

# *Ptpn1* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Ptpn1*

**Project type**

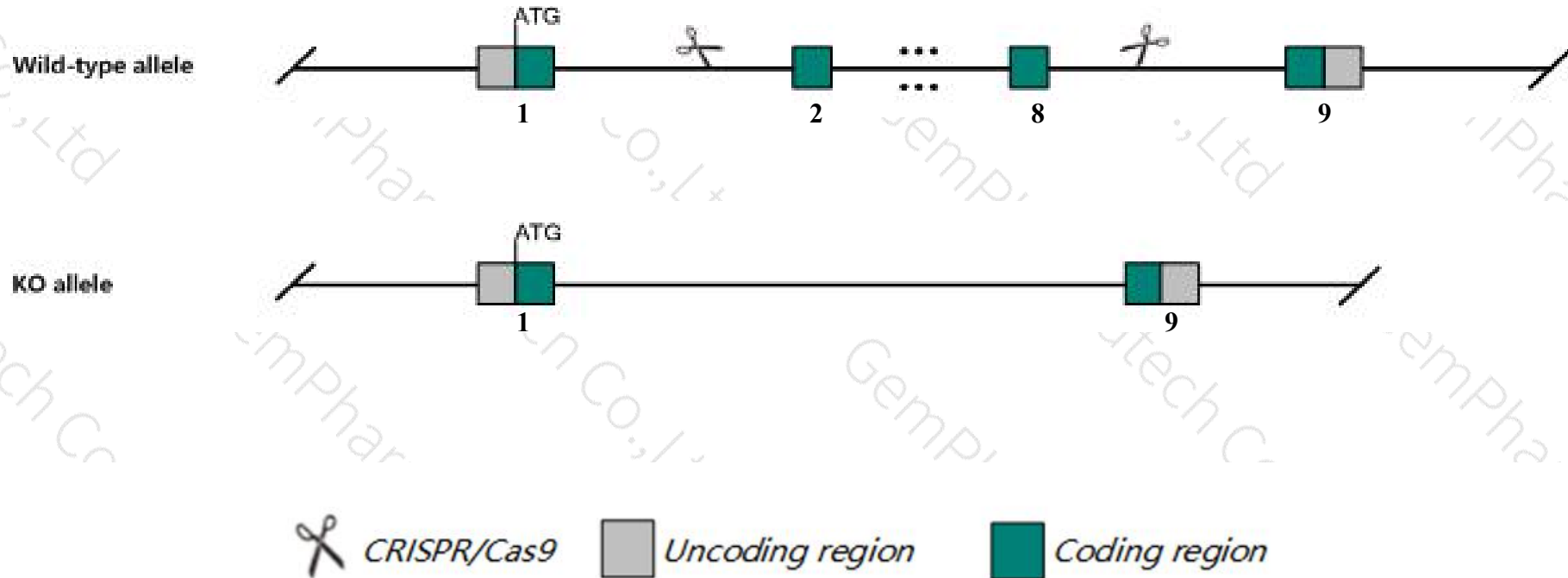
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptpn1* gene. The schematic diagram is as follows:



- The *Ptpn1* gene has 7 transcripts. According to the structure of *Ptpn1* gene, exon2-exon8 of *Ptpn1-201* (ENSMUST00000029053.7) transcript is recommended as the knockout region. The region contains 1022bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ptpn1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygotes for targeted null mutations exhibit greatly reduced adiposity due to reduced fat cell mass, increased basal metabolic rate, mild hypoglycemia and hypoinsulinemia, increased insulin sensitivity, and enhanced sensitivity to leptin.
- The *Ptpn1* gene is located on the Chr2. 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)

## Ptpn1 protein tyrosine phosphatase, non-receptor type 1 [Mus musculus (house mouse)]

Gene ID: 19246, updated on 10-Feb-2019

### Summary



<b>Official Symbol</b>	Ptpn1 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	protein tyrosine phosphatase, non-receptor type 1 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:97805</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG000000027540</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>	PTP-1B, PTP-HA2, PTP1B
<b>Expression</b>	Ubiquitous expression in spleen adult (RPKM 41.9), ovary adult (RPKM 30.8) and 28 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

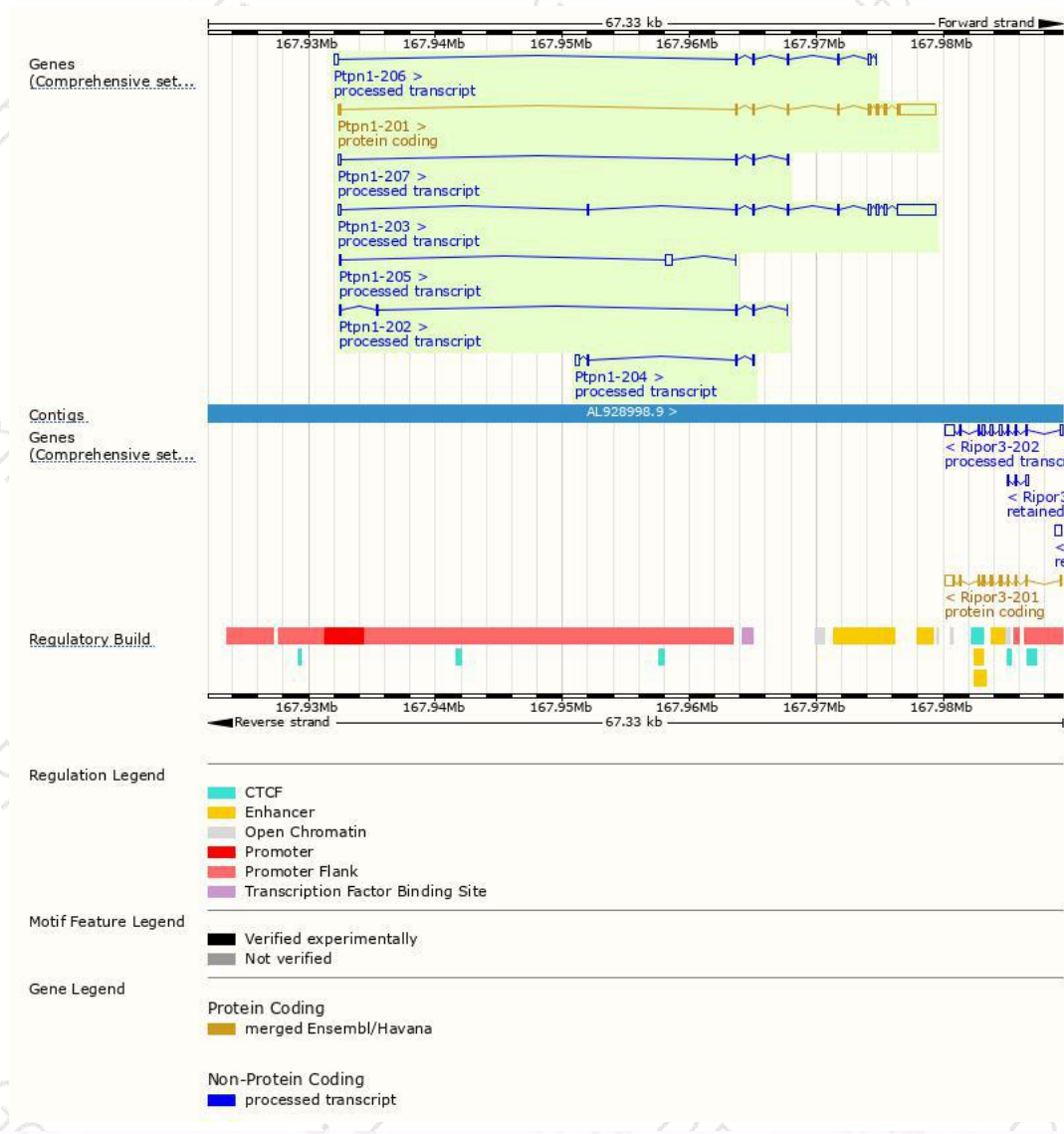
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptpn1-201	<a href="#">ENSMUST00000029053.7</a>	4213	<a href="#">432aa</a>	Protein coding	<a href="#">CCDS17107</a>	<a href="#">P35821 Q3TZW9</a>	TSL:1 GENCODE basic APPRIS P1
Ptpn1-203	<a href="#">ENSMUST00000126839.7</a>	4292	No protein	Processed transcript	-	-	TSL:1
Ptpn1-206	<a href="#">ENSMUST00000147210.7</a>	921	No protein	Processed transcript	-	-	TSL:5
Ptpn1-205	<a href="#">ENSMUST00000144249.1</a>	682	No protein	Processed transcript	-	-	TSL:3
Ptpn1-204	<a href="#">ENSMUST00000142717.1</a>	549	No protein	Processed transcript	-	-	TSL:3
Ptpn1-202	<a href="#">ENSMUST00000124039.7</a>	517	No protein	Processed transcript	-	-	TSL:5
Ptpn1-207	<a href="#">ENSMUST00000151705.7</a>	466	No protein	Processed transcript	-	-	TSL:3

The strategy is based on the design of *Ptpn1-201* transcript,The transcription is shown below

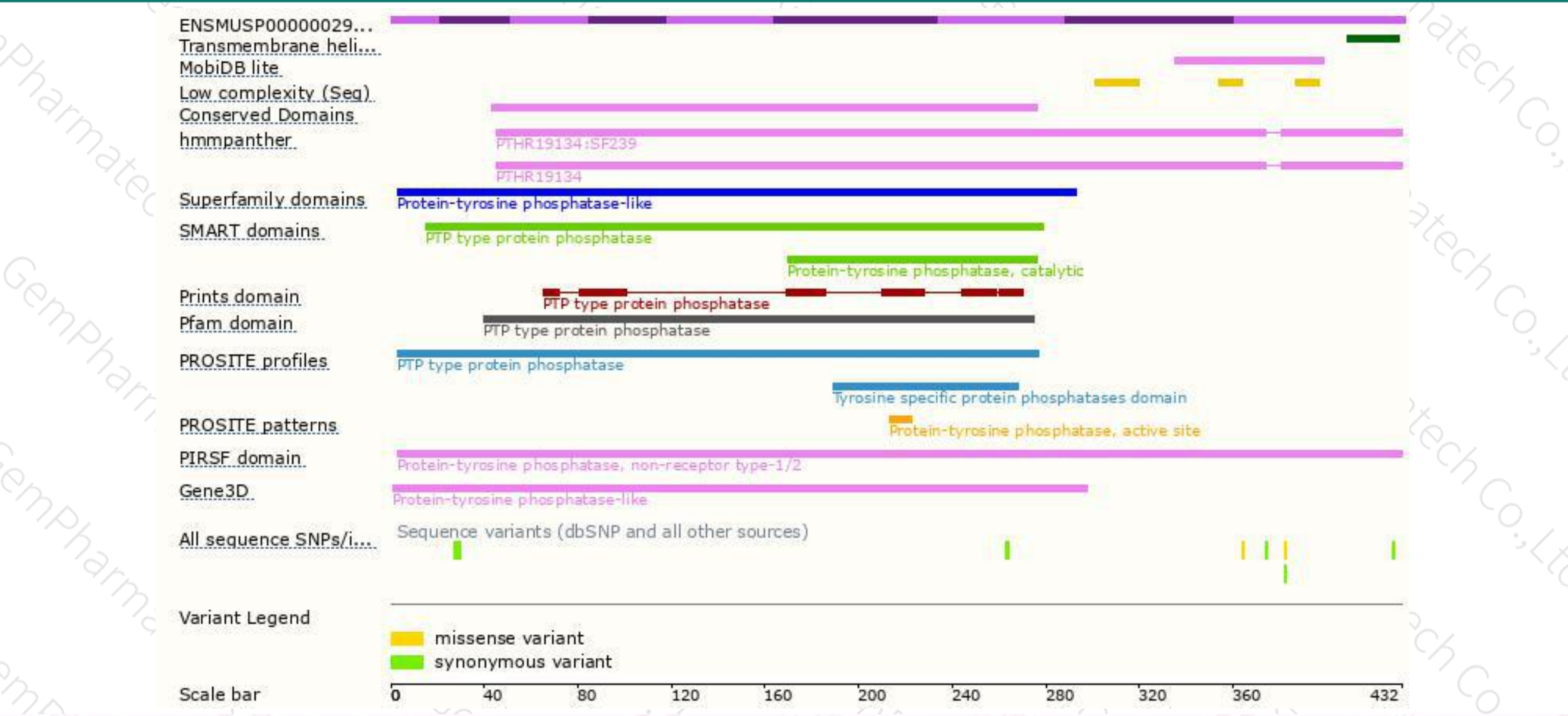


# Genomic location distribution

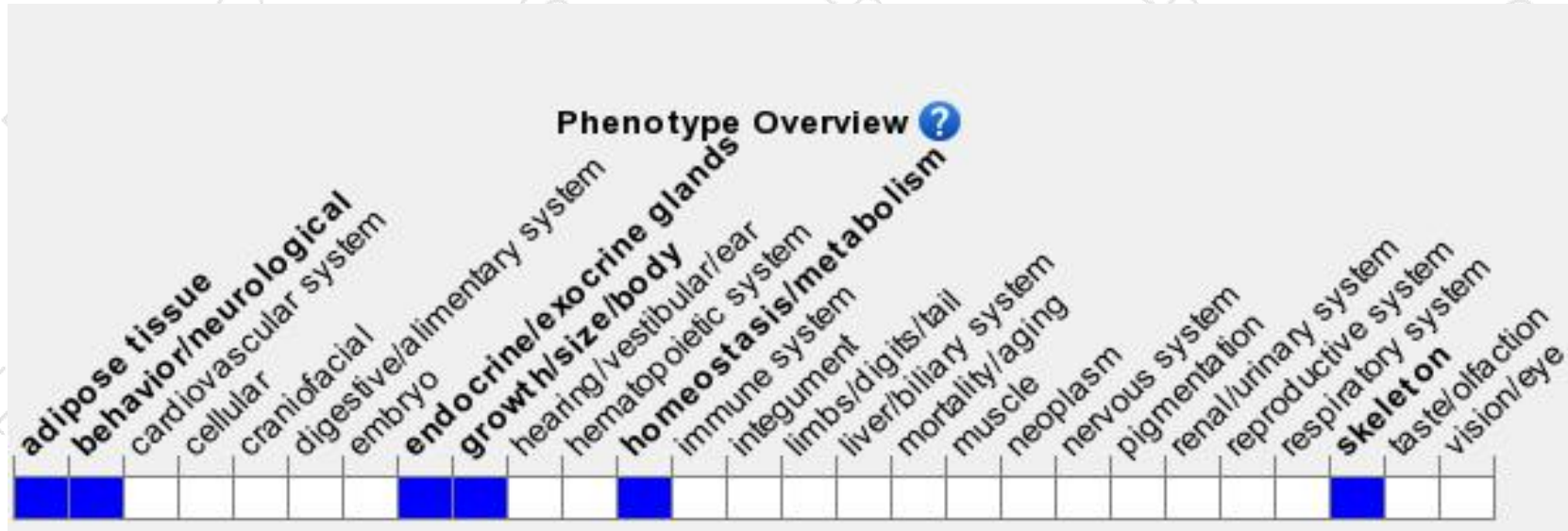




# Protein domain



# 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, Homozygotes for targeted null mutations exhibit greatly reduced adiposity due to reduced fat cell mass, increased basal metabolic rate, mild hypoglycemia and hypoinsulinemia, increased insulin sensitivity, and enhanced sensitivity to leptin.

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

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