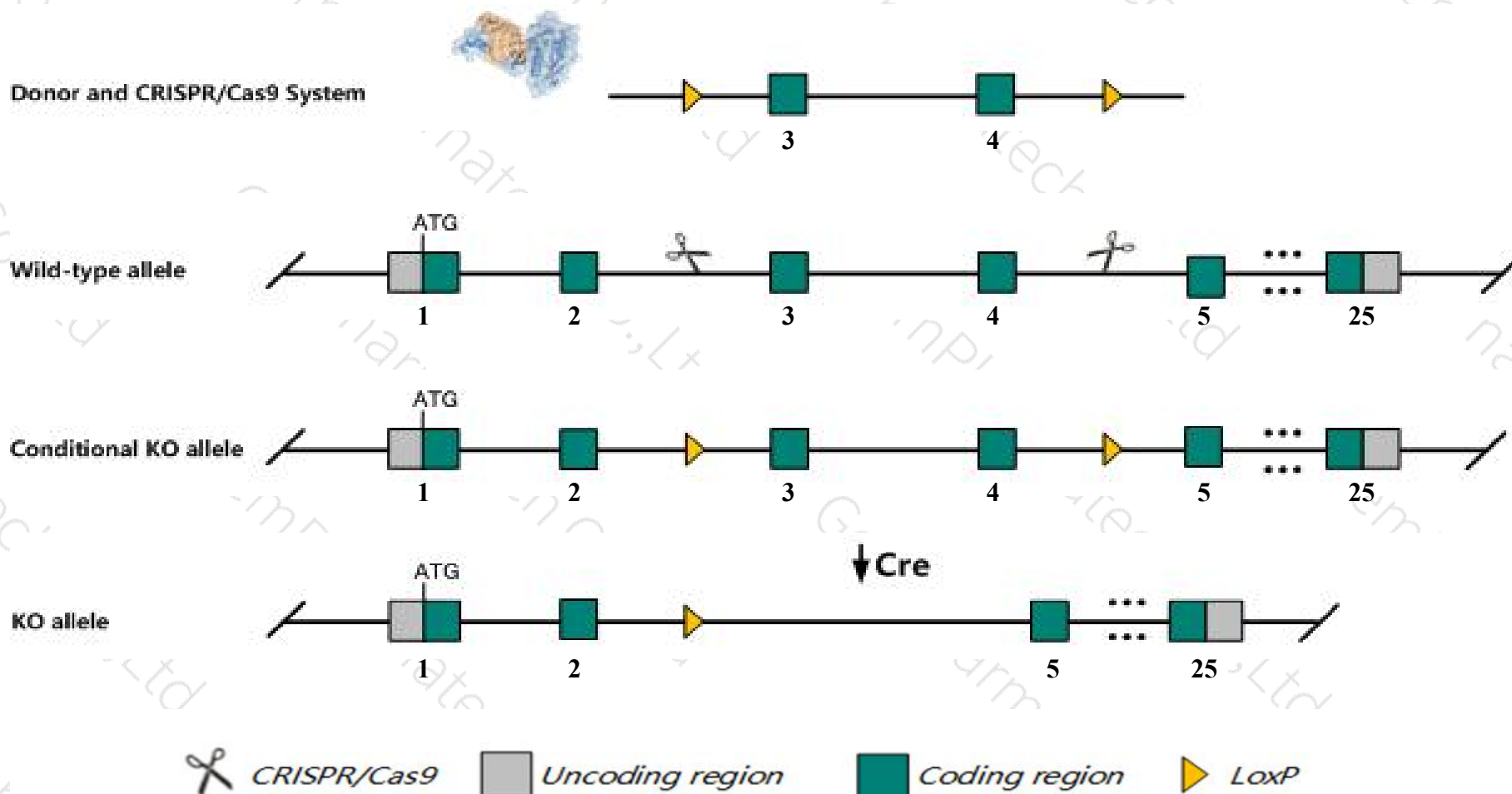
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptpn23* gene. The schematic diagram is as follows:



- The *Ptpn23* gene has 4 transcripts. According to the structure of *Ptpn23* gene, exon3-exon4 of *Ptpn23-201* (ENSMUST00000040021.11) transcript is recommended as the knockout region. The region contains 205bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ptpn23* 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, Embryos homozygous for a gene trap allele are significantly growth retarded and fail to reach the E8.5 stage.
- Transcript *Ptpn23-204* may not be affected.
- The *Ptpn23* 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)

Ptpn23 protein tyrosine phosphatase, non-receptor type 23 [*Mus musculus* (house mouse)]

Gene ID: 104831, updated on 12-Aug-2019

Summary

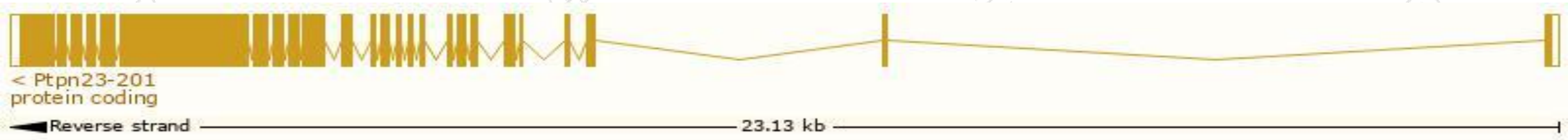
Official Symbol	Ptpn23 provided by MGI
Official Full Name	protein tyrosine phosphatase, non-receptor type 23 provided by MGI
Primary source	MGI:MGI:2144837
See related	Ensembl:ENSMUSG000000036057
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI462446; PTP-TD14
Expression	Ubiquitous expression in adrenal adult (RPKM 17.6), limb E14.5 (RPKM 12.4) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

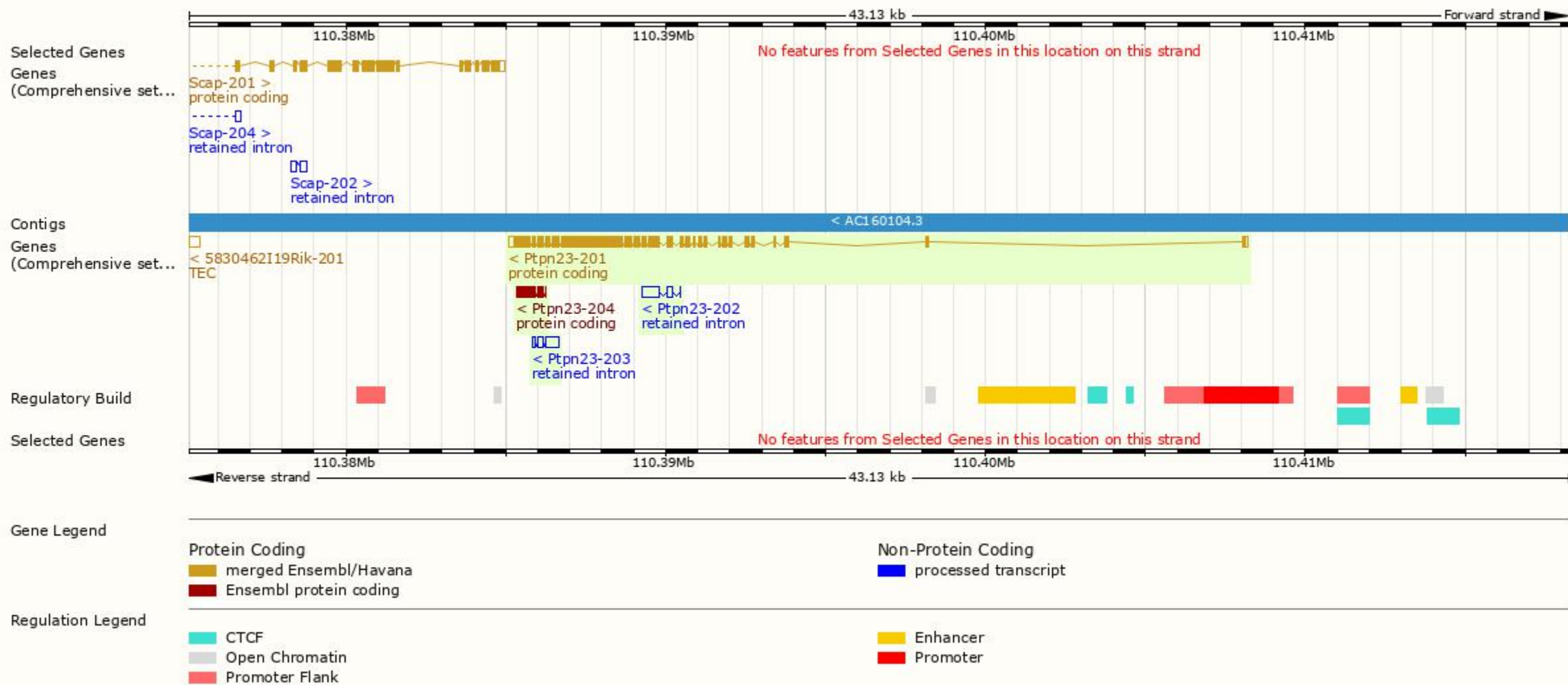
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptpn23-201	ENSMUST00000040021.11	5346	1692aa	Protein coding	CCDS40780	Q6PB44	TSL:5 GENCODE basic APPRIS P1
Ptpn23-204	ENSMUST00000200531.1	746	249aa	Protein coding	-	A0A0G2JEW5	CDS 5' and 3' incomplete TSL:3
Ptpn23-202	ENSMUST00000199254.1	692	No protein	Retained intron	-	-	TSL:2
Ptpn23-203	ENSMUST00000200278.1	632	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Ptpn23-201* 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, Embryos homozygous for a gene trap allele are significantly growth retarded and fail to reach the E8.5 stage.

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

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