

# *Ptpn5* Cas9-CKO Strategy

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**Reviewer:**

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**Design Date:**

**2019-11-21**

# Project Overview

**Project Name**

*Ptpn5*

**Project type**

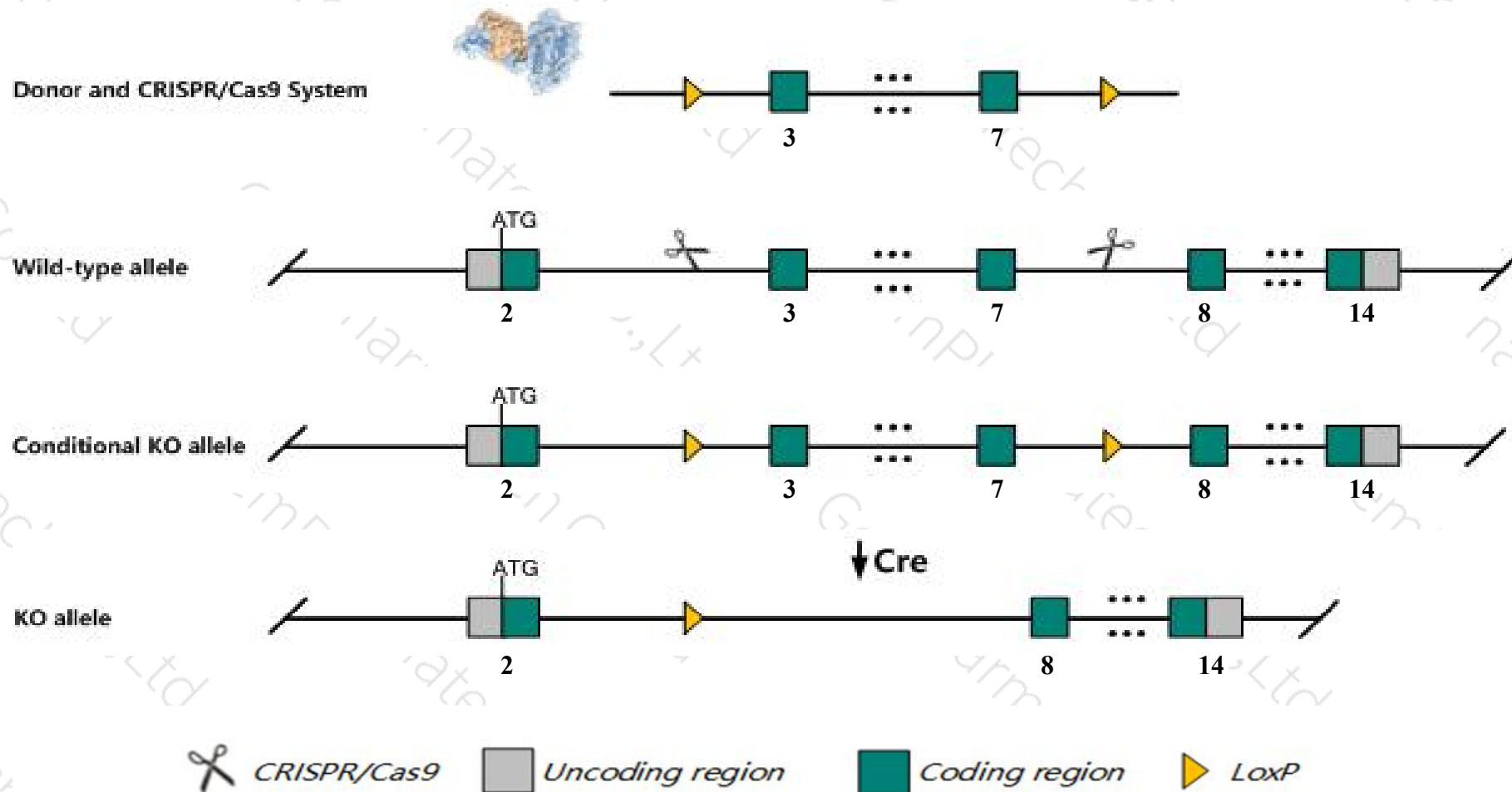
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptpn5* gene. The schematic diagram is as follows:



# Technical routes

- The *Ptpn5* gene has 11 transcripts. According to the structure of *Ptpn5* gene, exon3-exon7 of *Ptpn5-201* (ENSMUST00000033142.12) transcript is recommended as the knockout region. The region contains 818bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ptpn5* 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, mice homozygous for a null allele exhibit normal brain development.
- The *Ptpn5* gene is located on the Chr7. 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.



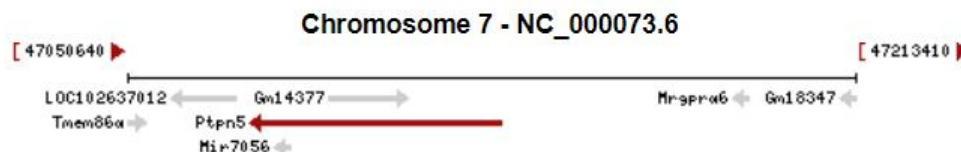
# Gene information (NCBI)

## Ptpn5 protein tyrosine phosphatase, non-receptor type 5 [ *Mus musculus* (house mouse) ]

Gene ID: 19259, updated on 17-Sep-2019

### Summary

<b>Official Symbol</b>	Ptpn5 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	protein tyrosine phosphatase, non-receptor type 5 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:97807</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000030854</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>	Step
<b>Expression</b>	Biased expression in CNS E18 (RPKM 44.4), whole brain E14.5 (RPKM 40.6) and 9 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

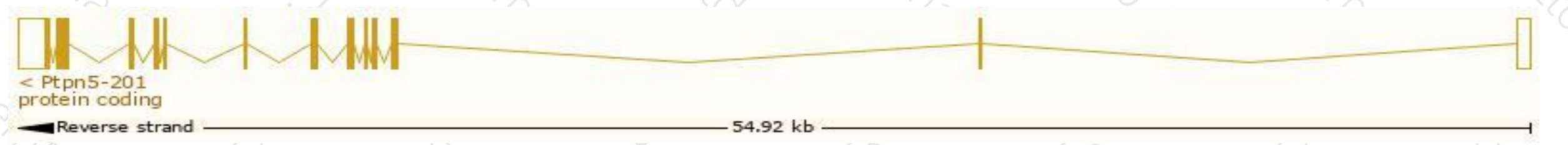


# Transcript information (Ensembl)

The gene has 11 transcripts,all transcripts are shown below:

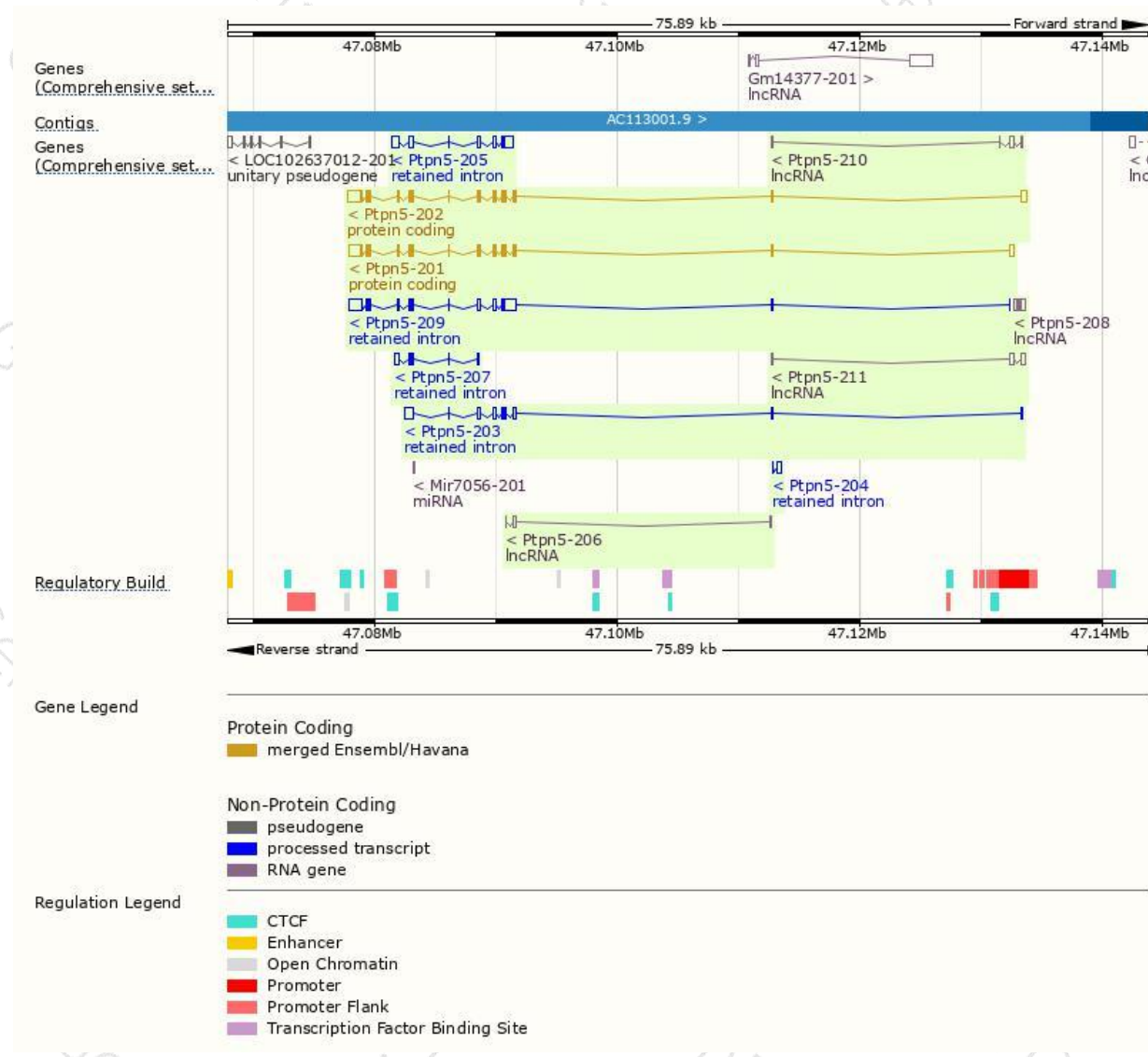
Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Ptpn5-201	<a href="#">ENSMUST00000033142.12</a>	3145	<a href="#">541aa</a>	<a href="#">ENSMUSP00000033142.5</a>	Protein coding	<a href="#">CCDS21294</a>	<a href="#">P54830</a>	TSL:1 GENCODE basic APPRIS P1
Ptpn5-202	<a href="#">ENSMUST00000102626.9</a>	3137	<a href="#">541aa</a>	<a href="#">ENSMUSP00000099686.1</a>	Protein coding	<a href="#">CCDS21294</a>	<a href="#">P54830</a>	TSL:1 GENCODE basic APPRIS P1
Ptpn5-209	<a href="#">ENSMUST00000209161.1</a>	3296	No protein	-	Retained intron	-	-	TSL:2
Ptpn5-205	<a href="#">ENSMUST00000208324.1</a>	2165	No protein	-	Retained intron	-	-	TSL:1
Ptpn5-203	<a href="#">ENSMUST00000207172.1</a>	1874	No protein	-	Retained intron	-	-	TSL:2
Ptpn5-207	<a href="#">ENSMUST00000208531.1</a>	694	No protein	-	Retained intron	-	-	TSL:3
Ptpn5-204	<a href="#">ENSMUST00000207344.1</a>	393	No protein	-	Retained intron	-	-	TSL:3
Ptpn5-211	<a href="#">ENSMUST00000209184.1</a>	765	No protein	-	lncRNA	-	-	TSL:3
Ptpn5-210	<a href="#">ENSMUST00000209179.1</a>	673	No protein	-	lncRNA	-	-	TSL:3
Ptpn5-208	<a href="#">ENSMUST00000209057.1</a>	589	No protein	-	lncRNA	-	-	TSL:3
Ptpn5-206	<a href="#">ENSMUST00000208437.1</a>	348	No protein	-	lncRNA	-	-	TSL:3

The strategy is based on the design of *Ptpn5-201* transcript,The transcription is shown below



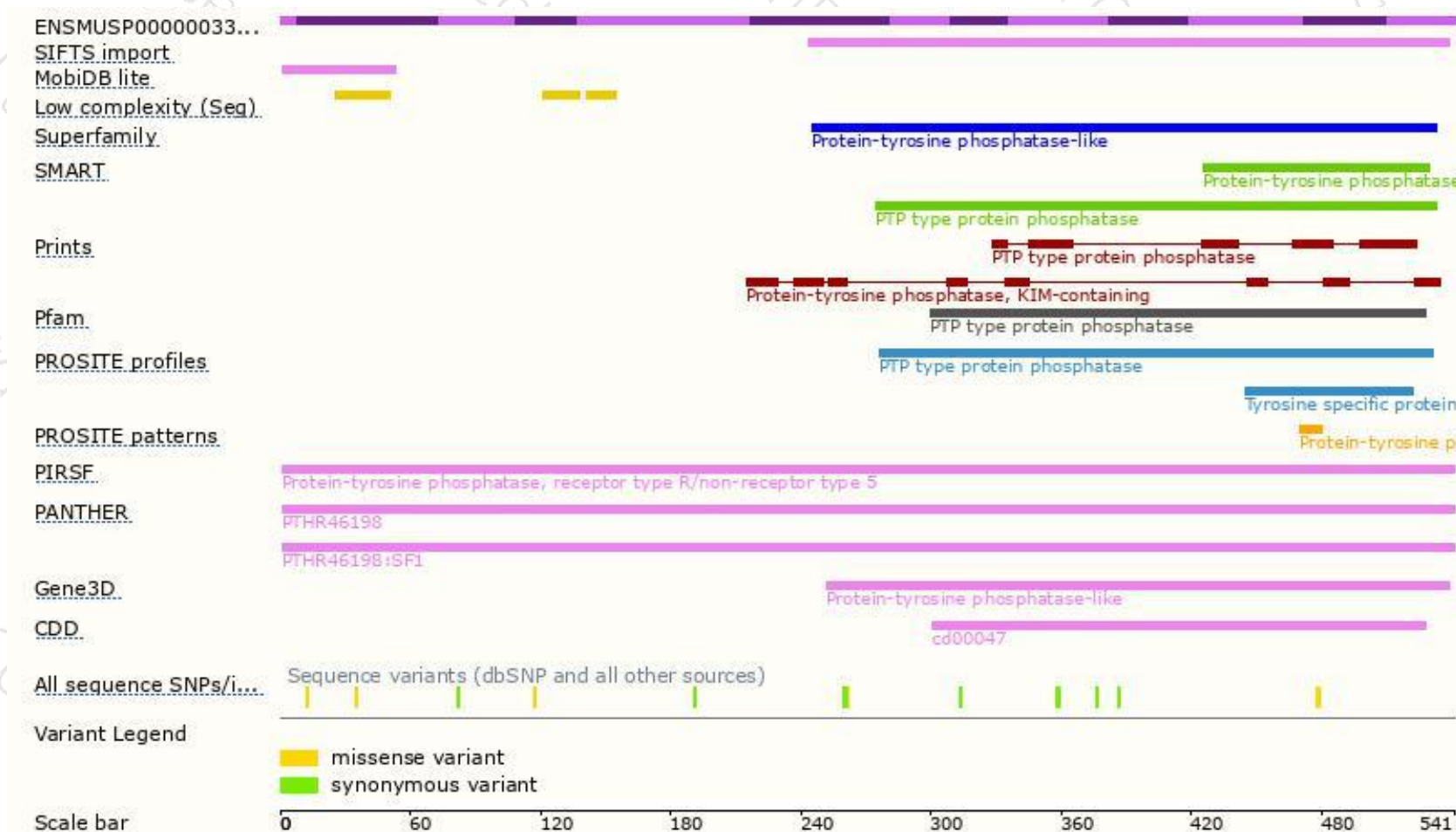


# Genomic location distribution



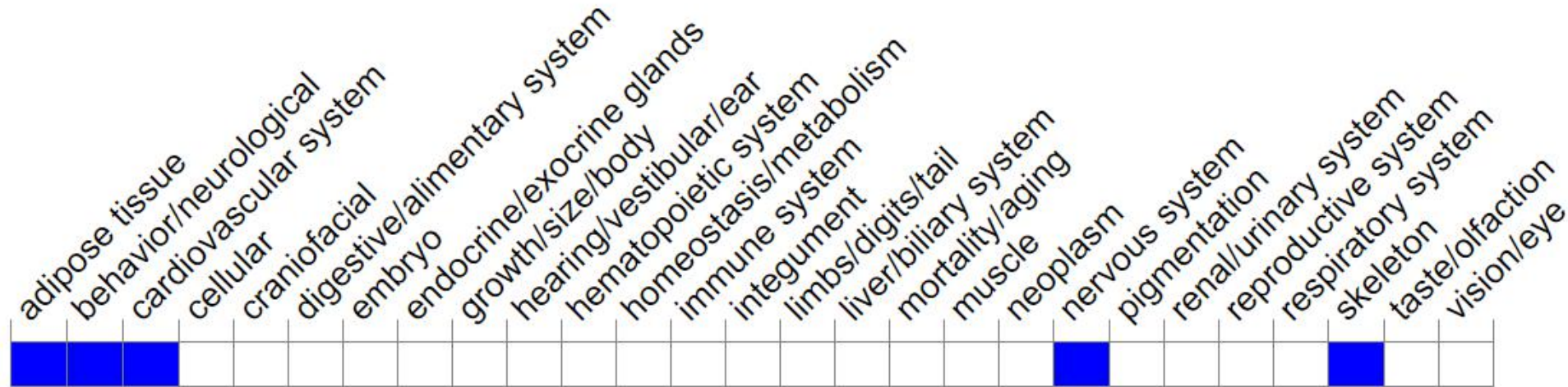


# Protein domain



# Mouse phenotype description(MGI)

## Phenotype Overview ?



*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 null allele exhibit normal brain development.

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

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