

# *Nptxr* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Nptxr*

**Project type**

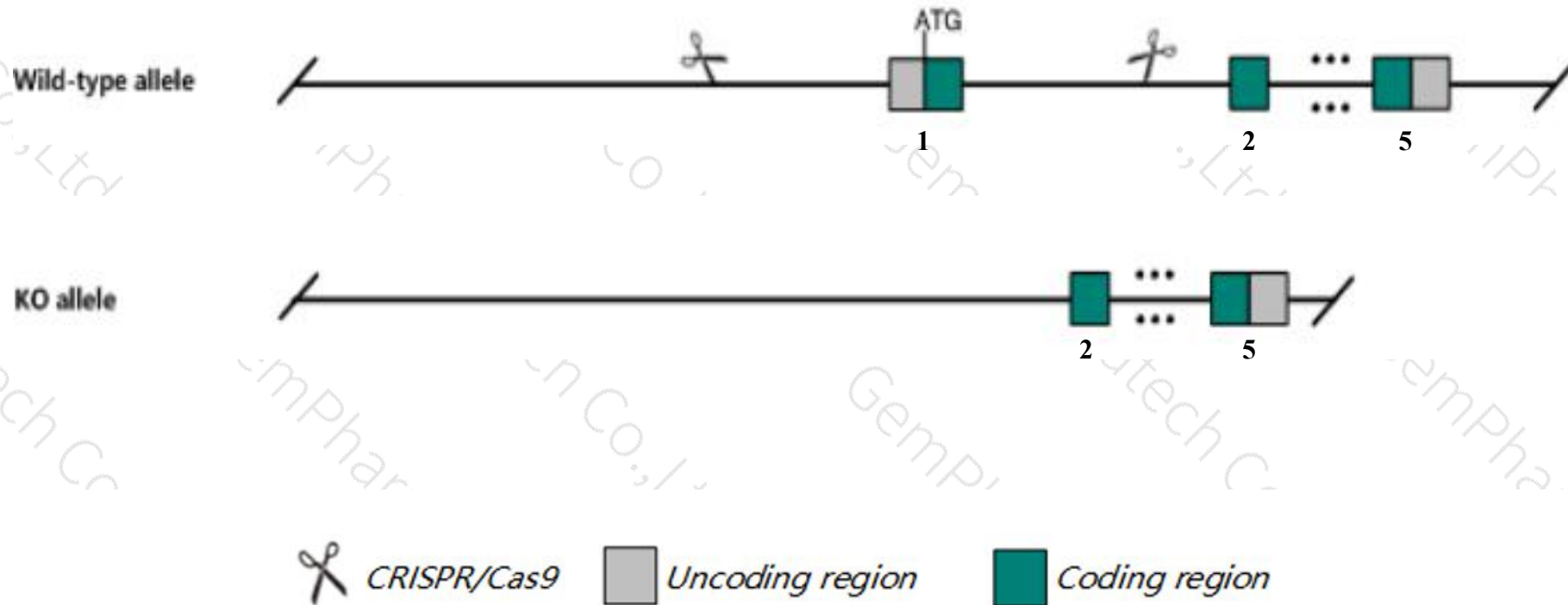
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



# Technical routes

- The *Nptxr* gene has 3 transcripts. According to the structure of *Nptxr* gene, exon1 of *Nptxr*-203(ENSMUST00000175858.8) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nptxr* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, mice homozygous for a null mutation of this gene display a mild alteration in retinal ganglion cell innervation but are fertile with no obvious behavioral abnormalities.
- The flox region is in the intron of the *Npcd* gene, which may affect the regulation of this gene.
- The *Nptxr* gene is located on the Chr15. 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)

## Nptxr neuronal pentraxin receptor [Mus musculus (house mouse)]

Gene ID: 73340, updated on 13-Mar-2020

### Summary



**Official Symbol** Nptxr provided by [MGI](#)

**Official Full Name** neuronal pentraxin receptor provided by [MGI](#)

**Primary source** [MGI:MGI:1920590](#)

**See related** [Ensembl:ENSMUSG00000022421](#)

**Gene type** protein coding

**RefSeq status** REVIEWED

**Organism** [Mus musculus](#)

**Lineage** Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

**Also known as** 1200009K17Rik, 1700036C17Rik, 5730406O18Rik, AI452369, AI785356, D15Bwg0580e, NPR, Npcd

**Summary** This gene encodes a protein similar to the rat neuronal pentraxin receptor. The rat pentraxin receptor is an integral membrane protein that is thought to mediate neuronal uptake of the snake venom toxin, taipoxin, and its transport into the synapses. Studies in rat indicate that translation of this mRNA initiates at a non-AUG (CUG) codon. This may also be true for mouse and human, based on strong sequence conservation amongst these species. [provided by RefSeq, Jul 2008]

**Expression** Biased expression in frontal lobe adult (RPKM 79.6), cortex adult (RPKM 75.7) and 5 other tissues [See more](#)

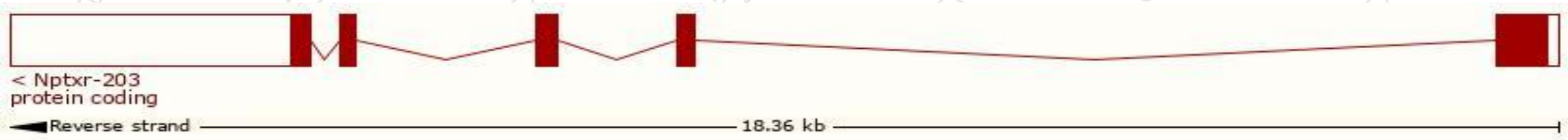
**Orthologs** [human](#) [all](#)

# Transcript information (Ensembl)

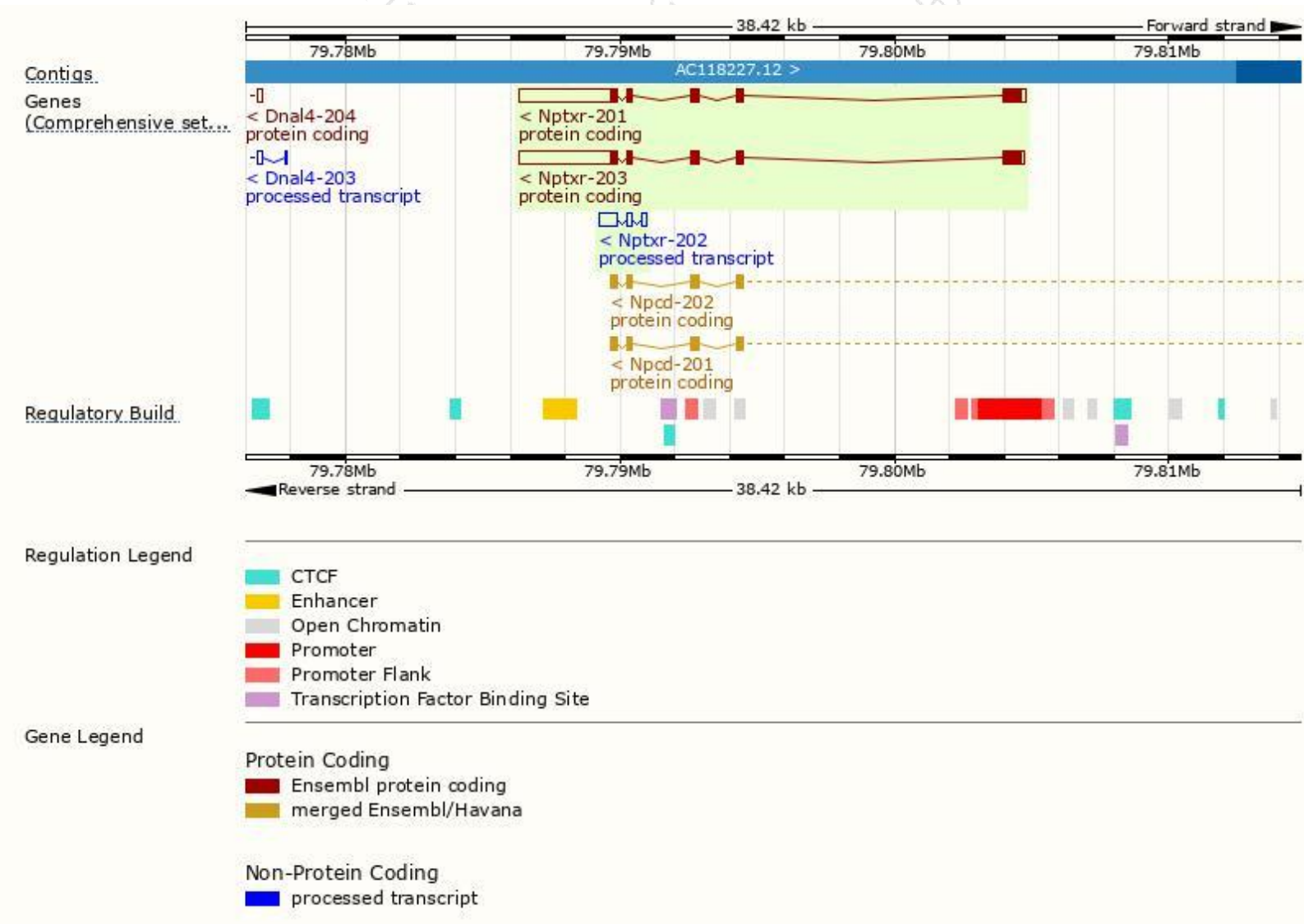
The gene has 3 transcripts,all transcripts are shown below:

| Name      | Transcript ID                        | bp   | Protein               | Biotype              | CCDS                      | UniProt                | Flags                           |
|-----------|--------------------------------------|------|-----------------------|----------------------|---------------------------|------------------------|---------------------------------|
| Nptxr-203 | <a href="#">ENSMUST00000175858.8</a> | 4948 | <a href="#">493aa</a> | Protein coding       | <a href="#">CCDS27653</a> | <a href="#">E9PZM8</a> | TSL:1 GENCODE basic APPRIS P2   |
| Nptxr-201 | <a href="#">ENSMUST00000023057.9</a> | 5006 | <a href="#">493aa</a> | Protein coding       | -                         | <a href="#">F7BX42</a> | TSL:1 GENCODE basic APPRIS ALT2 |
| Nptxr-202 | <a href="#">ENSMUST00000125283.1</a> | 999  | No protein            | Processed transcript | -                         | -                      | TSL:1                           |

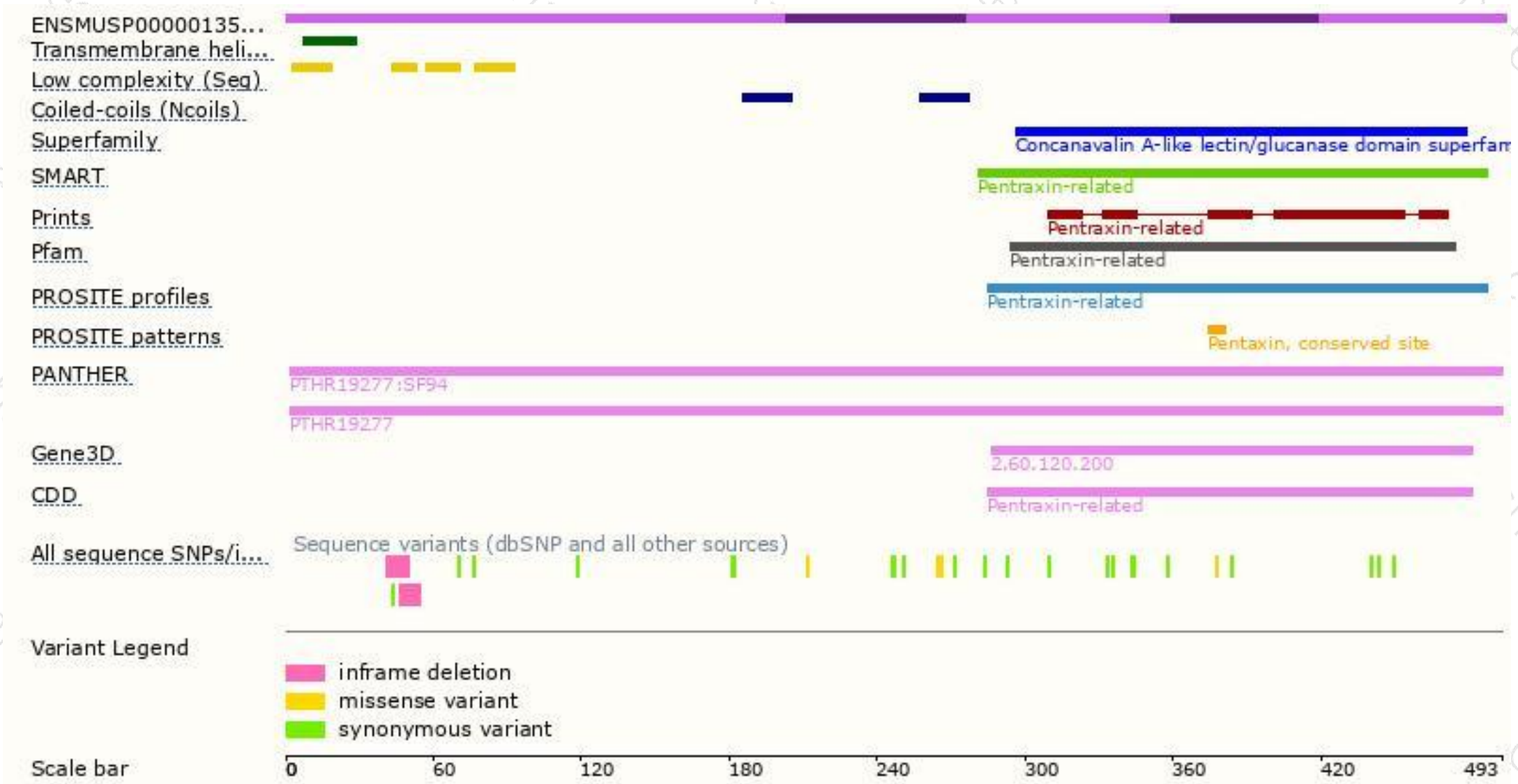
The strategy is based on the design of *Nptxr-203* transcript,the transcription is shown below:



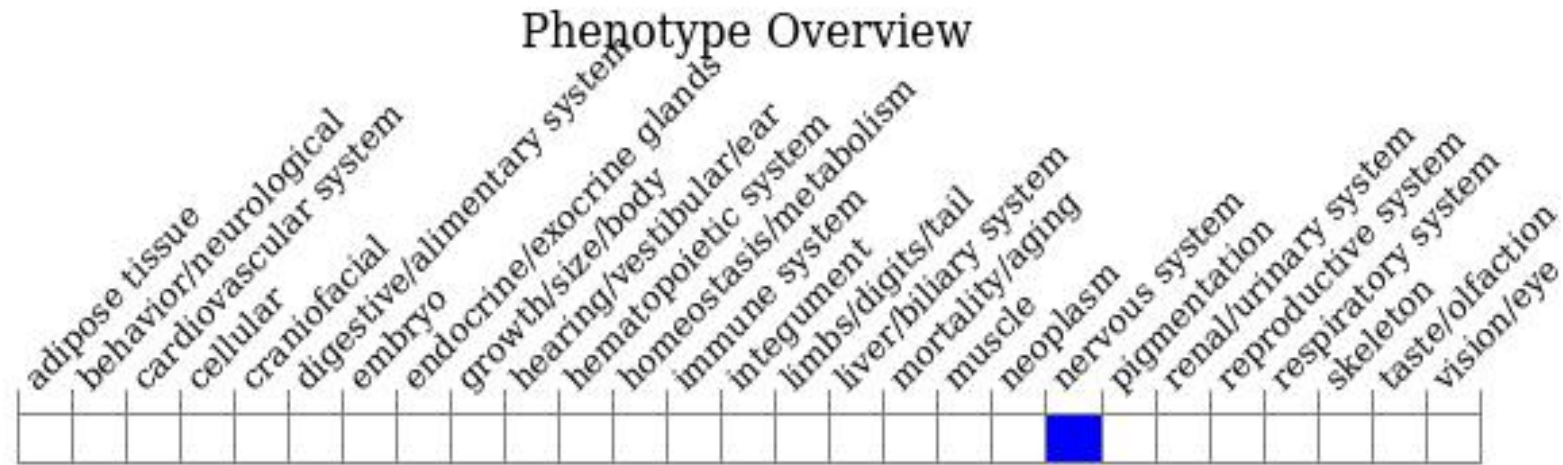
# Genomic location distribution



# 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 null mutation of this gene display a mild alteration in retinal ganglion cell innervation but are fertile with no obvious behavioral abnormalities.

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

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