

Car8 Cas9-KO Strategy

Designer: Xueting Zhang

Reviewer: Yanhua Shen

Date: 2020-02-05

Project Overview

Project Name

Car8

Project type

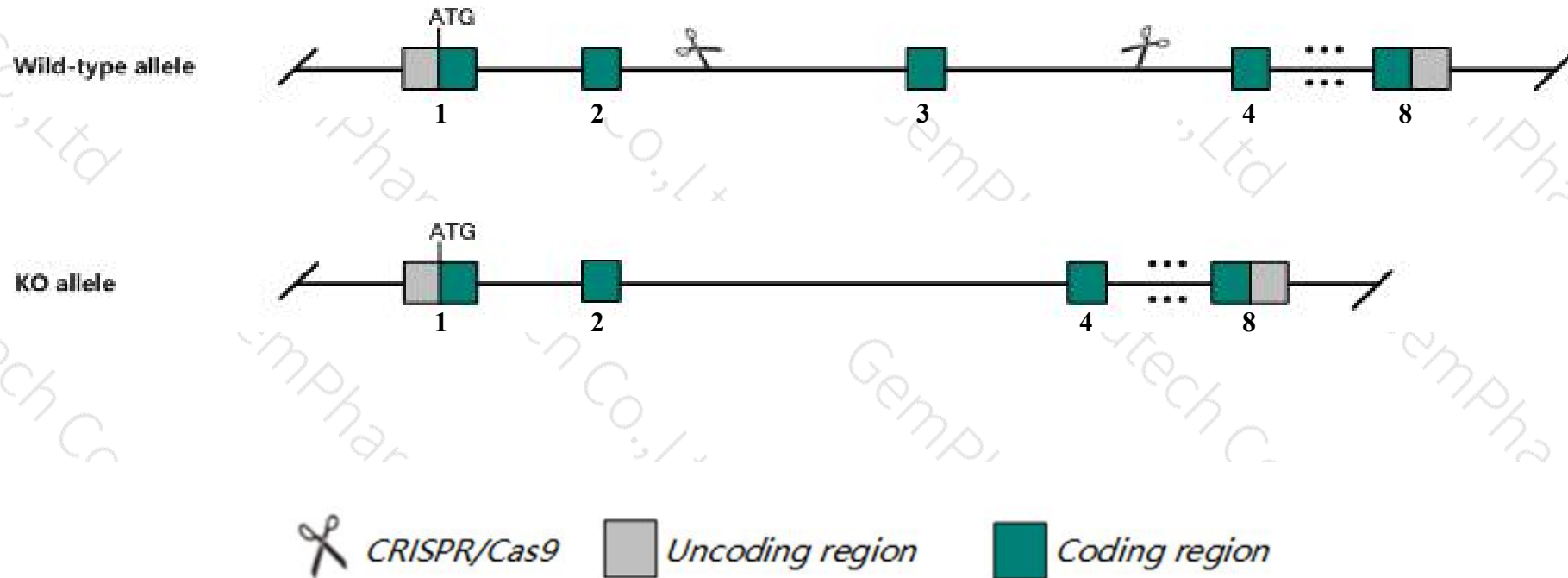
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Car8* gene. The schematic diagram is as follows:



- The *Car8* gene has 1 transcript. According to the structure of *Car8* gene, exon3 of *Car8-201* (ENSMUST00000066674.7) transcript is recommended as the knockout region. The region contains 125bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Car8* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Mice homozygous for a spontaneous deletion exhibit a wobbly side-to-side gait which is first noted at two weeks of age and persists throughout life.
- The N-terminal of *Car8* gene will remain several amino acids, it may remain the partial function of *Car8* gene.
- The *Car8* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Car8 carbonic anhydrase 8 [*Mus musculus* (house mouse)]

Gene ID: 12319, updated on 17-Dec-2019

Summary

- Official Symbol** Car8 provided by [MGI](#)
- Official Full Name** carbonic anhydrase 8 provided by [MGI](#)
- Primary source** [MGI:MGI:88253](#)
- See related** [Ensembl:ENSMUSG00000041261](#)
- 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** Ca8; wdl; Cals; Carp; Cals1; AW546993
- Expression** Biased expression in cerebellum adult (RPKM 76.1) and lung adult (RPKM 3.9) [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 4 A1; 4 3.53 cM

See Car8 in [Genome Data Viewer](#)

Exon count: 9

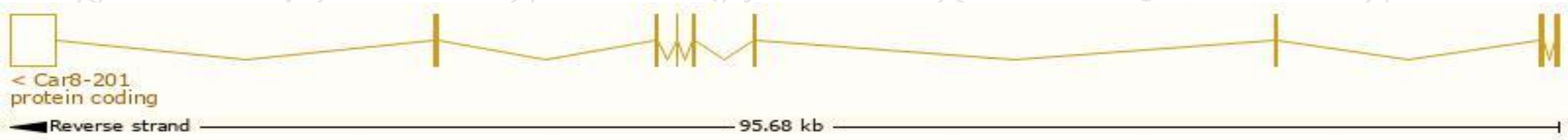
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	4	NC_000070.6 (8141493..8239041, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	4	NC_000070.5 (8068640..8166188, complement)

Transcript information (Ensembl)

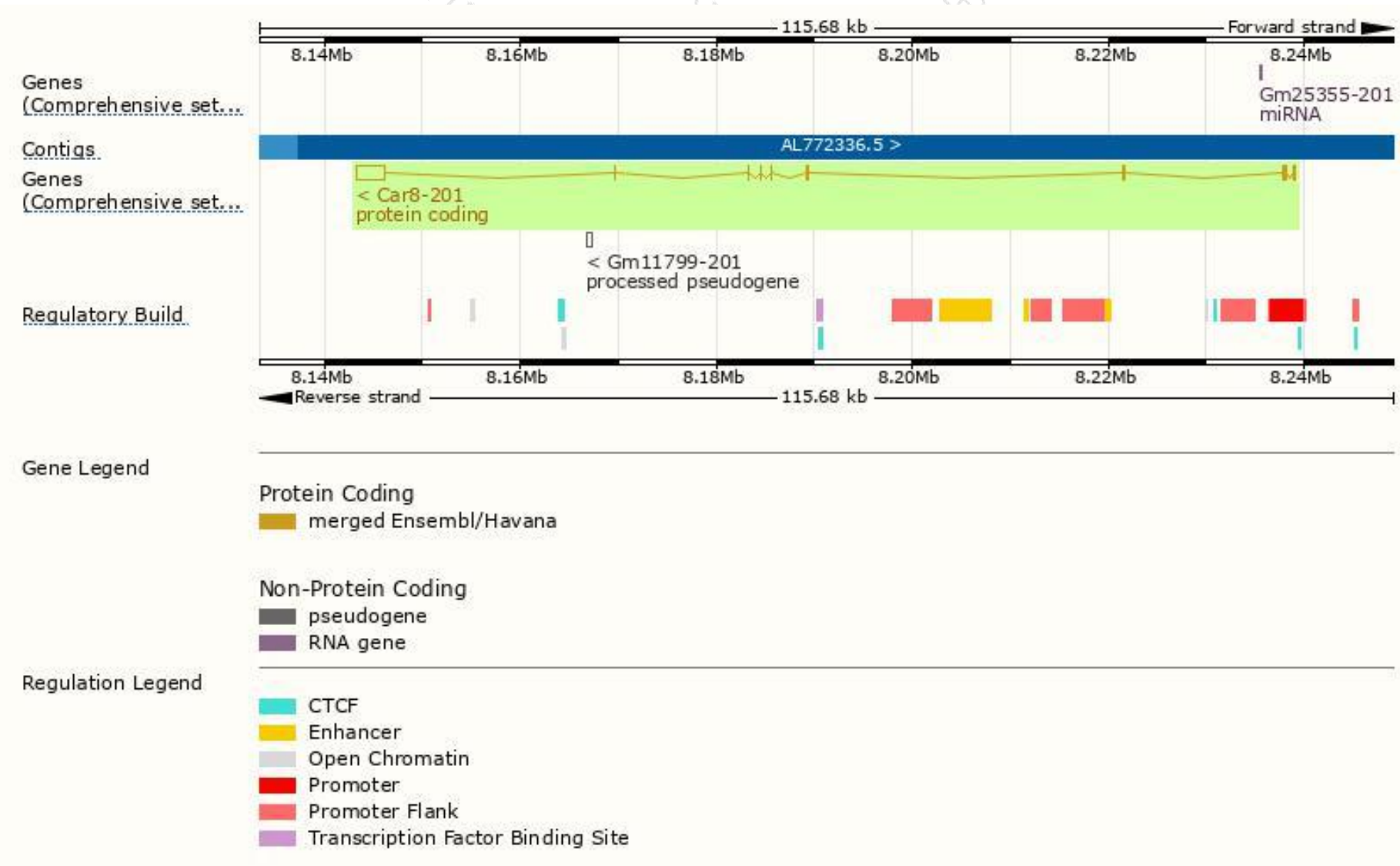
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Car8-201	ENSMUST00000066674.7	3853	291aa	Protein coding	CCDS17954	P28651	TSL:1 GENCODE basic APPRIS P1

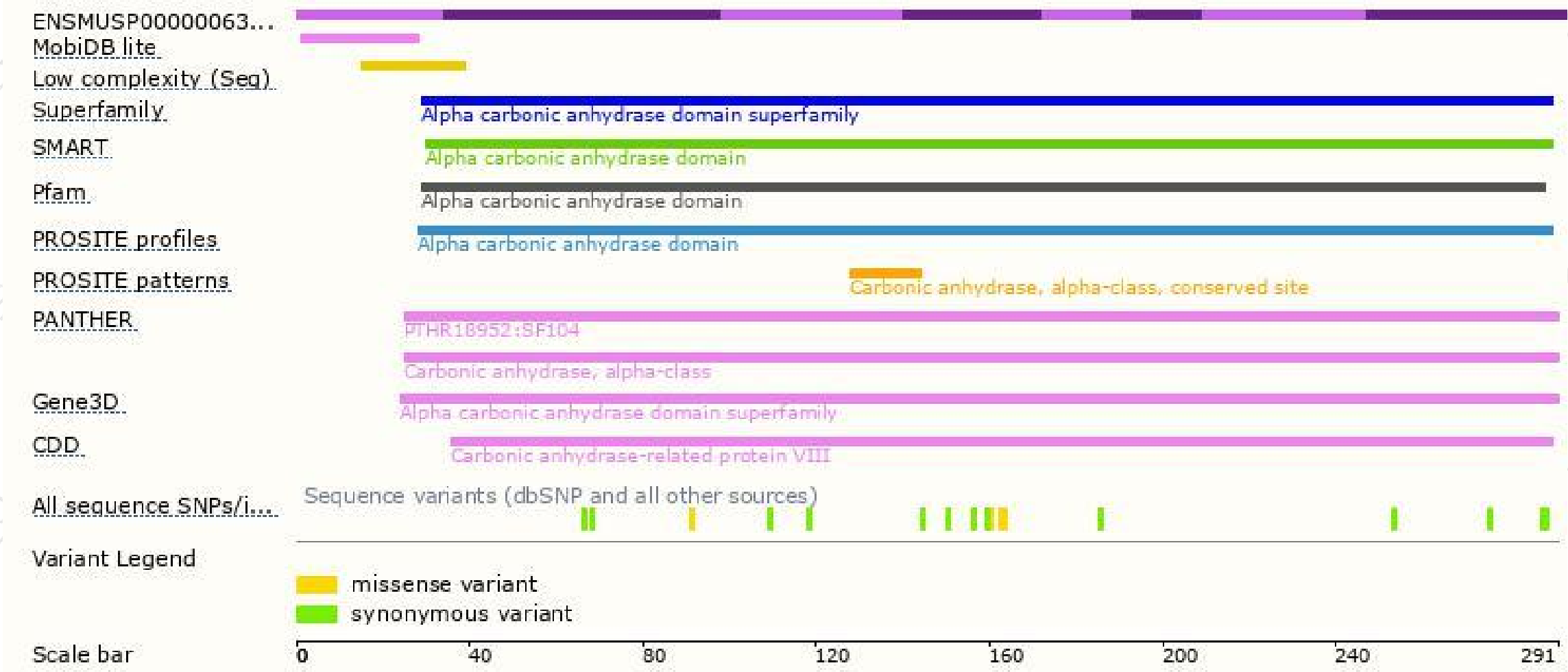
The strategy is based on the design of *Car8-201* transcript, The transcription is shown below



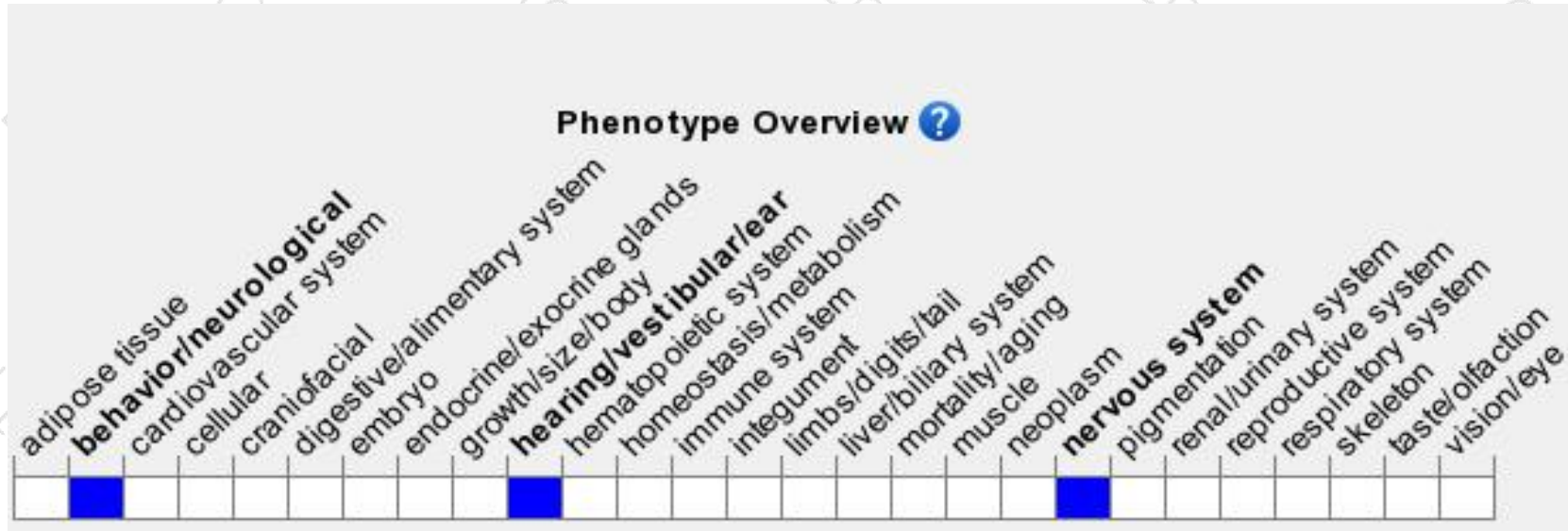
Genomic location distribution



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 spontaneous deletion exhibit a wobbly side-to-side gait which is first noted at two weeks of age and persists throughout life.

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

Tel: 400-9660890

