Lrfn3 Cas9-KO Strategy

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Reviewer: Miaomiao Cui

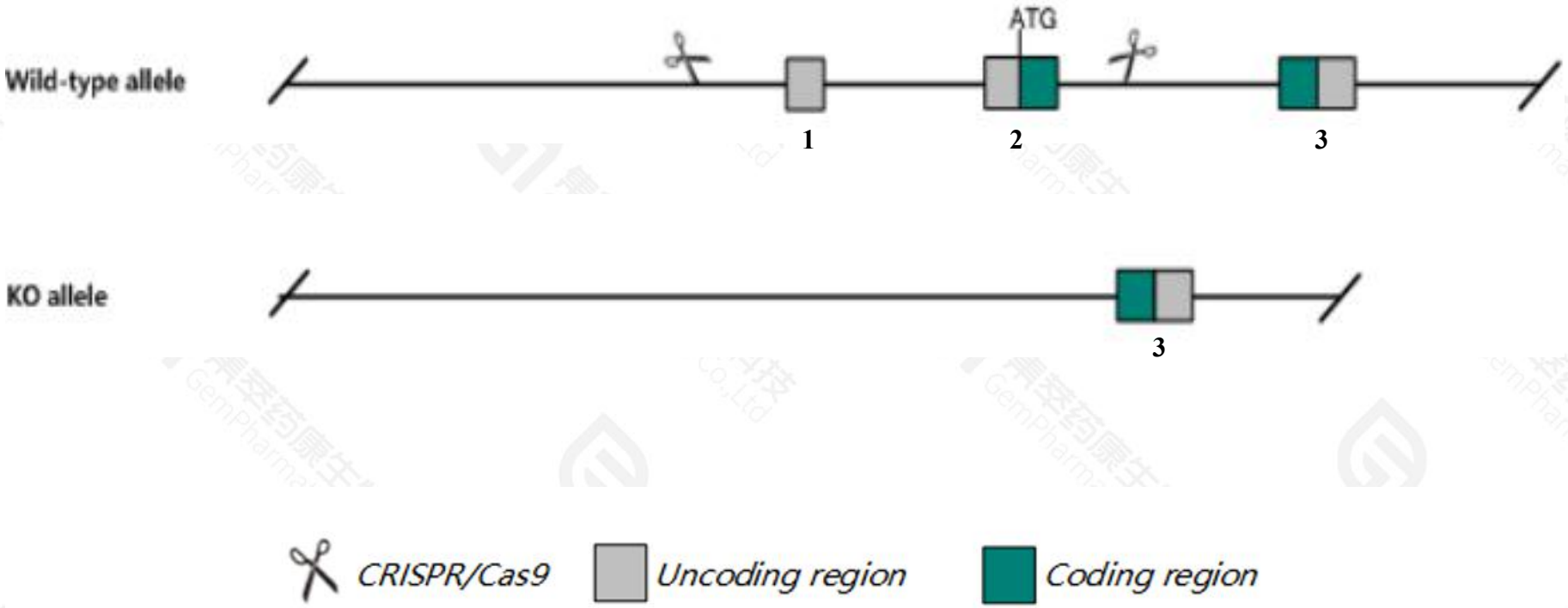
Design Date: 2021-3-12

Project Overview

Project Name	***Lrfn3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lrfn3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Lrfn3* gene has 1 transcript. According to the structure of *Lrfn3* gene, exon1-exon2 of *Lrfn3-201*(ENSMUST00000046351.6) transcript is recommended as the knockout region.The region contains 1415bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Lrfn3* 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.

Notice

➢ According to the existing MGI data,mice homozygous for a knock-out allele exhibit increased frequency of excitatory and inhibitory postsynaptic freuqency and synapse density,

➢ The *Lrfn3* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

集萃药康 GemPharmatech

Lrfn3 leucine rich repeat and fibronectin type III domain containing 3 [Mus musculus (house mouse)]

Gene ID: 233067, updated on 13-Mar-2020

Summary

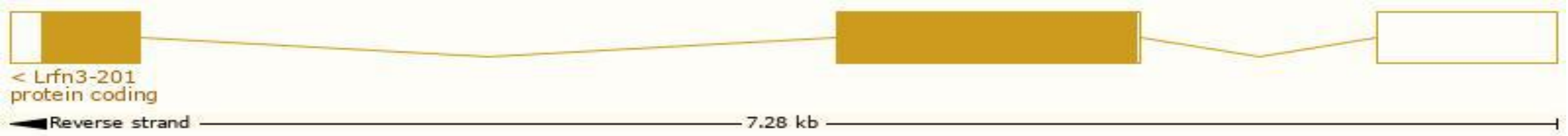
Official Symbol	Lrfn3 provided by MGI
Official Full Name	leucine rich repeat and fibronectin type III domain containing 3 provided by MGI
Primary source	MGI:MGI:2442512
See related	Ensembl:ENSMUSG00000036957
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A530045B06Rik, SA, SALM4
Expression	Ubiquitous expression in adrenal adult (RPKM 16.8), duodenum adult (RPKM 14.8) and 23 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

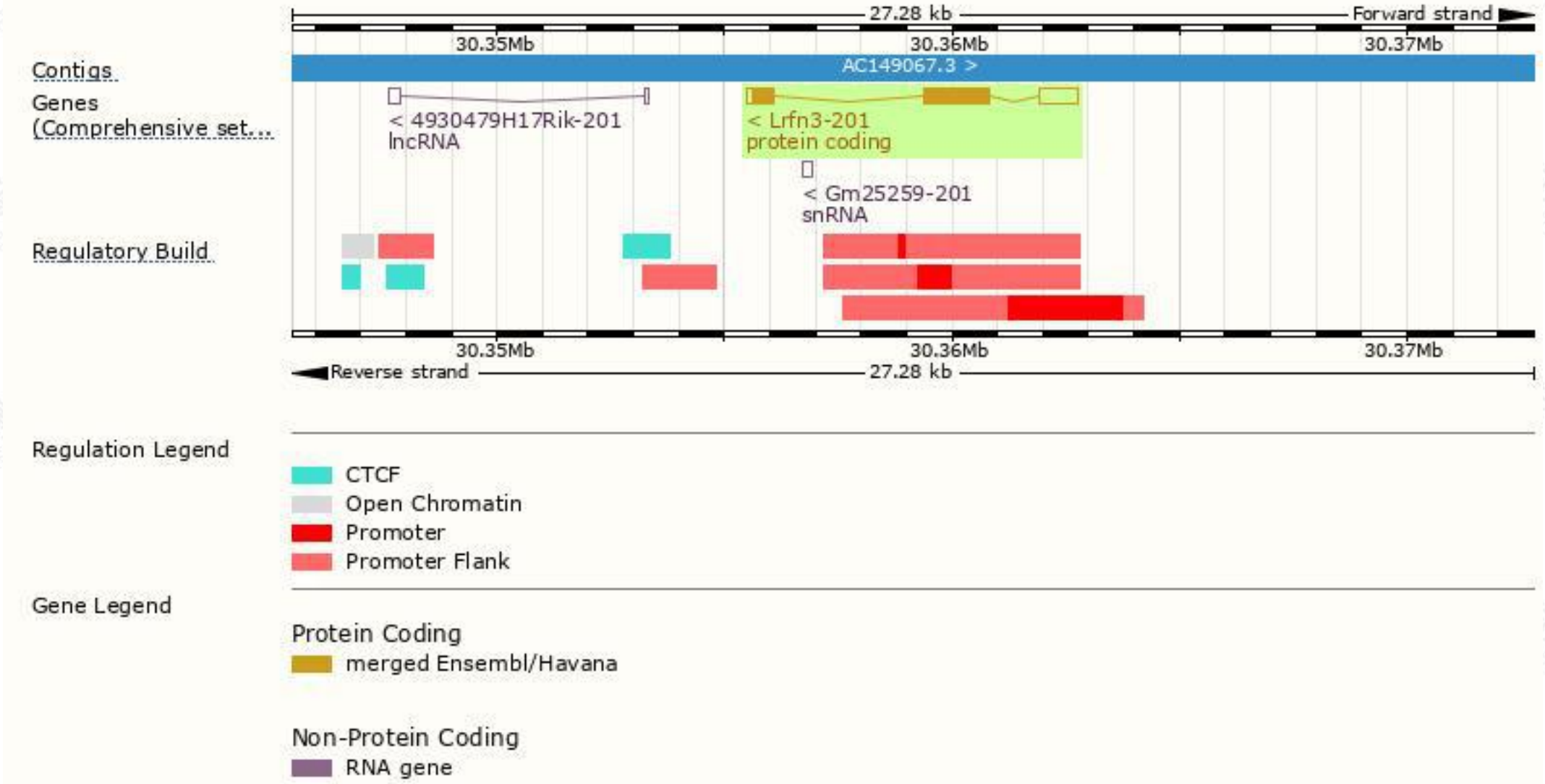
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lrfn3-201	ENSMUST00000046351.6	2886	626aa	Protein coding	CCDS21088	Q8BLY3	TSL:1 GENCODE basic APPRIS P1

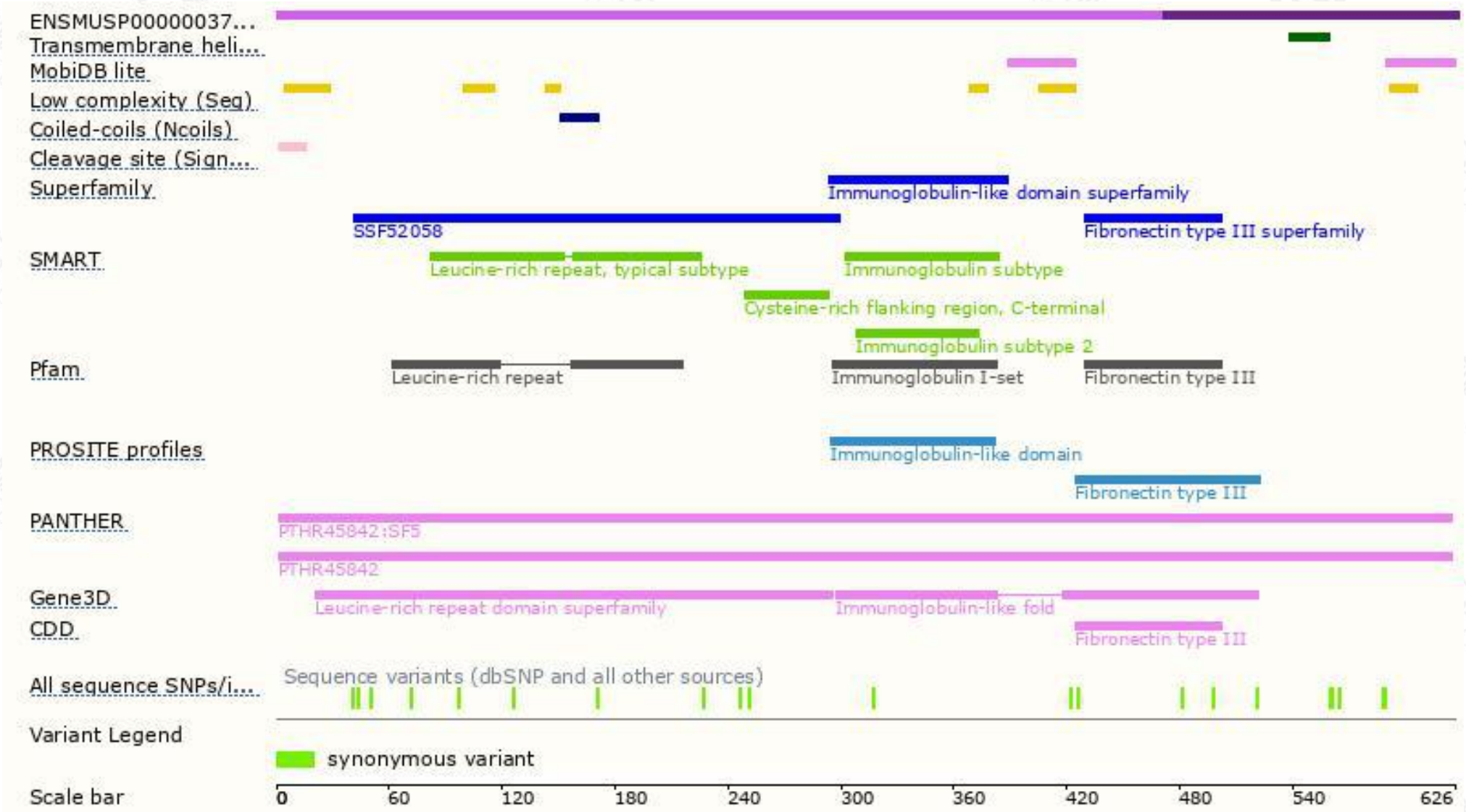
The strategy is based on the design of *Lrfn3-201* transcript,the transcription is shown below:



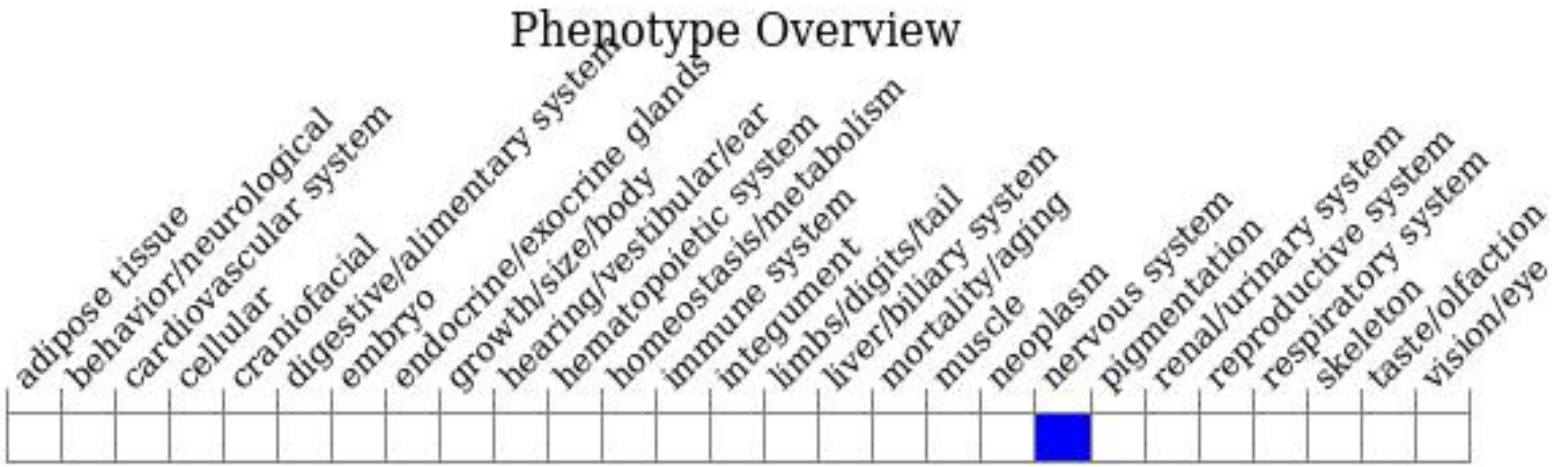
Genomic location distribution



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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