Als2 Cas9-KO Strategy

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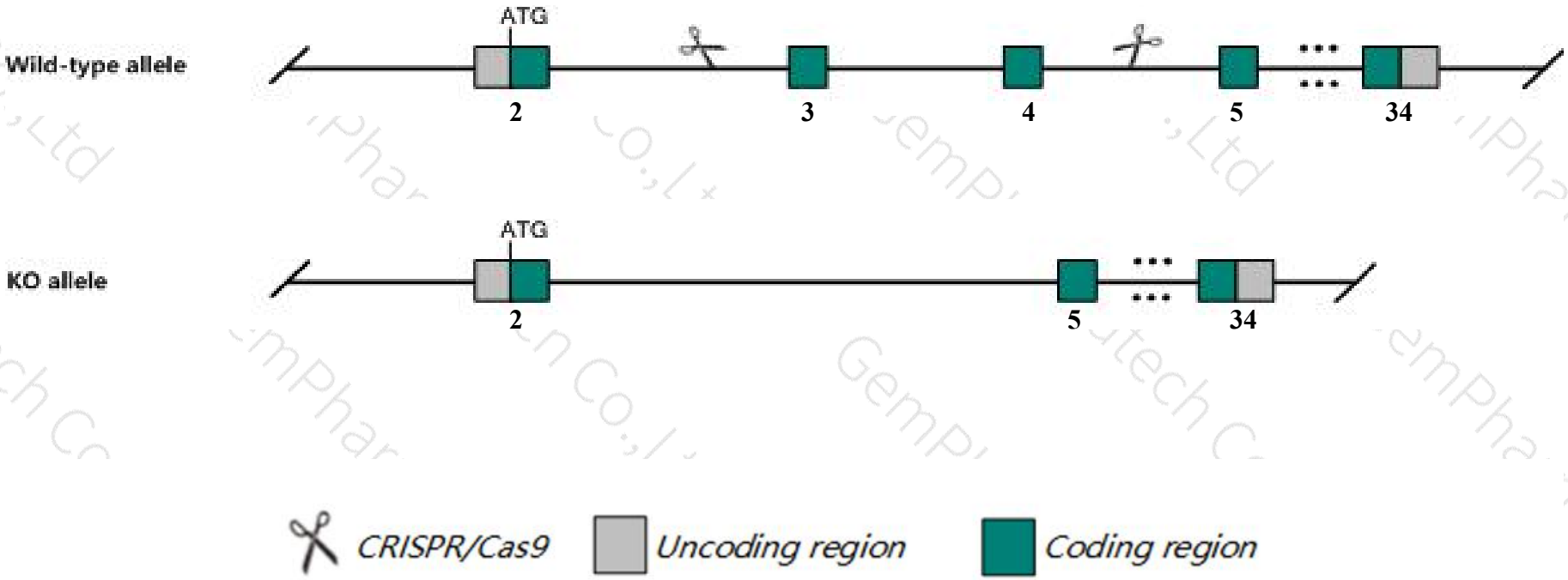
Project Overview

Project Name	***Als2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Als2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Als2* gene has 5 transcripts. According to the structure of *Als2* gene, exon3-exon4 of *Als2-201* (ENSMUST00000027178.12) transcript is recommended as the knockout region.The region contains 1075bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Als2* gene. The brief process is as follows: CRISPR/Cas9 system wer

Notice

- According to the existing MGI data,Homozygous null mutations in this gene may result in increased body weight, altered endosome trafficking, modest motor behavioral abnormalities, altered anxiety responses, impaired axonal transport, and mild neurolopathogical deficits including axonal degeneration in the corticospinal tract.

- The *Als2* gene is located on the Chr1. 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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Als2 alsin Rho guanine nucleotide exchange factor [*Mus musculus* (house mouse)]

Gene ID: 74018, updated on 8-Dec-2019

Summary

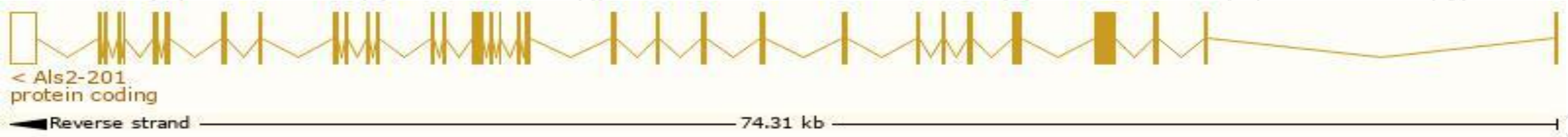
Official Symbol	Als2 provided by MGI
Official Full Name	alsin Rho guanine nucleotide exchange factor provided by MGI
Primary source	MGI:MGI:1921268
See related	Ensembl:ENSMUSG00000026024
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Alsin; Als2cr6; mKIAA1563; 3222402C23Rik; 9430073A21Rik
Expression	Ubiquitous expression in cerebellum adult (RPKM 19.3), liver adult (RPKM 7.8) and 25 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

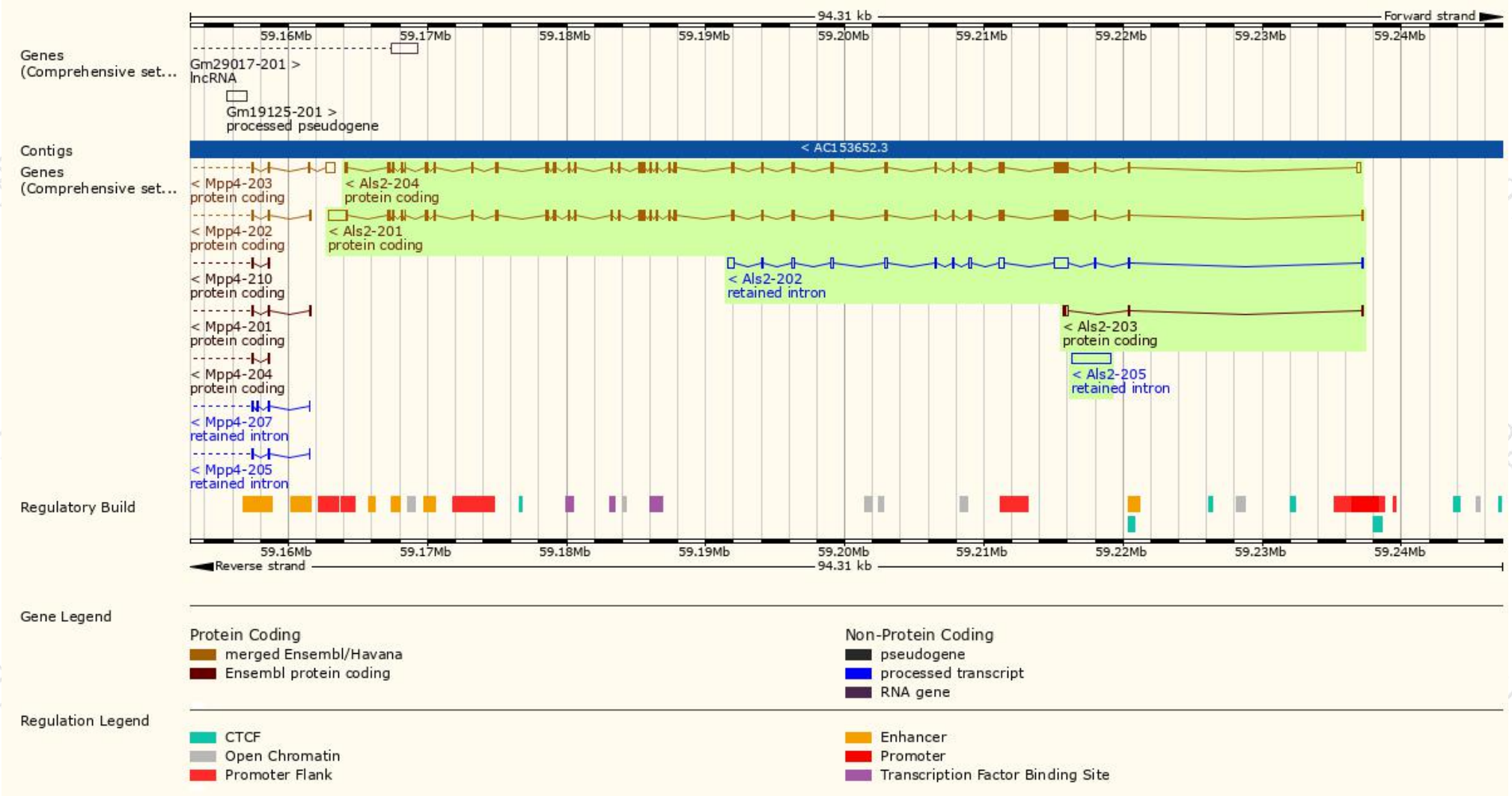
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Als2-201	ENSMUST00000027178.12	6342	1651aa	ENSMUSP00000027178.6	Protein coding	CCDS35583	Q920R0	TSL:1 GENCODE basic APPRIS P1
Als2-204	ENSMUST00000163058.1	5379	1651aa	ENSMUSP00000125753.1	Protein coding	CCDS35583	Q920R0	TSL:1 GENCODE basic APPRIS P1
Als2-203	ENSMUST00000160945.1	521	69aa	ENSMUSP00000140990.1	Protein coding	-	A0A087WSC7	CDS 3' incomplete TSL:2
Als2-202	ENSMUST00000159166.7	2977	No protein	-	Retained intron	-	-	TSL:1
Als2-205	ENSMUST00000188469.1	2783	No protein	-	Retained intron	-	-	TSL:NA

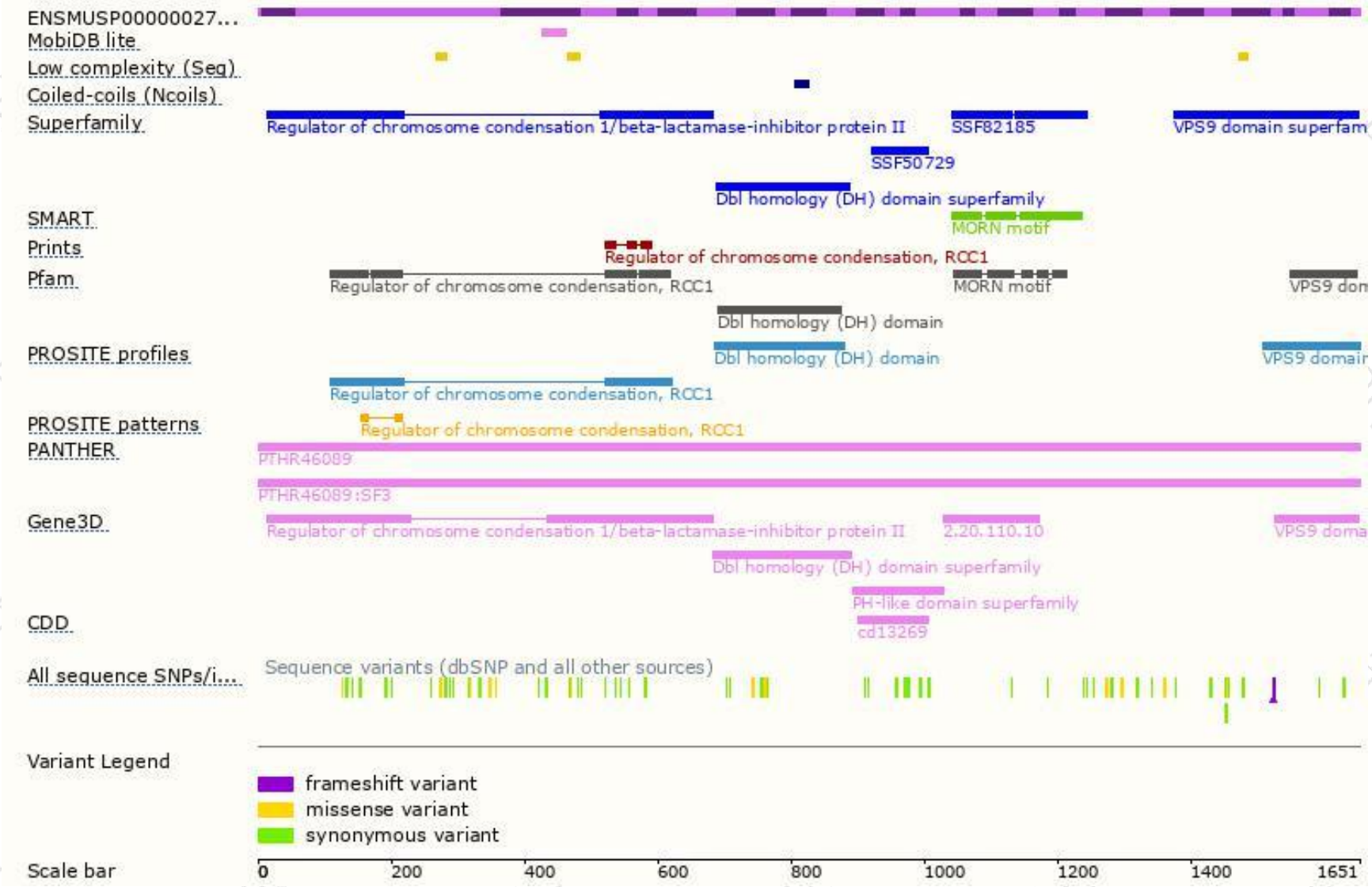
The strategy is based on the design of *Als2-201* transcript,The transcription is shown below



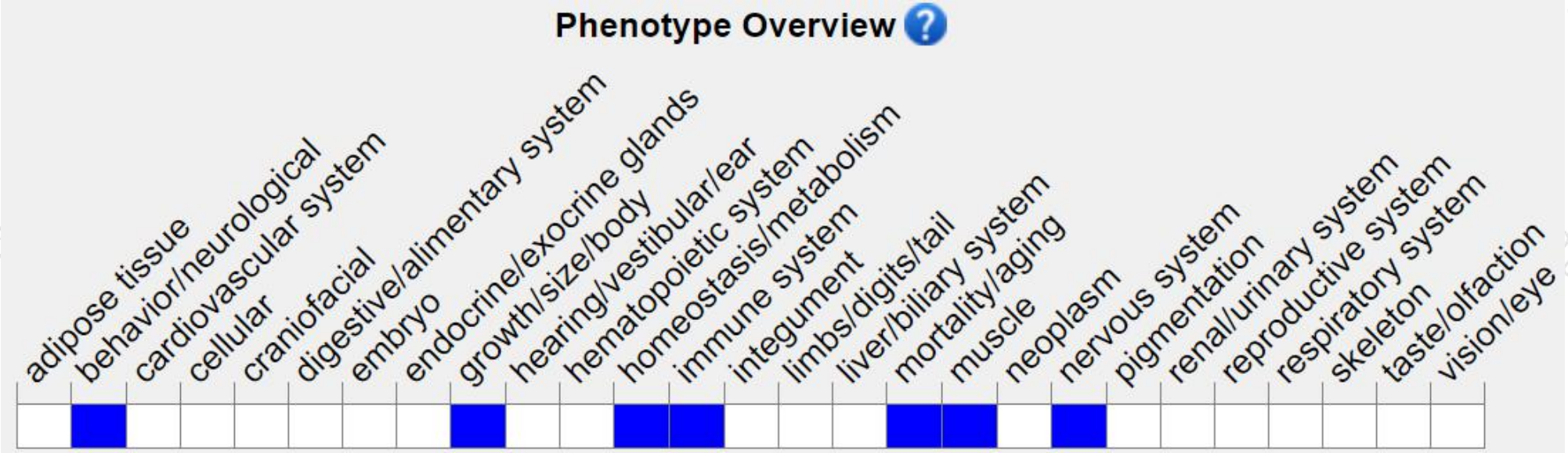
Genomic location distribution



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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