

***Kcns1* Cas9-KO Strategy**

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Project Overview

Project Name

Kcns1

Project type

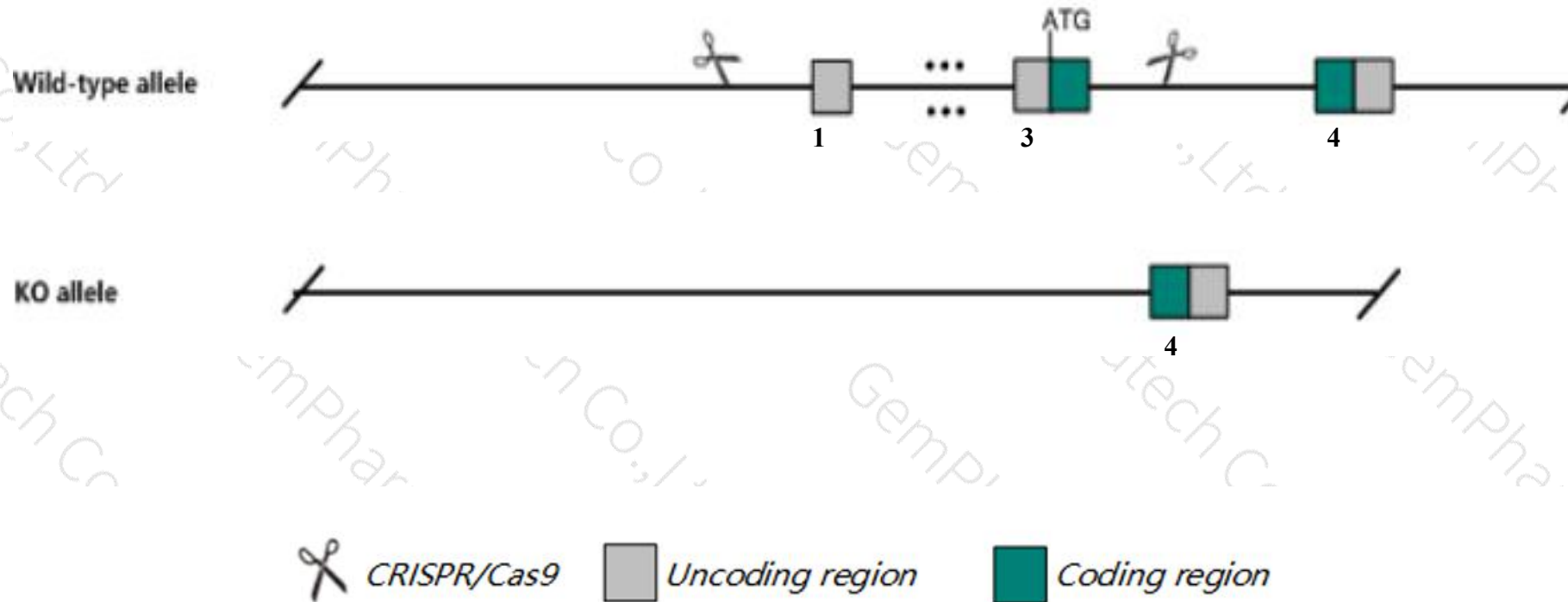
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcns1* gene. The schematic diagram is as follows:



- The *Kcns1* gene has 1 transcript. According to the structure of *Kcns1* gene, exon1-exon3 of *Kcns1*-201(ENSMUST00000045196.3) transcript is recommended as the knockout region. The region contains most of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kcns1* 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 conditional allele activated in DRG exhibit increased sensitivity to mechanical stimulation prior to and following neuropathic pain induction and cold nociception following neuropathic pain induction, and increased performance on a rotarod.
- The floxed region is near to the C-terminal of *Wfdc5* gene, this strategy may influence the regulatory function of the C-terminal of *Wfdc5* gene.
- The floxed region is near to the N-terminal of *A730032A03Rik* gene, this strategy may influence the regulatory function of the N-terminal of *A730032A03Rik* gene.
- The *Kcns1* gene is located on the Chr2. 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)

Kcns1 K+ voltage-gated channel, subfamily S, 1 [Mus musculus (house mouse)]

Gene ID: 16538, updated on 13-Mar-2020

Summary



Official Symbol Kcns1 provided by [MGI](#)

Official Full Name K+ voltage-gated channel, subfamily S, 1 provided by [MGI](#)

Primary source [MGI:MGI:1197019](#)

See related [Ensembl:ENSMUSG00000040164](#)

Gene type protein coding

RefSeq status VALIDATED

Organism [Mus musculus](#)

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

Also known as Kv9.1

Expression Biased expression in cortex adult (RPKM 4.4), limb E14.5 (RPKM 3.1) and 8 other tissues [See more](#)

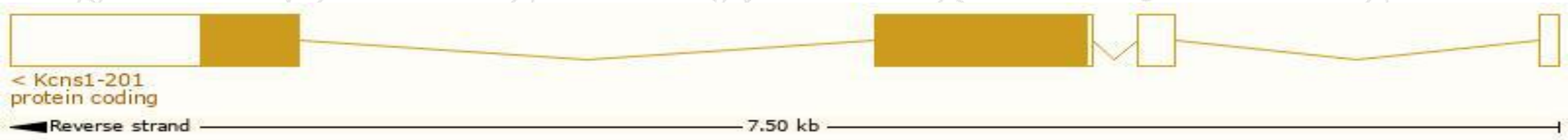
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

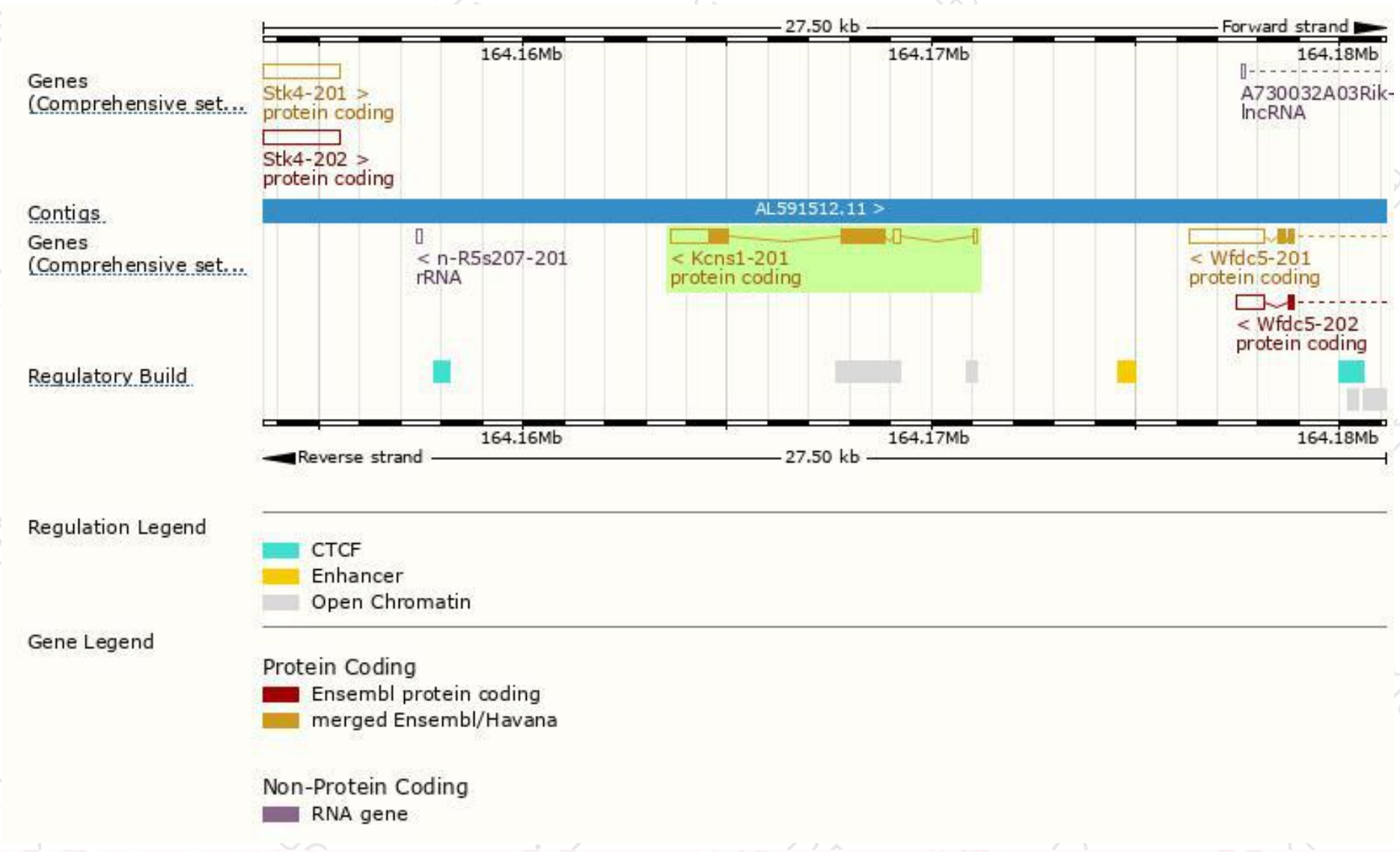
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcns1-201	ENSMUST00000045196.3	2712	497aa	Protein coding	CCDS17022	Q35173	TSL:1 GENCODE basic APPRIS P1

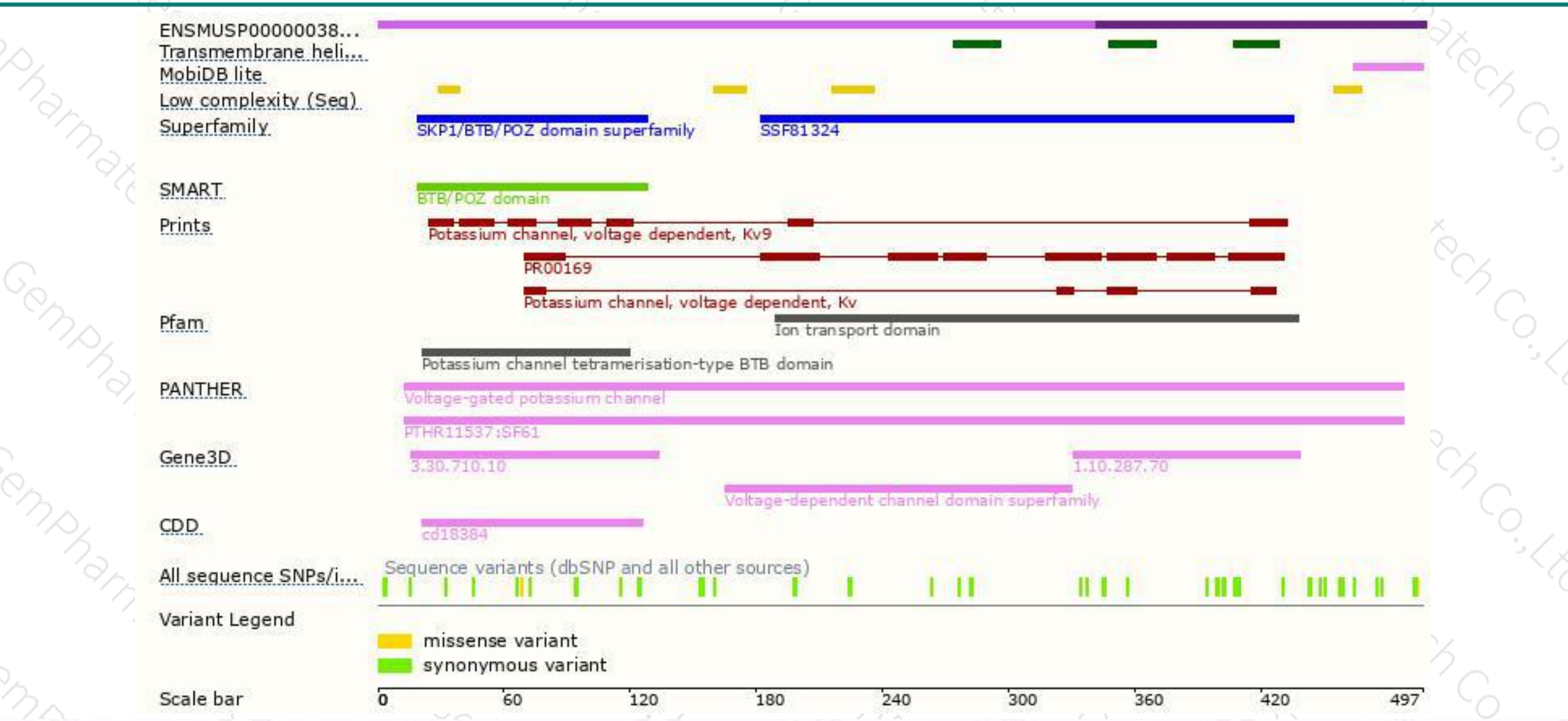
The strategy is based on the design of *Kcns1-201* transcript, the transcription is shown below:



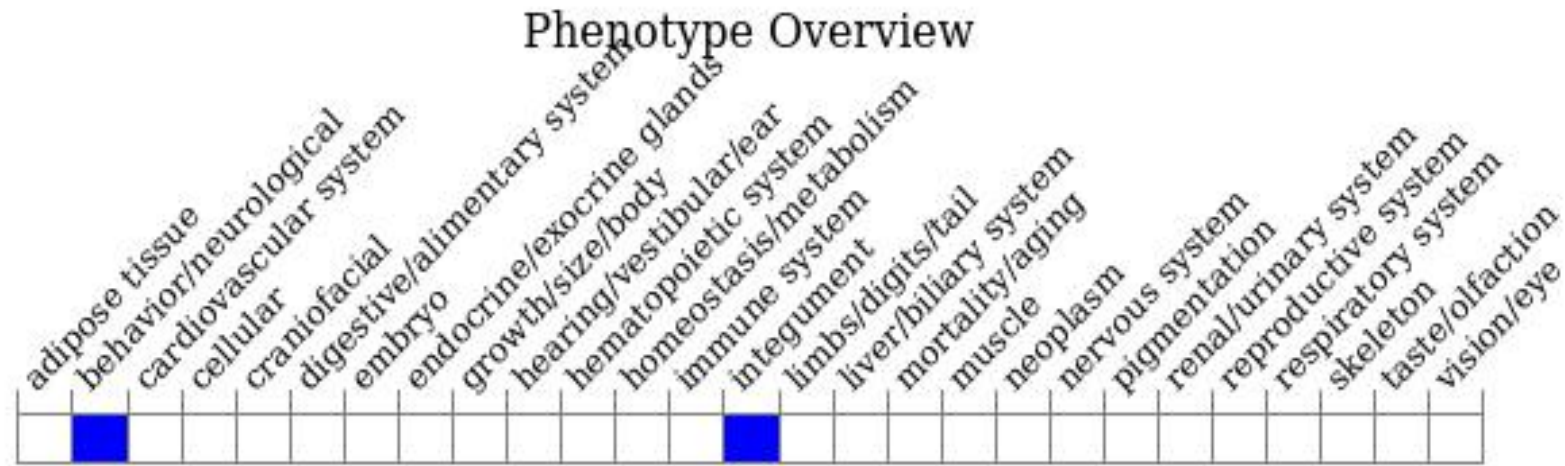
Genomic location distribution



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/>).

According to the existing MGI data, mice homozygous for a conditional allele activated in DRG exhibit increased sensitivity to mechanical stimulation prior to and following neuropathic pain induction and cold nociception following neuropathic pain induction, and increased performance on a rotarod.

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

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