Cacng2 Cas9-KO Strategy

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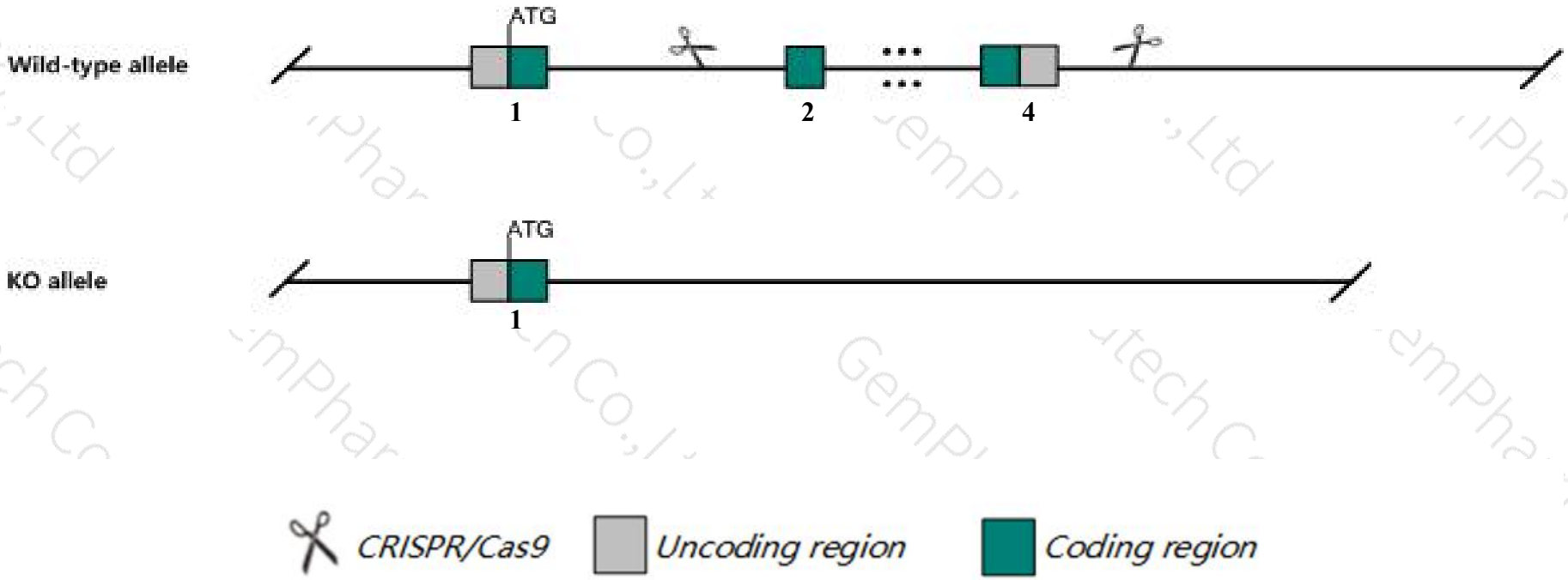
Project Overview

Project Name	***Cacng2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cacng2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Cacng2* gene has 1 transcript. According to the structure of *Cacng2* gene, exon2-exon4 of *Cacng2-201* (ENSMUST00000019290.2) 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 *Cacng2* gene. The brief process is as follows: CRISPR/Cas9 system v

Notice

- According to the existing MGI data,Homozygotes for mutant alleles show growth retardation, movement anomalies including ataxic gait, tremor and head tossing, and neocortical spike-wave seizures.

- The *Cacng2* 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）

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Cacng2 calcium channel, voltage-dependent, gamma subunit 2 [*Mus musculus* (house mouse)]

Gene ID: 12300, updated on 10-Oct-2019

Summary

Official Symbol	Cacng2 provided by MGI
Official Full Name	calcium channel, voltage-dependent, gamma subunit 2 provided by MGI
Primary source	MGI:MGI:1316660
See related	Ensembl:ENSMUSG00000019146
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	stg; wag; waggler; AW060990; stargazer; stargazin; B230105C07Rik; B930041E13Rik
Expression	Biased expression in cerebellum adult (RPKM 13.3), cortex adult (RPKM 7.7) and 4 other tissues See more
Orthologs	human all

Genomic context

Location: 15 E1; 15 36.92 cM

See Cacng2 in Genome Data Viewer

Exon count: 4

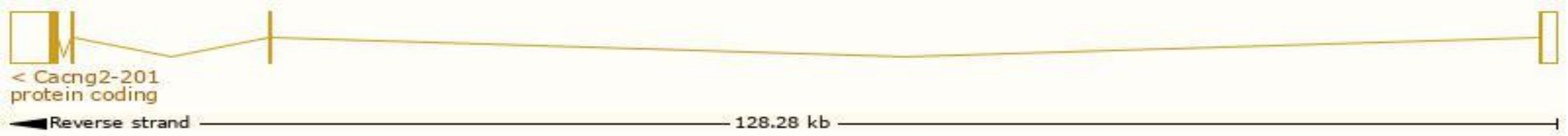
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	15	NC_000081.6 (77991919..78120220, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	15	NC_000081.5 (77824053..77949710, complement)

Transcript information（Ensembl）

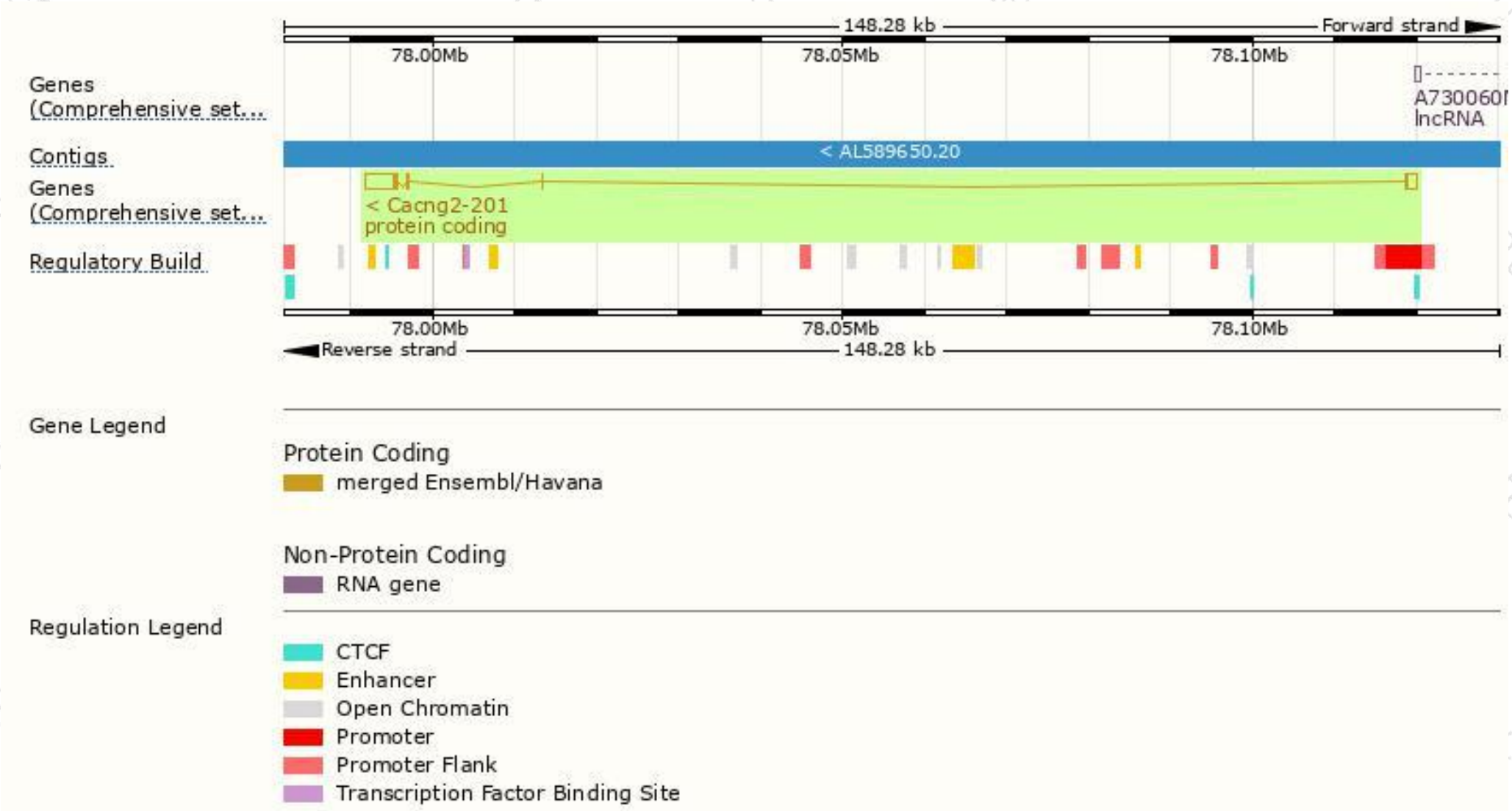
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cacng2-201	ENSMUST00000019290.2	5510	323aa	Protein coding	CCDS27608	O88602 Q3ZB20	TSL:1 GENCODE basic APPRIS P1

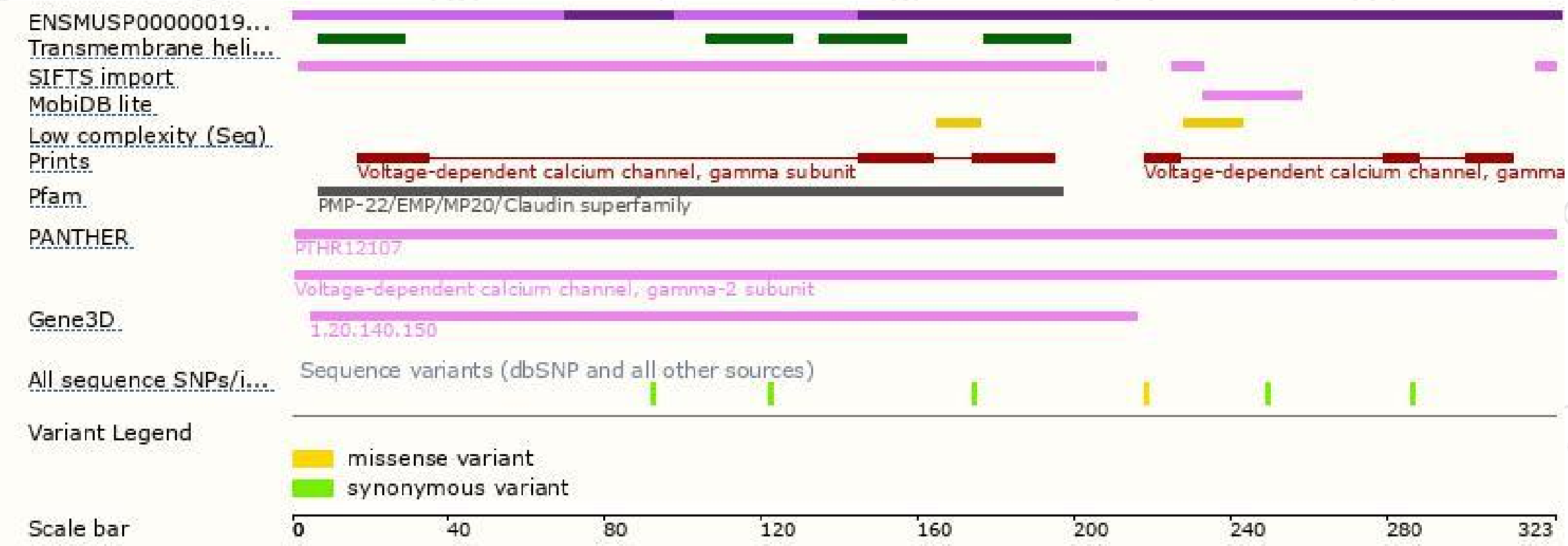
The strategy is based on the design of *Cacng2-201* transcript,The transcription is shown below



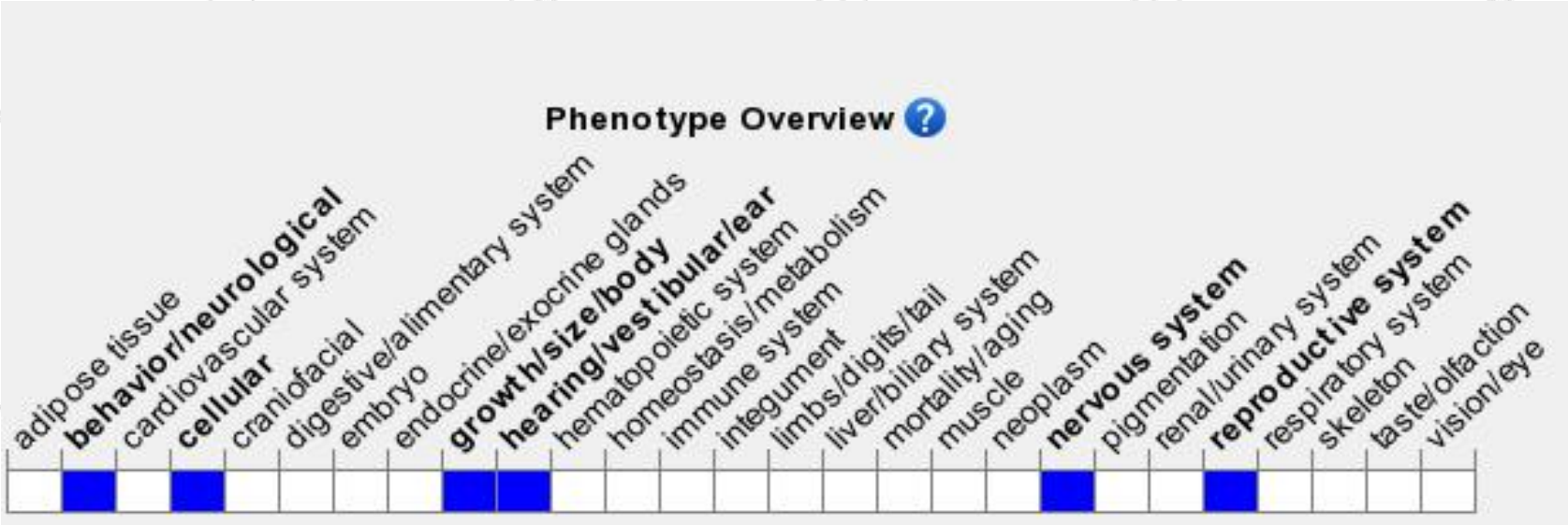
Genomic location distribution



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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