Grik3 Cas9-CKO Strategy

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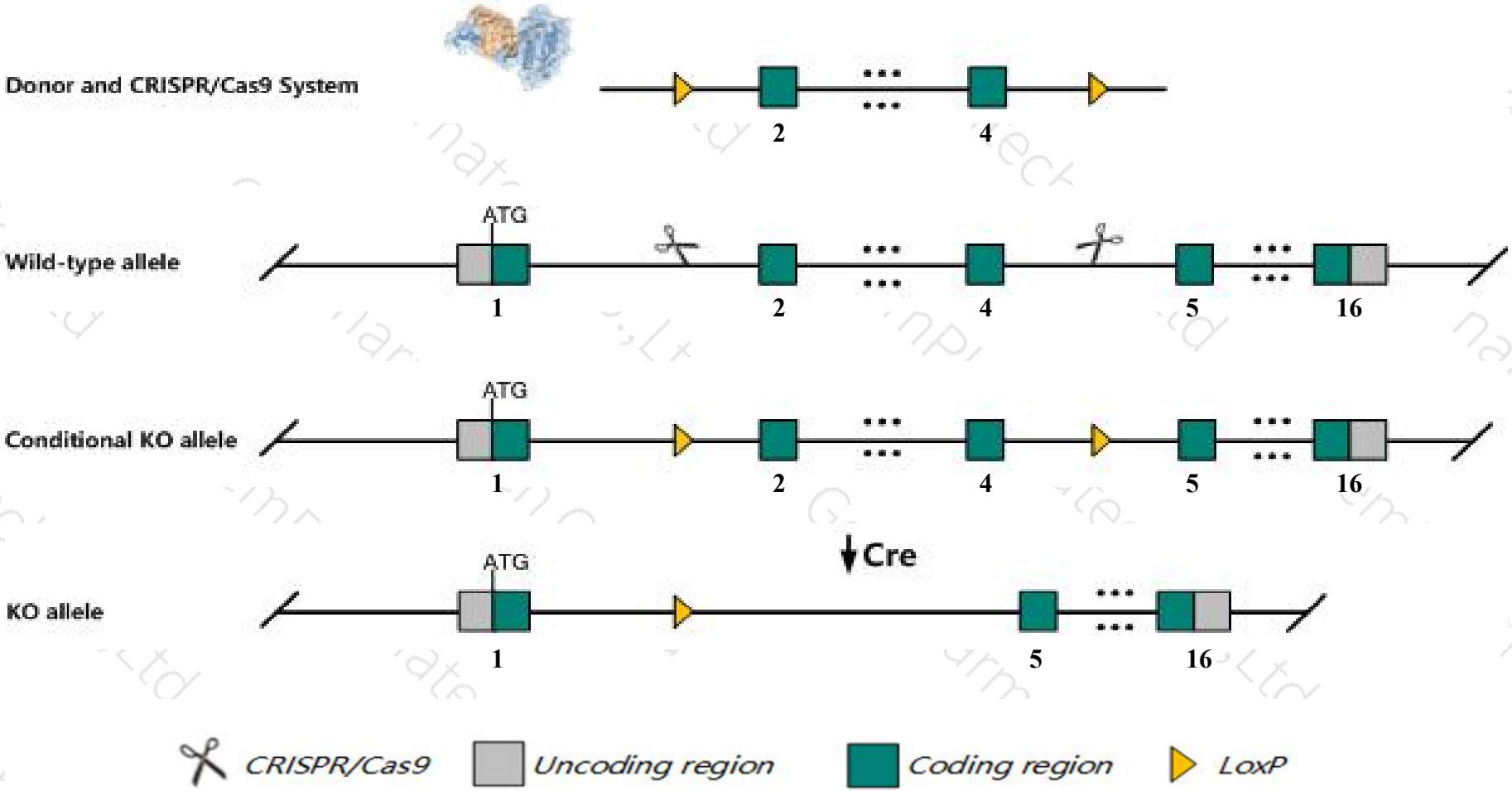
Project Overview

Project Name	***Grik3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Grik3* gene. The schematic diagram is as follows:



Technical routes

- The *Grik3* gene has 1 transcript. According to the structure of *Grik3* gene, exon2-exon4 of *Grik3-201* (ENSMUST00000030676.7) transcript is recommended as the knockout region.The region contains 617bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Grik3* 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 knock-out allele exhibit significantly reduced short- and long-term synaptic potentiation.

- The *Grik3* gene is located on the Chr4. 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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Grik3 glutamate receptor, ionotropic, kainate 3 [Mus musculus (house mouse)]

Gene ID: 14807, updated on 9-Apr-2019

Summary

Official Symbol	Grik3 provided by MGI
Official Full Name	glutamate receptor, ionotropic, kainate 3 provided by MGI
Primary source	MGI:MGI:95816
See related	Ensembl:ENSMUSG00000001985
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	9630027E11, GluK3, GluR7-3, Glur-7, Glur7
Summary	Glutamate receptors are the predominant excitatory neurotransmitter receptors in the mammalian brain and are activated in a variety of normal neurophysiologic processes. This gene product belongs to the kainate family of glutamate receptors, which are composed of four subunits and function as ligand-activated ion channels. Transcript variants encoding different isoforms have been described for this gene, however, their full-length nature is not known. [provided by RefSeq, Jul 2008]
Expression	Biased expression in frontal lobe adult (RPKM 10.1), whole brain E14.5 (RPKM 9.8) and 8 other tissuesSee more
Orthologs	human all

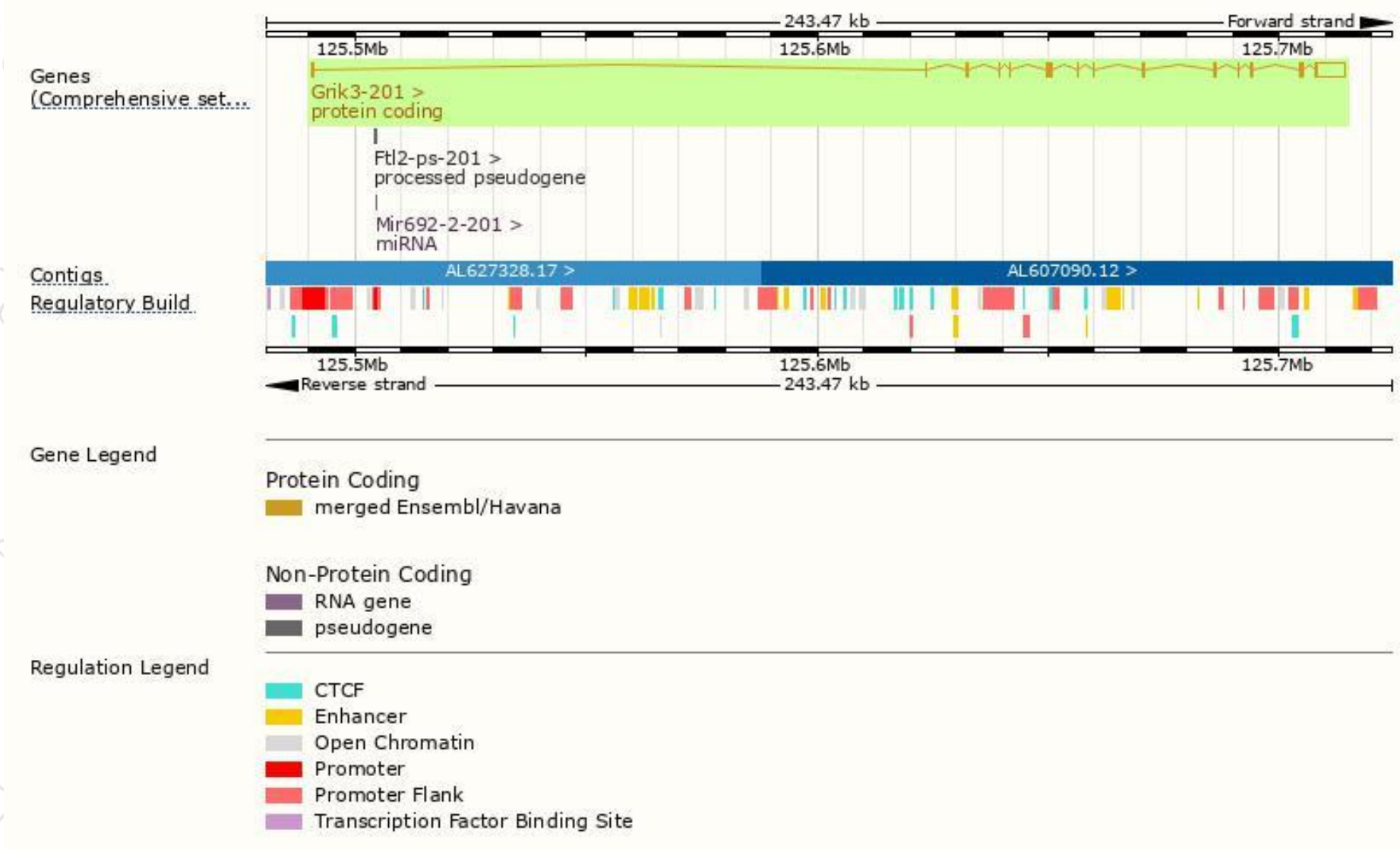
Transcript information（Ensembl）

The gene has 1 transcript,and the transcript is shown below:

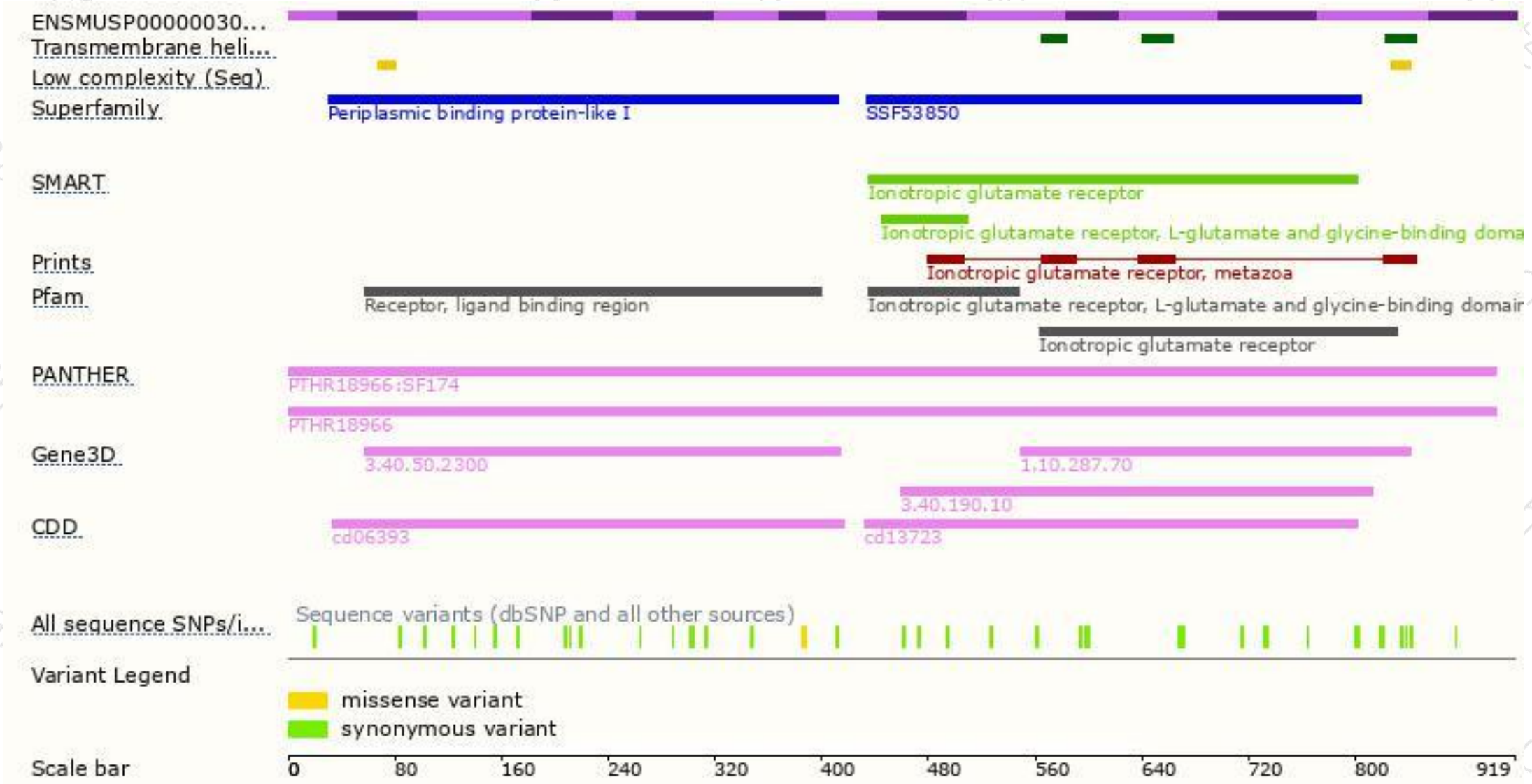
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Grik3-201	ENSMUST00000030676.7	8973	919aa	Protein coding	CCDS38878	B1AS29	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Grik3-201* transcript,The transcription is shown below

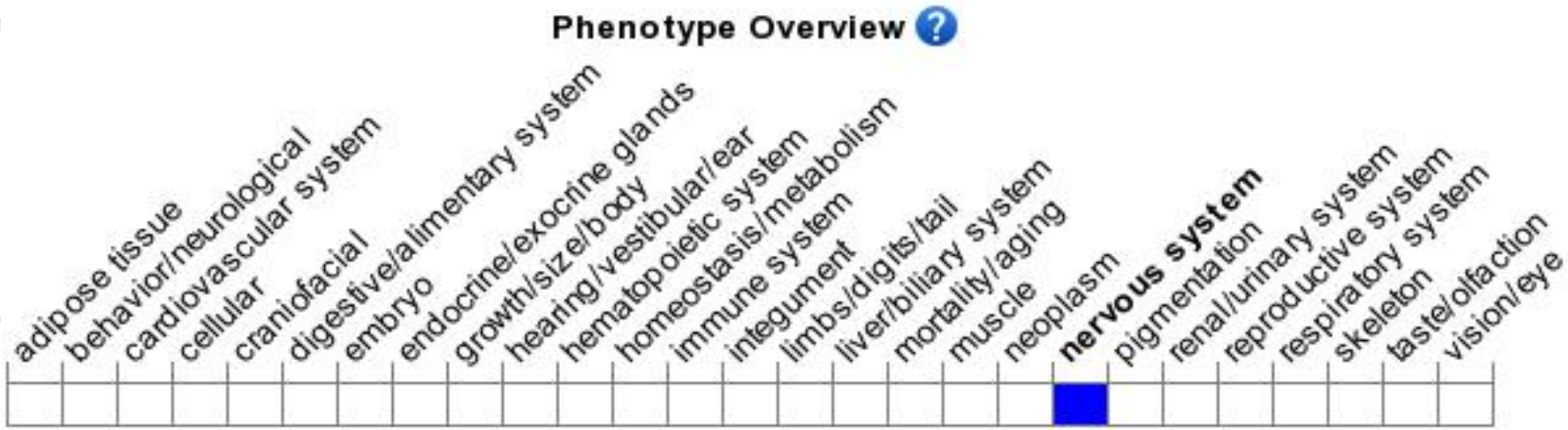
Genomic location distribution



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/).

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

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