Nptxr Cas9-CKO Strategy

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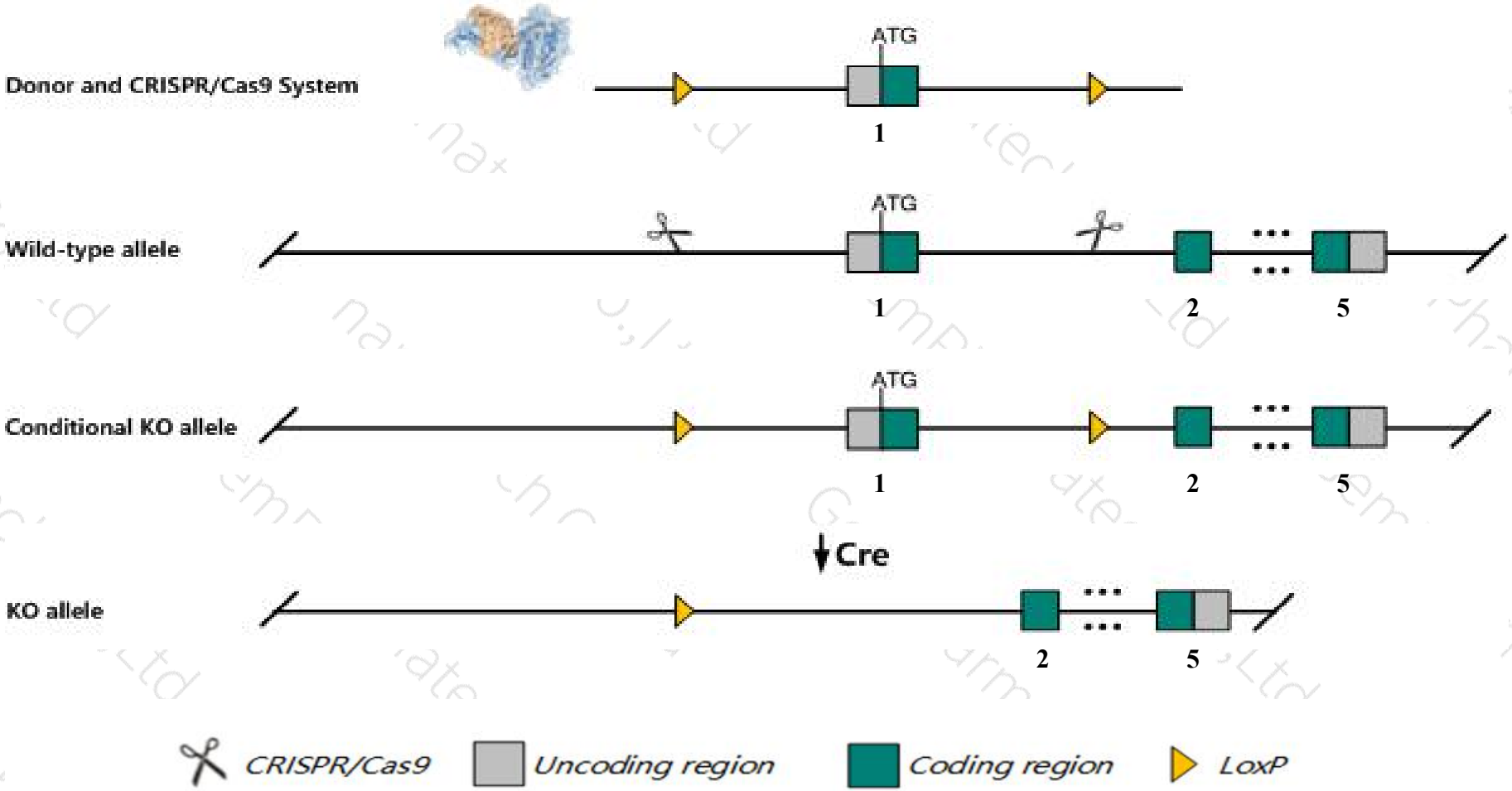
Design Date: 2020-8-3

Project Overview

Project Name	***Nptxr***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional 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 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.

Notice

➢ 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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

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

Summary

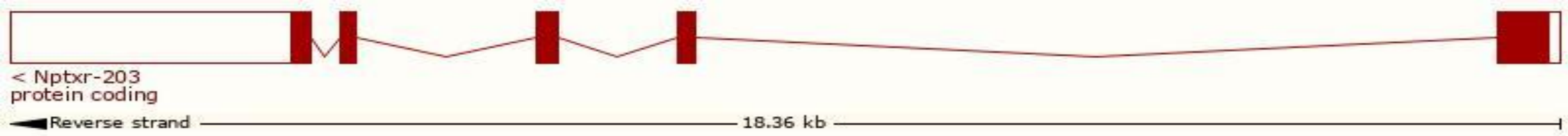
Official Symbol	Nptxr provided by MGI
Official Full Name	neuronal pentraxin receptor provided byMGI
Primary source	MGI:MGI:1920590
See related	Ensembl:ENSMUSG00000022421
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; 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 tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

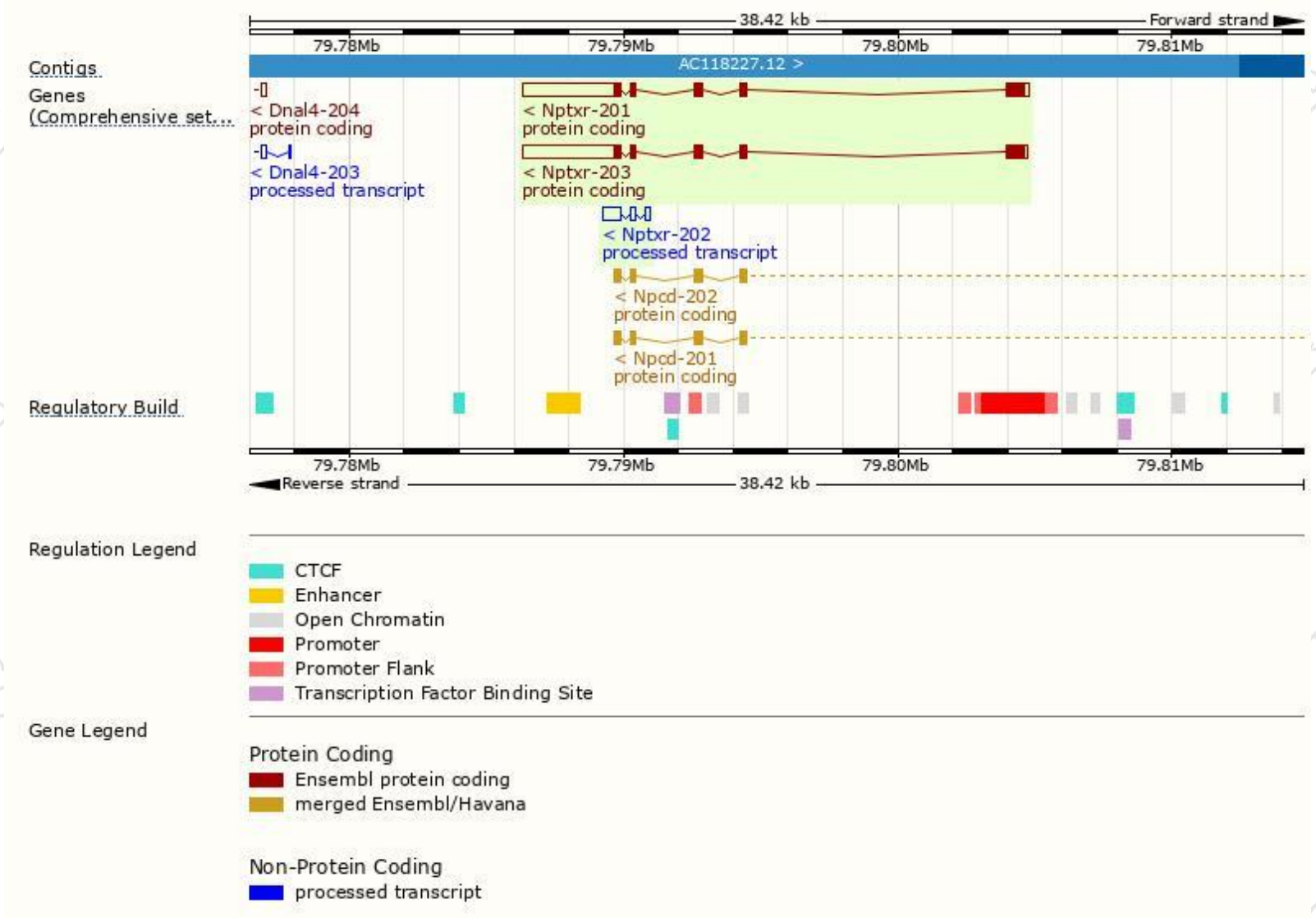
The gene has 3 transcripts,all transcripts are shown below:

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

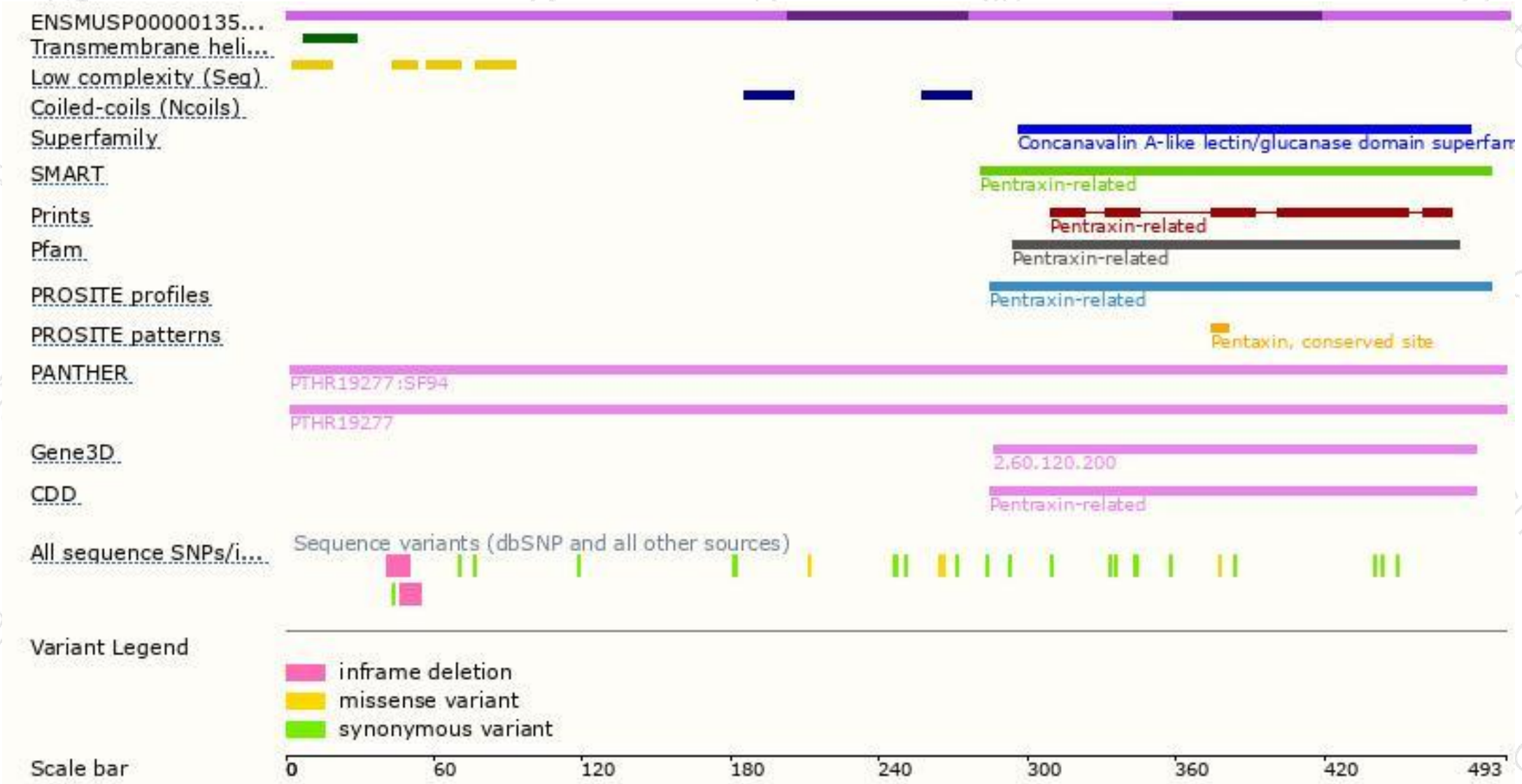
The strategy is based on the design of *Nptxr-203* transcript,the transcription is shown below:



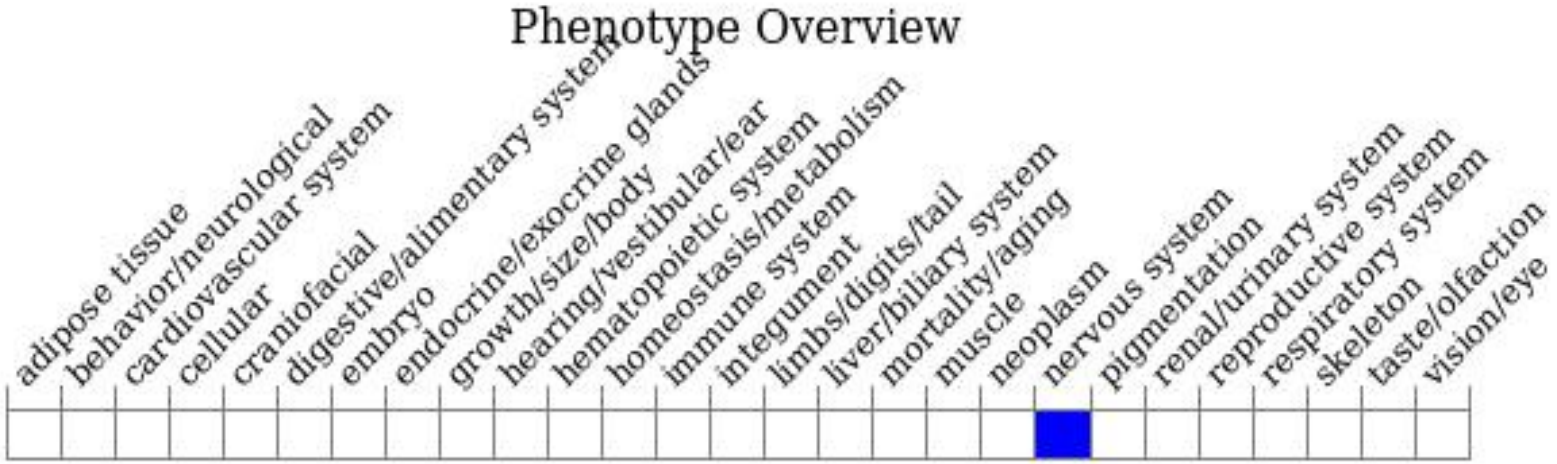
Genomic location distribution



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/).

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

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