

# *Ptprg* Cas9-KO Strategy

**Designer:**

**Daohua Xu**

**Reviewer:**

**Huimin Su**

**Design Date:**

**2020-2-14**

# Project Overview

**Project Name**

*Ptprg*

**Project type**

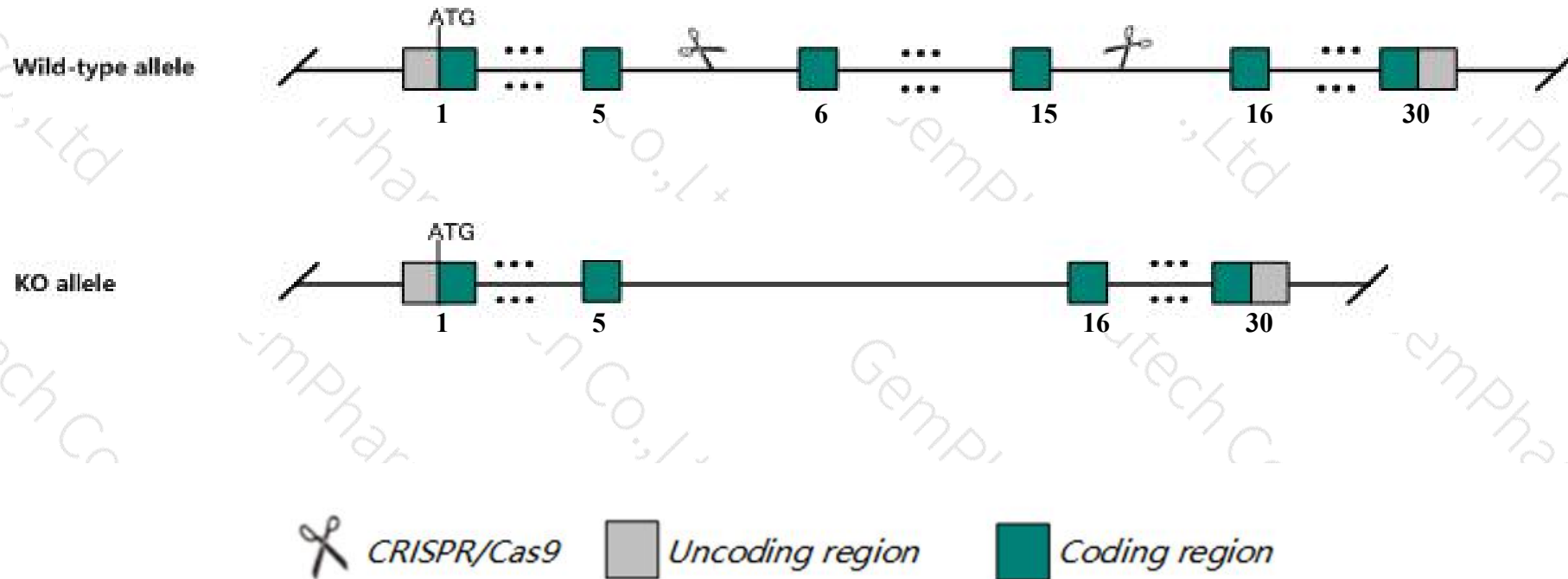
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



- The *Ptprg* gene has 8 transcripts. According to the structure of *Ptprg* gene, exon6-exon15 of *Ptprg*-201 (ENSMUST00000022264.12) transcript is recommended as the knockout region. The region contains 1843bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ptprg* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele are overtly normal but exhibit minor behavioral changes including specific motor deficits, reduced latency to react in the tail flick test, enhanced sensory processing for acoustic stimuli, and reduced performance with cued fear conditioning.
- The KO region contains functional region of the *Gm48603* gene. Knockout the region may affect the function of *Gm48603* gene.
- The *Ptprg* gene is located on the Chr14. 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)

## Ptprg protein tyrosine phosphatase, receptor type, G [Mus musculus (house mouse)]

Gene ID: 19270, updated on 31-Jan-2019

### Summary



<b>Official Symbol</b>	Ptprg provided by <a href="#">MGI</a>
<b>Official Full Name</b>	protein tyrosine phosphatase, receptor type, G provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:97814</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG000000021745</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>	5430405N12Rik, AW046354, AW549872, RPTPgamma
<b>Expression</b>	Ubiquitous expression in adrenal adult (RPKM 13.7), ovary adult (RPKM 13.0) and 26 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

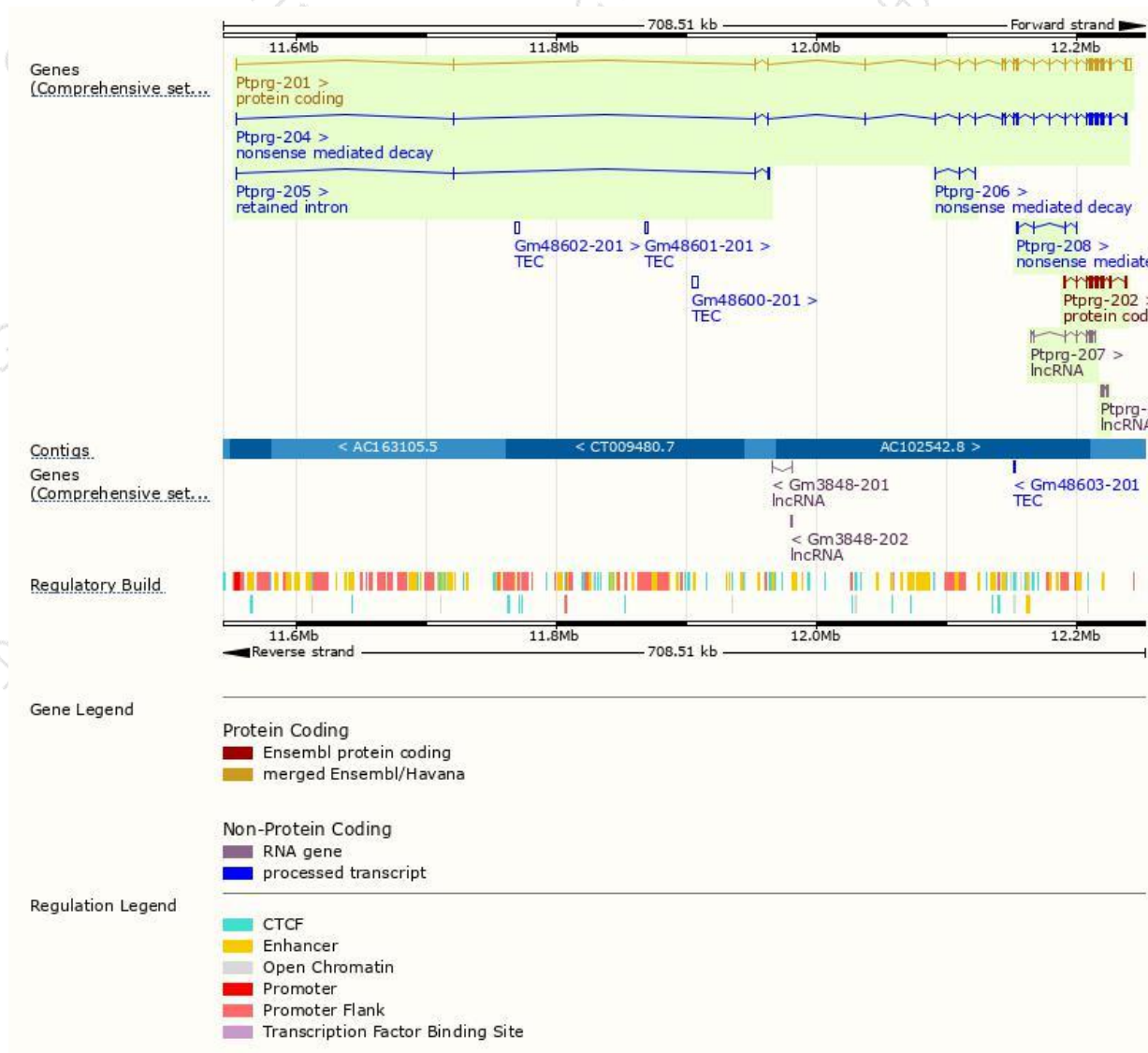
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptprg-201	<a href="#">ENSMUST00000022264.12</a>	9213	<a href="#">1442aa</a>	Protein coding	<a href="#">CCDS26816</a>	<a href="#">F8VQD7</a>	TSL:1 GENCODE basic APPRIS P1
Ptprg-202	<a href="#">ENSMUST00000119888.1</a>	2787	<a href="#">667aa</a>	Protein coding	<a href="#">CCDS84092</a>	<a href="#">E9Q6E7</a>	TSL:1 GENCODE basic
Ptprg-204	<a href="#">ENSMUST00000142917.7</a>	5591	<a href="#">260aa</a>	Nonsense mediated decay	-	<a href="#">D6RD11</a>	TSL:1
Ptprg-208	<a href="#">ENSMUST00000226099.1</a>	739	<a href="#">156aa</a>	Nonsense mediated decay	-	<a href="#">A0A286YCH6</a>	CDS 5' incomplete
Ptprg-206	<a href="#">ENSMUST00000155727.2</a>	408	<a href="#">65aa</a>	Nonsense mediated decay	-	<a href="#">D3Z2S6</a>	CDS 5' incomplete TSL:3
Ptprg-205	<a href="#">ENSMUST00000148113.1</a>	2595	No protein	Retained intron	-	-	TSL:2
Ptprg-207	<a href="#">ENSMUST00000223890.1</a>	905	No protein	lncRNA	-	-	
Ptprg-203	<a href="#">ENSMUST00000134290.1</a>	426	No protein	lncRNA	-	-	TSL:3

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

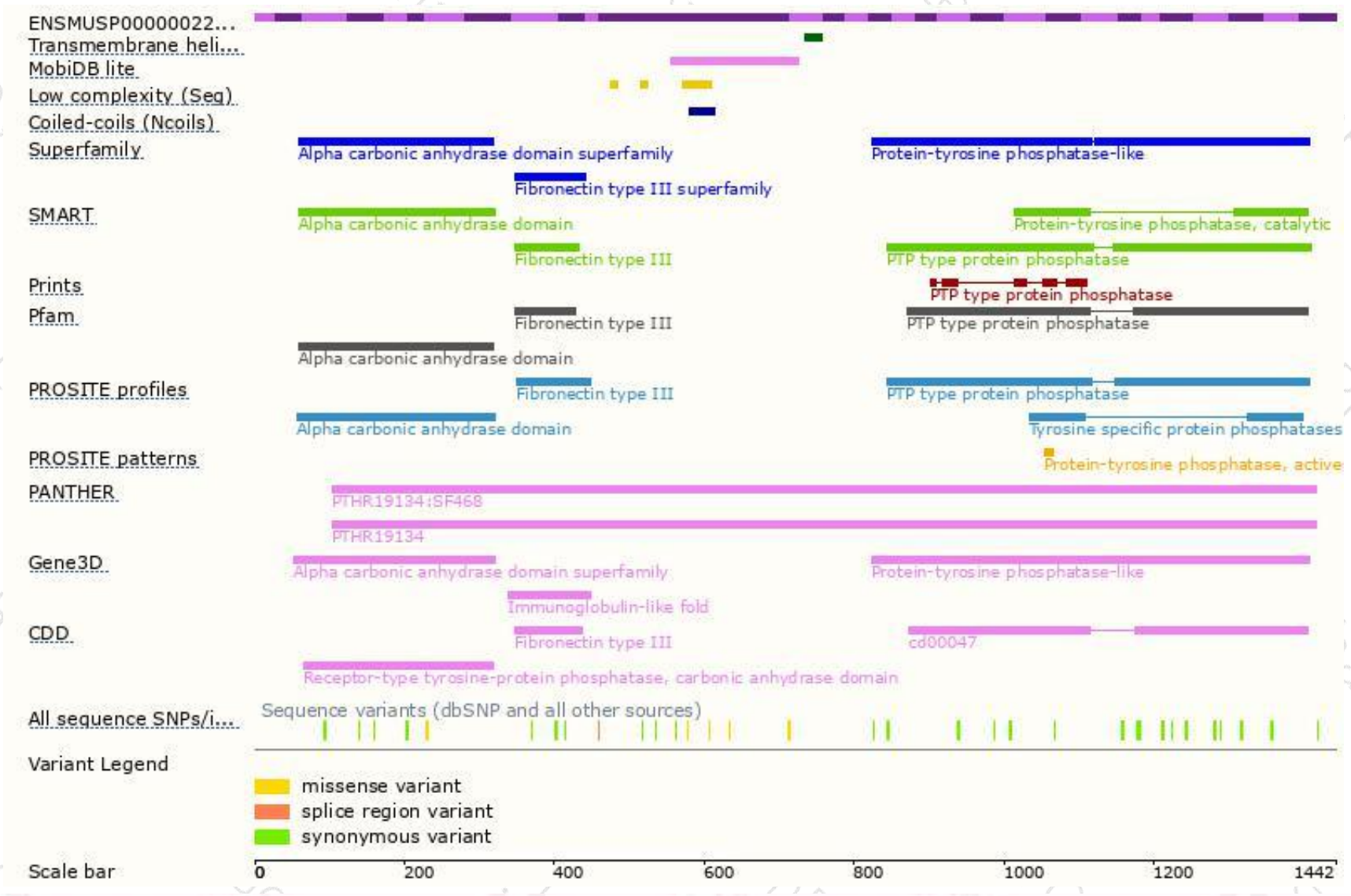


# Genomic location distribution

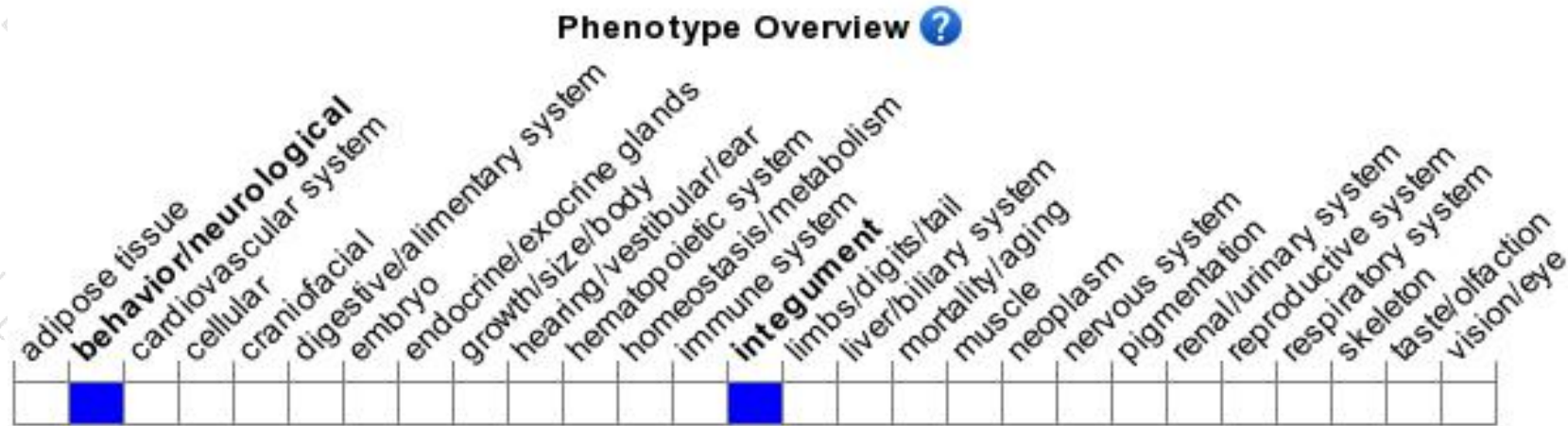




# Protein domain



# 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 knock-out allele are overtly normal but exhibit minor behavioral changes including specific motor deficits, reduced latency to react in the tail flick test, enhanced sensory processing for acoustic stimuli, and reduced performance with cued fear conditioning.

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

Tel: 400-9660890

