

# *Ptpn23* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Ptpn23*

**Project type**

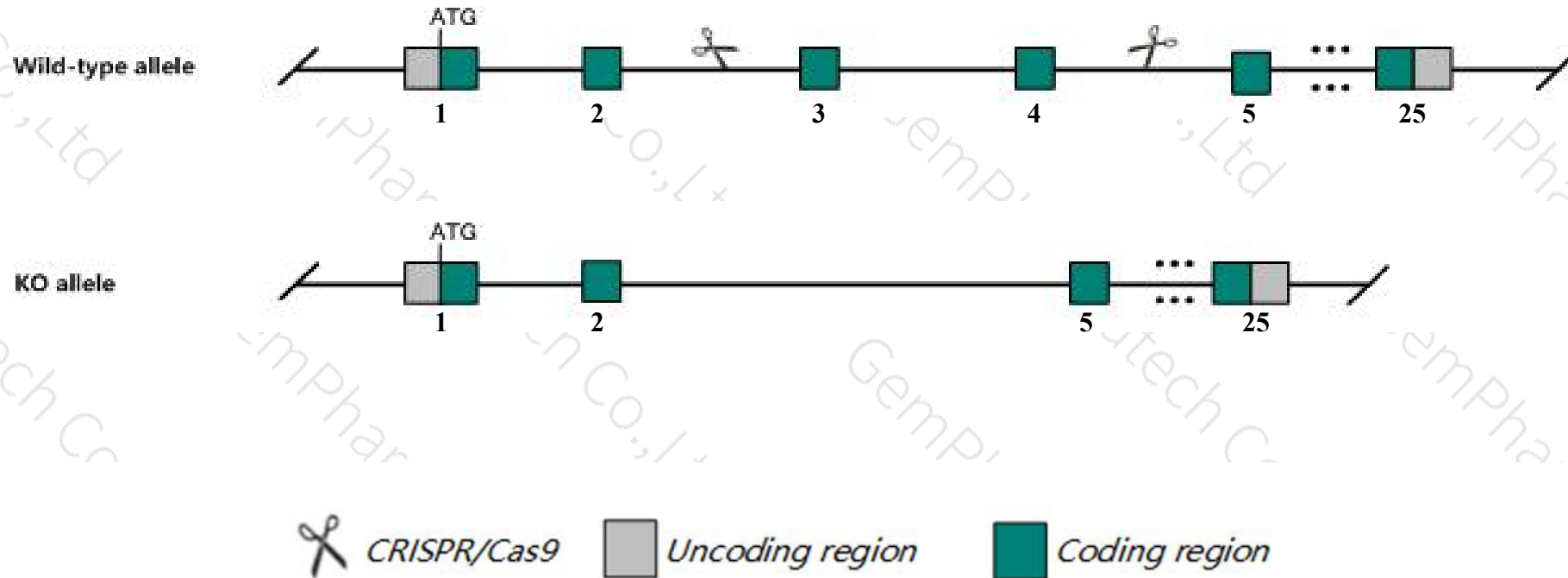
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# 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

- 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology 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

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

# Transcript information (Ensembl)

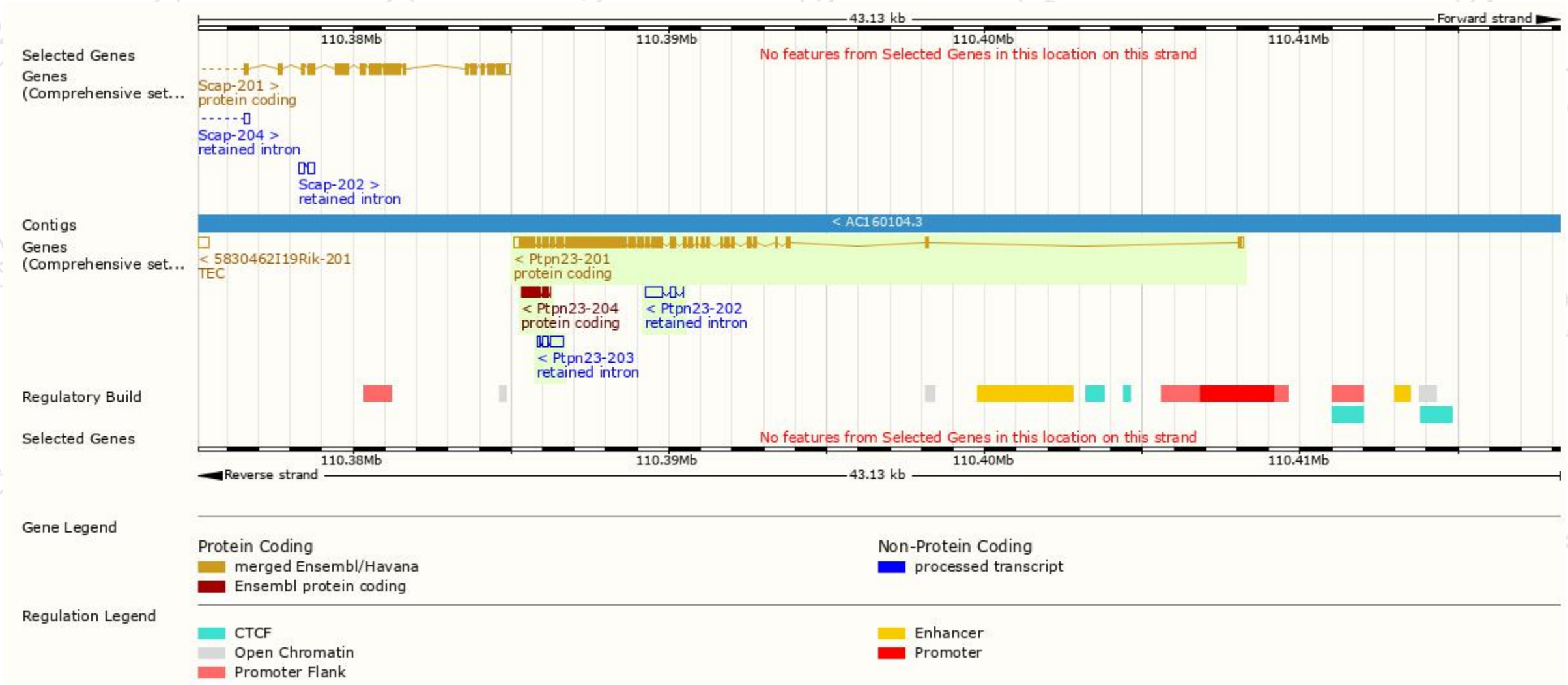
The gene has 4 transcripts,all transcripts are shown below:

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

The strategy is based on the design of *Ptpn23-201* transcript,The transcription is shown below

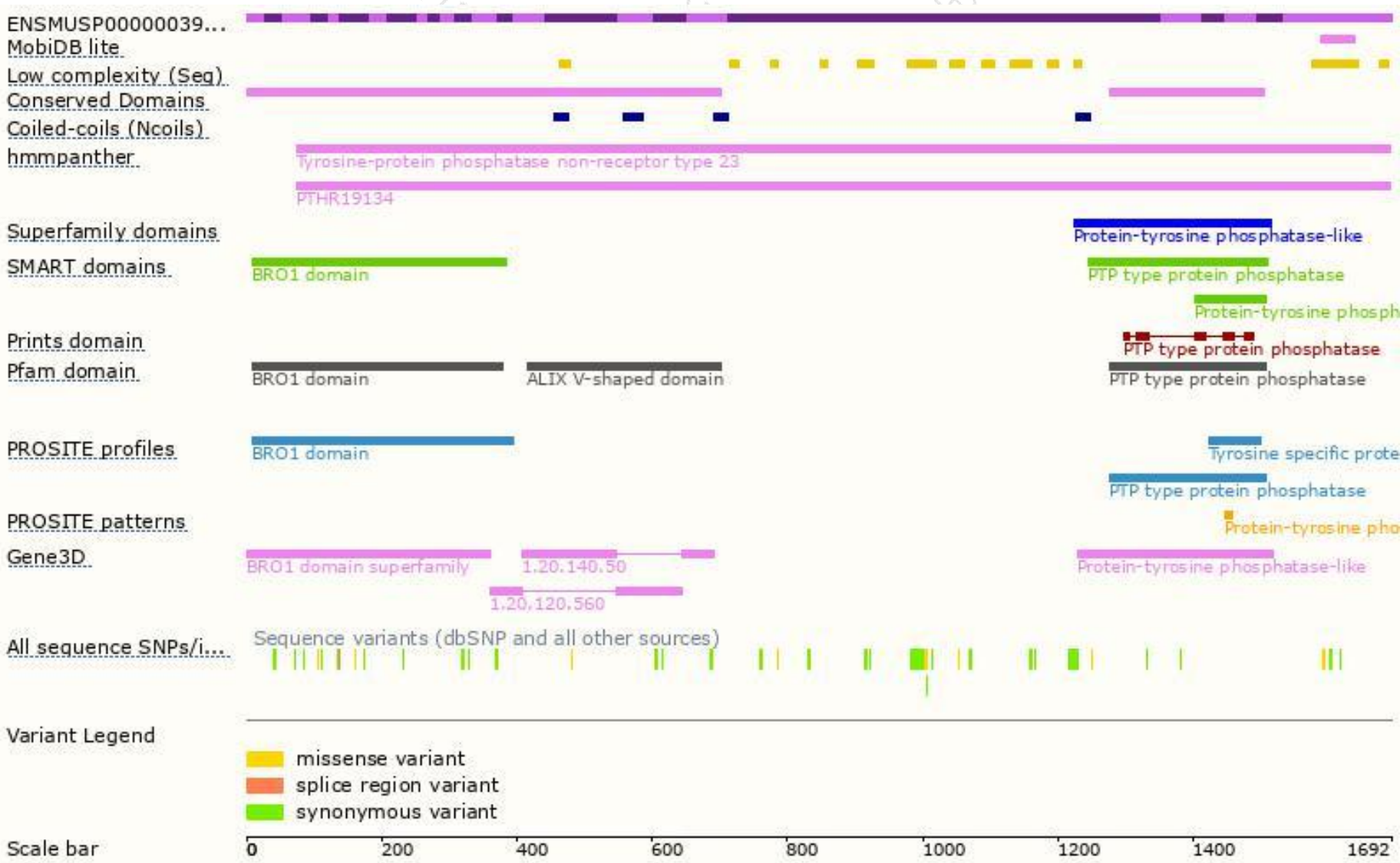


# Genomic location distribution





# 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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