

# ***Ptpn22 Cas9-KO Strategy***

**Designer:**

**Daohua Xu**

**Reviewer:**

**Huimin Su**

**Design Date:**

**2019-10-23**

# Project Overview

**Project Name**

*Ptpn22*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptpn22* gene. The schematic diagram is as follows:



- The *Ptpn22* gene has 8 transcripts. According to the structure of *Ptpn22* gene, exon2-exon13 of *Ptpn22-201* (ENSMUST00000029433.8) transcript is recommended as the knockout region. The region contains 1720bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ptpn22* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous null mice display antigen dependent increases in T cell proliferation and cytokine production, enlarged spleens and lymph nodes, increased spontaneous germinal center formation, increased B cell numbers, and increased serum IgG and IgE levels.
- The *Ptpn22* gene is located on the Chr3. 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)

## Ptpn22 protein tyrosine phosphatase, non-receptor type 22 (lymphoid) [Mus musculus (house mouse)]

Gene ID: 19260, updated on 31-Jan-2019

### Summary



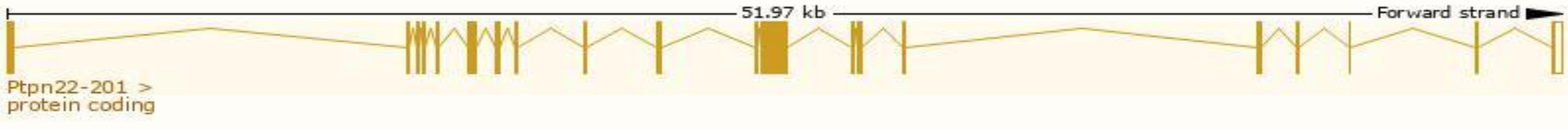
<b>Official Symbol</b>	Ptpn22 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	protein tyrosine phosphatase, non-receptor type 22 (lymphoid) provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:107170</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG000000027843</a>
<b>Gene 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>	70zpep, PEP, Ptpn8
<b>Expression</b>	Biased expression in cerebellum adult (RPKM 5.9), thymus adult (RPKM 4.1) and 10 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

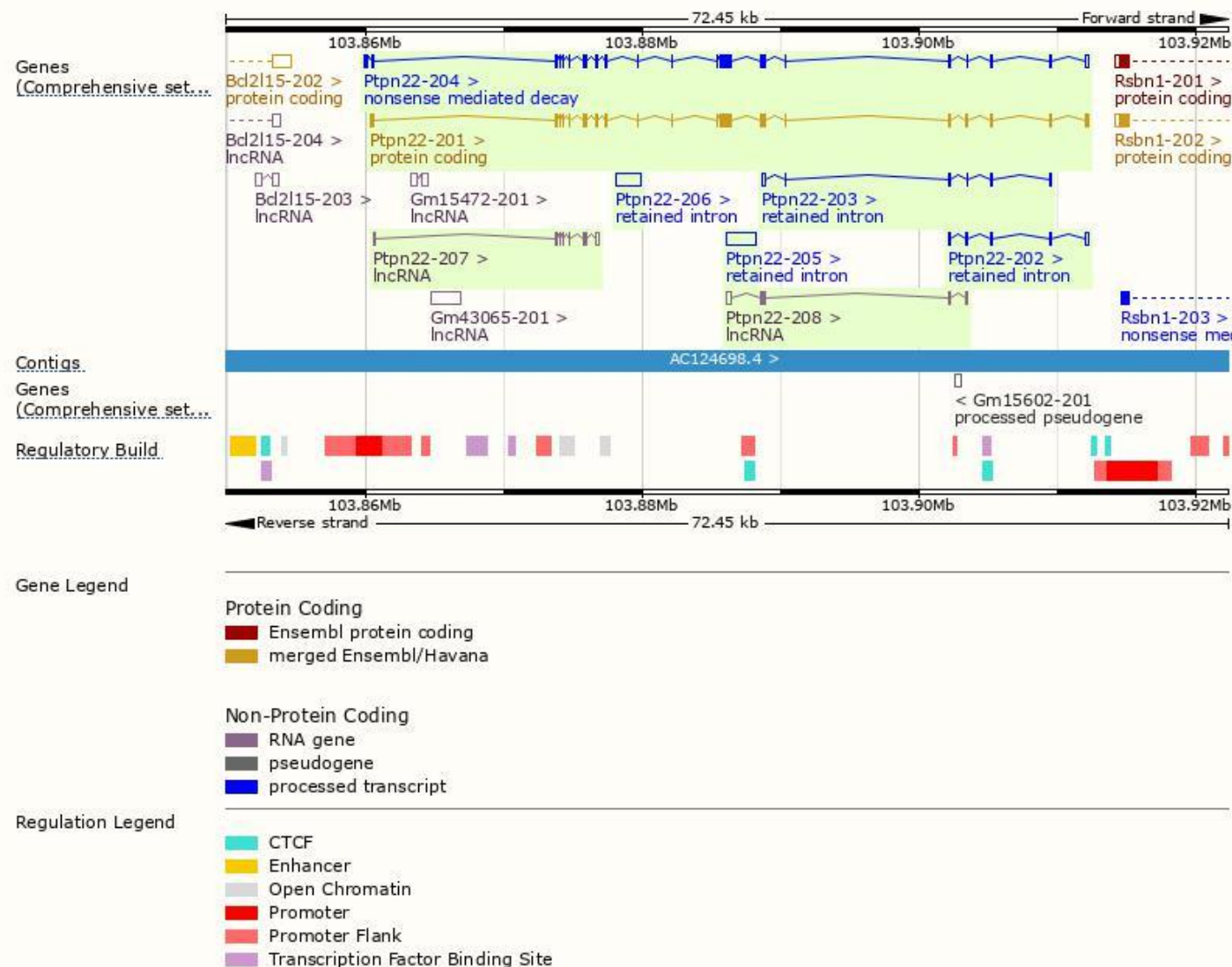
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptpn22-201	<a href="#">ENSMUST00000029433.8</a>	2743	<a href="#">802aa</a>	Protein coding	<a href="#">CCDS38577</a>	<a href="#">P29352</a>	TSL:1 GENCODE basic APPRIS P1
Ptpn22-204	<a href="#">ENSMUST00000146071.7</a>	2757	<a href="#">715aa</a>	Nonsense mediated decay	-	<a href="#">E9QAS3</a>	TSL:1
Ptpn22-205	<a href="#">ENSMUST00000196385.1</a>	2172	No protein	Retained intron	-	-	TSL:NA
Ptpn22-206	<a href="#">ENSMUST00000197997.1</a>	1833	No protein	Retained intron	-	-	TSL:NA
Ptpn22-202	<a href="#">ENSMUST00000126548.1</a>	649	No protein	Retained intron	-	-	TSL:2
Ptpn22-203	<a href="#">ENSMUST00000134373.7</a>	558	No protein	Retained intron	-	-	TSL:5
Ptpn22-207	<a href="#">ENSMUST00000198530.1</a>	737	No protein	lncRNA	-	-	TSL:3
Ptpn22-208	<a href="#">ENSMUST00000198701.4</a>	570	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Ptpn22-201* transcript,The transcription is shown below



# Genomic location distribution

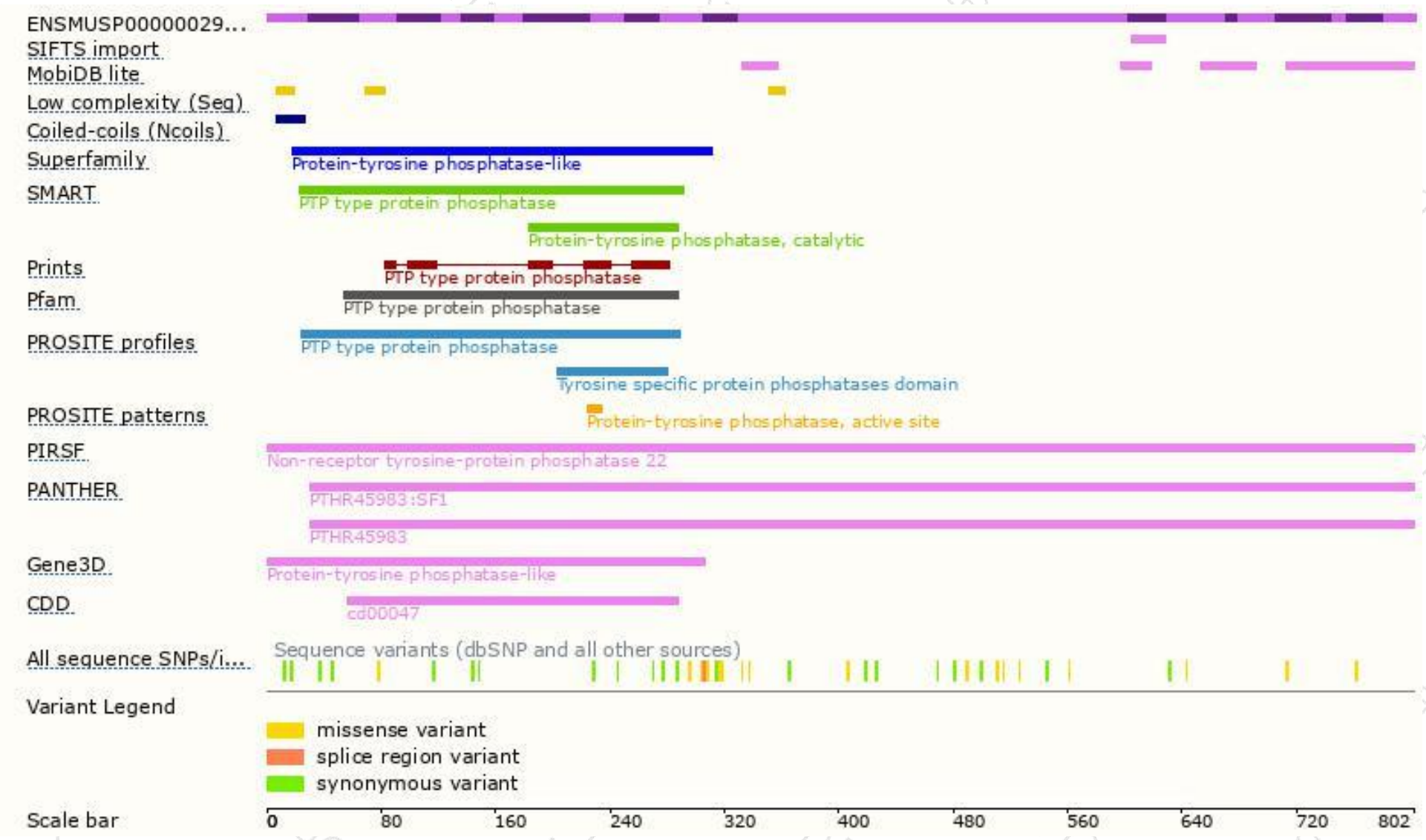




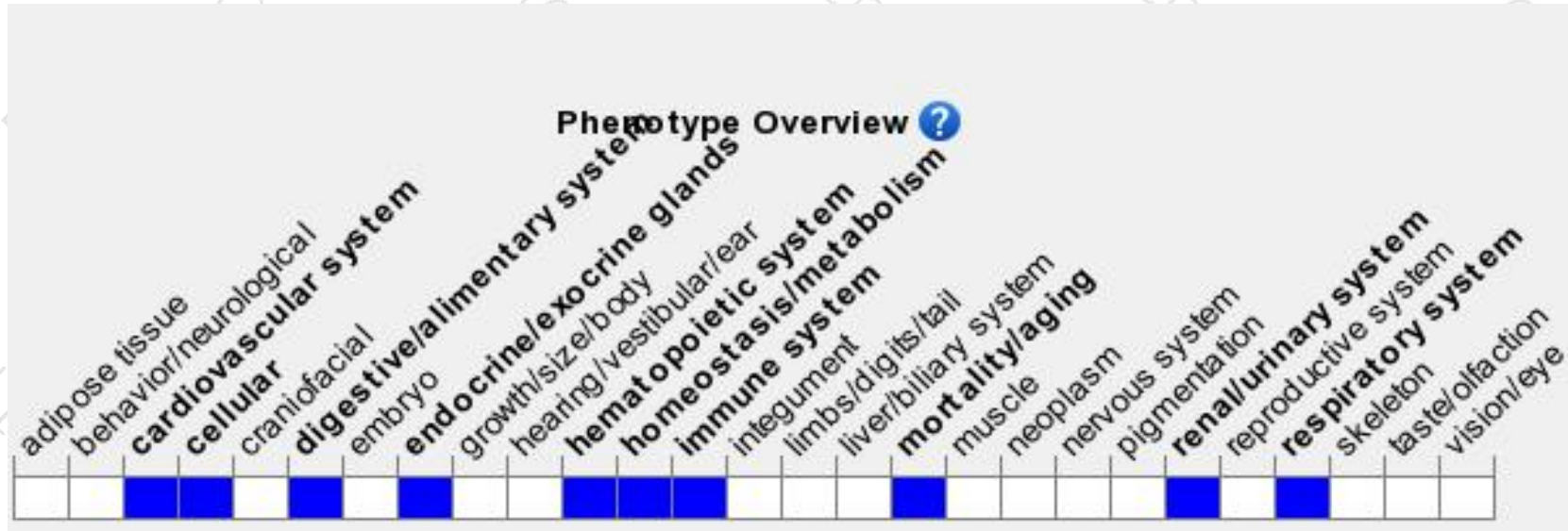
# Protein domain



集萃药康  
GemPharmatech



# 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, Homozygous null mice display antigen dependent increases in T cell proliferation and cytokine production, enlarged spleens and lymph nodes, increased spontaneous germinal center formation, increased B cell numbers, and increased serum IgG and IgE levels.

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

Tel: 400-9660890

