Sec22b Cas9-KO Strategy

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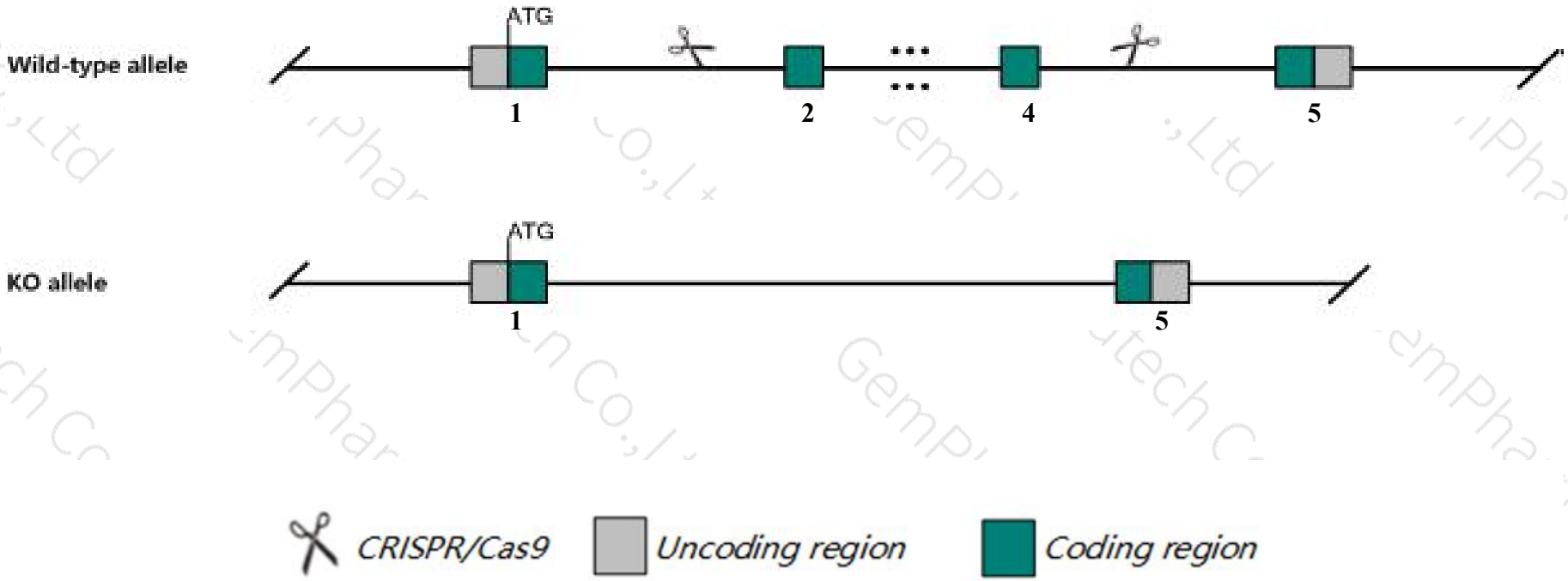
Project Overview

Project Name	***Sec22b***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sec22b* gene. The schematic diagram is as follows:



Technical routes

➢ The *Sec22b* gene has 5 transcripts. According to the structure of *Sec22b* gene, exon2-exon4 of *Sec22b-201* (ENSMUST00000029476.8) transcript is recommended as the knockout region.The region contains 418bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Sec22b* gene. The brief process is as follows: CRISPR/Cas9 systen

Notice

- According to the existing MGI data,Homozygous knockout has no effect on the development or function of lymphoid cells, nor on the process of antigen cross-presentation.
- The knockout region is near to the N-terminal of *Gm15999* gene,this strategy may influence the regulatory function of the N-terminal of *Gm15999* gene.
- The *Sec22b* gene is located on the Chr3. 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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Sec22b SEC22 homolog B, vesicle trafficking protein [*Mus musculus* (house mouse)]

Gene ID: 20333, updated on 5-Nov-2019

Summary

Official Symbol	Sec22b provided by MGI
Official Full Name	SEC22 homolog B, vesicle trafficking protein provided by MGI
Primary source	MGI:MGI:1338759
See related	Ensembl:ENSMUSG00000027879
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	C81333; ERS-24; Sec22l1; AA517334; AI480645; 4930564D15Rik
Expression	Ubiquitous expression in placenta adult (RPKM 47.1), limb E14.5 (RPKM 29.5) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 3; 3 F2.2

See Sec22b in Genome Data Viewer

Exon count: 5

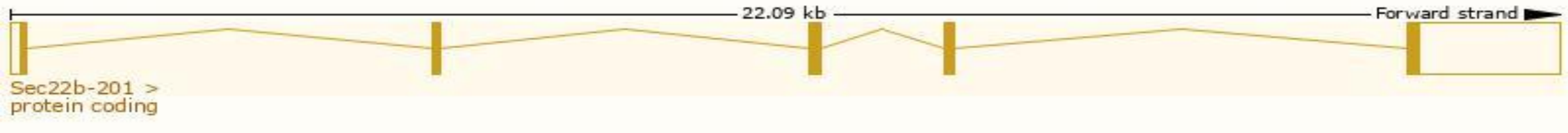
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	3	NC_000069.6 (97901227..97922318)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	3	NC_000069.5 (97705150..97726241)

Transcript information（Ensembl）

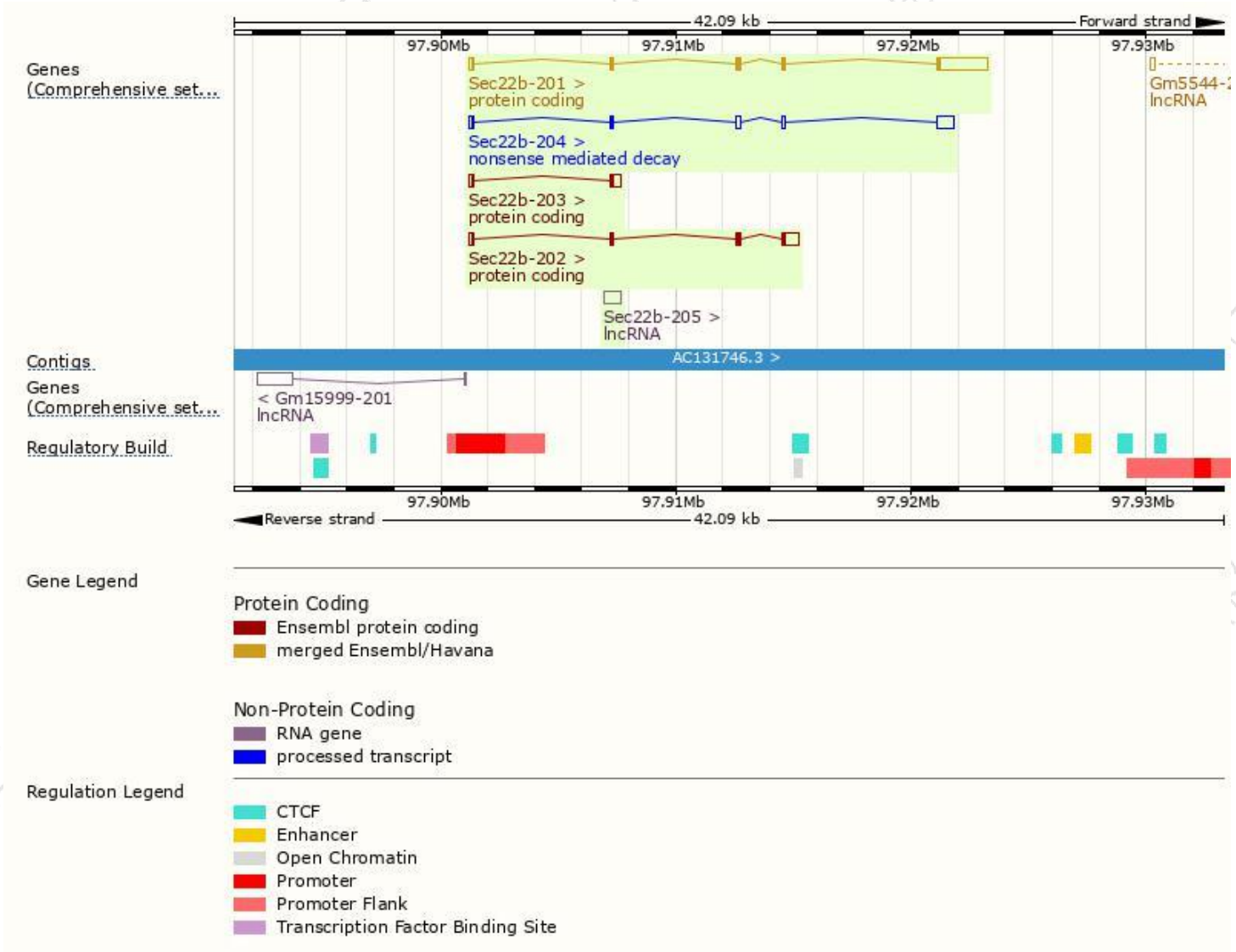
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sec22b-201	ENSMUST00000029476.8	2810	215aa	Protein coding	CCDS17658	O08547	TSL:1 GENCODE basic APPRIS P1
Sec22b-202	ENSMUST00000122288.1	1177	166aa	Protein coding	-	E9Q6R3	TSL:1 GENCODE basic
Sec22b-203	ENSMUST00000130620.1	640	62aa	Protein coding	-	A0A0G2JF08	TSL:2 GENCODE basic
Sec22b-204	ENSMUST00000130778.1	1355	42aa	Nonsense mediated decay	-	D6RES2	TSL:1
Sec22b-205	ENSMUST00000199738.1	711	No protein	lncRNA	-	-	TSL:NA

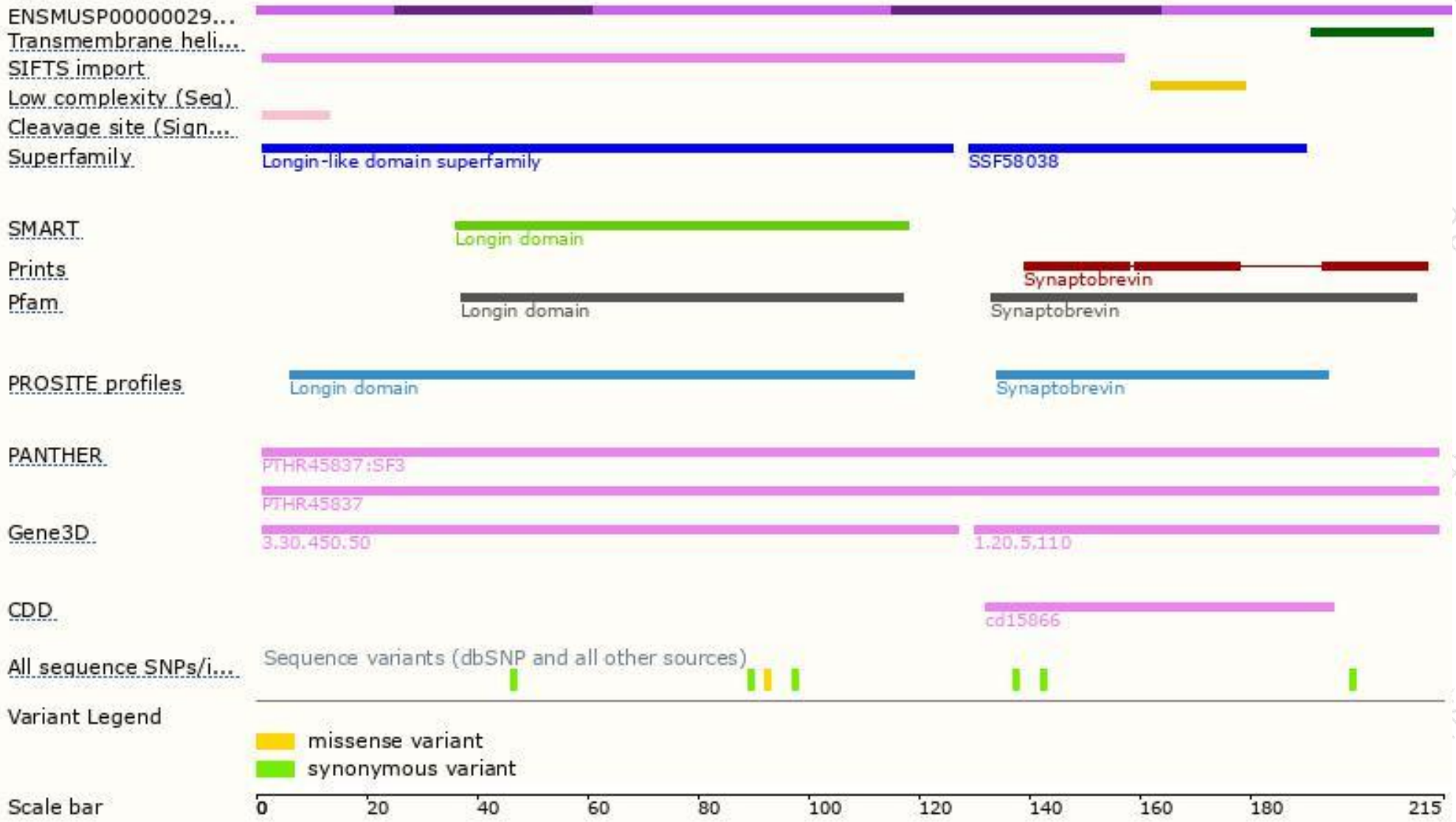
The strategy is based on the design of *Sec22b-201* transcript,The transcription is shown below



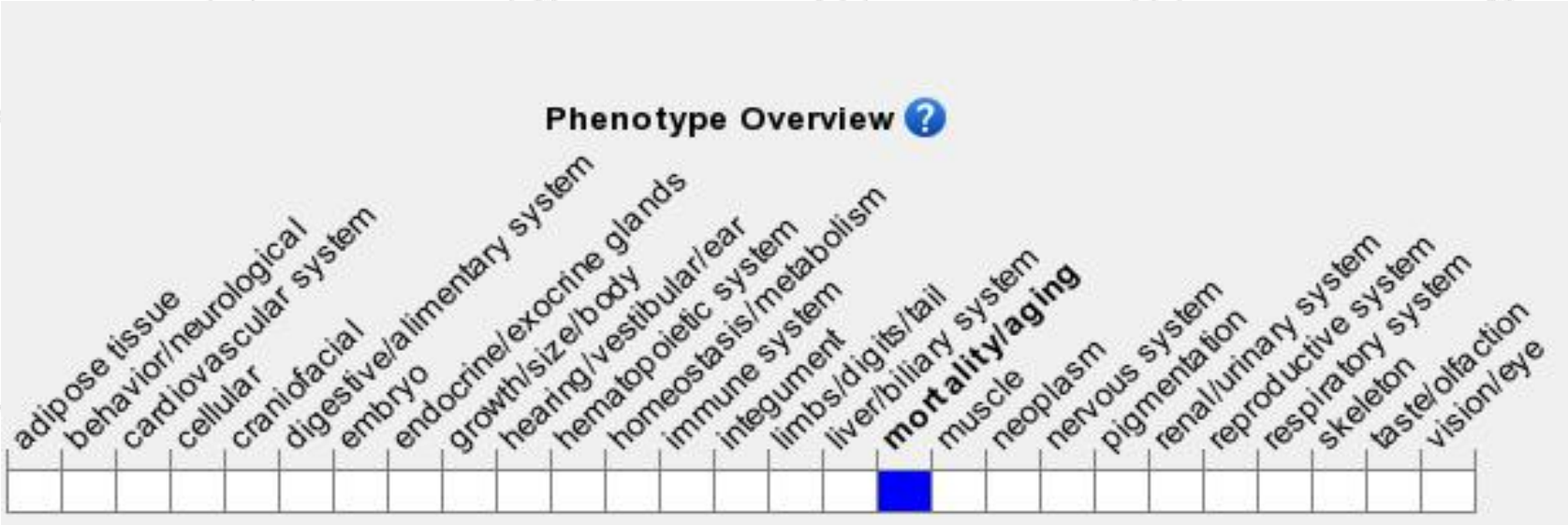
Genomic location distribution



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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