Cdc42 Cas9-KO Strategy

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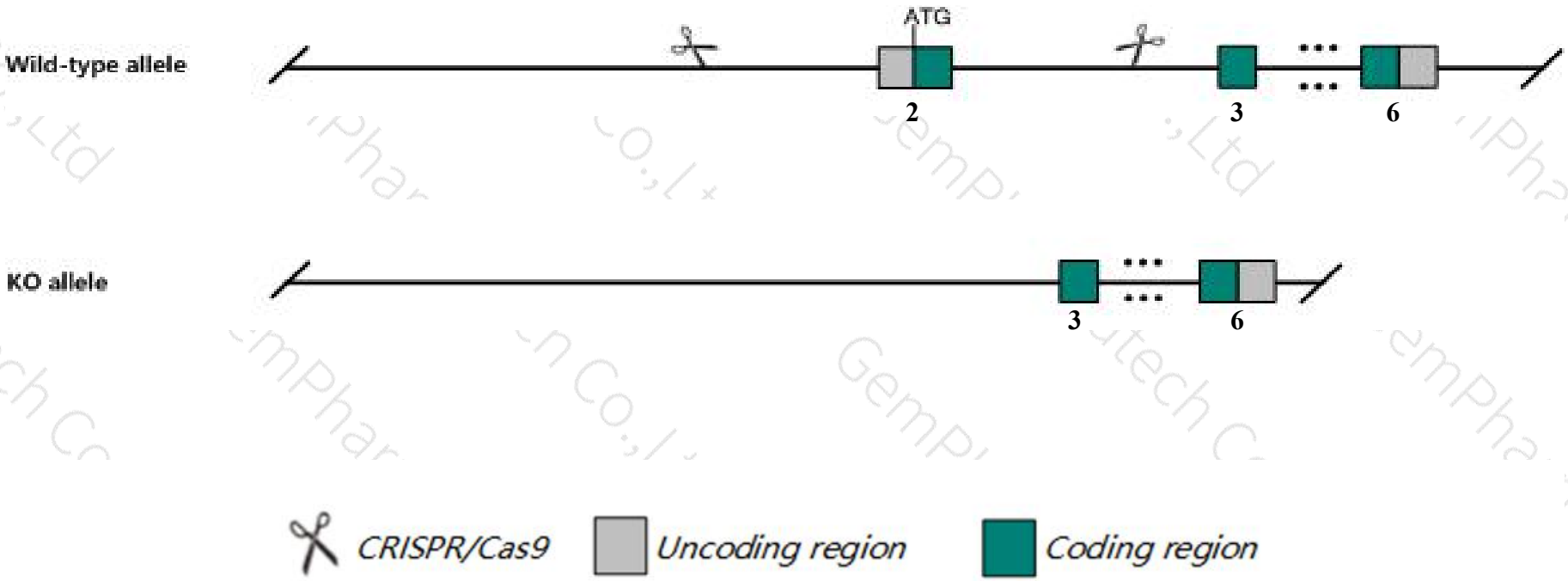
Project Overview

Project Name	***Cdc42***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdc42* gene. The schematic diagram is as follows:



Technical routes

➢ The *Cdc42* gene has 2 transcripts. According to the structure of *Cdc42* gene, exon2 of *Cdc42-202* (ENSMUST00000051477.12) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cdc42* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Embryos homozygous for a knock-out allele are small, lack primary ectoderm, exhibit disorganized embryonic tissue and die before somite formation. Mice homozygous for a gene trapped allele die at E3.5-E7.5. Mice heterozygous for a targeted allele show reduced ventricle muscle contractility.

- The *Cdc42* 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）

集萃药康 GemPharmatech

Cdc42 cell division cycle 42 [Mus musculus (house mouse)]

Gene ID: 12540, updated on 7-Apr-2019

Summary

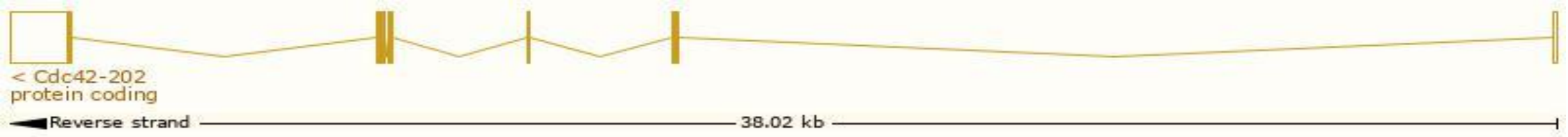
Official Symbol	Cdc42 provided by MGI
Official Full Name	cell division cycle 42 provided by MGI
Primary source	MGI:MGI:106211
See related	Ensembl:ENSMUSG00000006699
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI747189, AU018915
Expression	Ubiquitous expression in CNS E18 (RPKM 107.5), placenta adult (RPKM 89.1) and 26 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

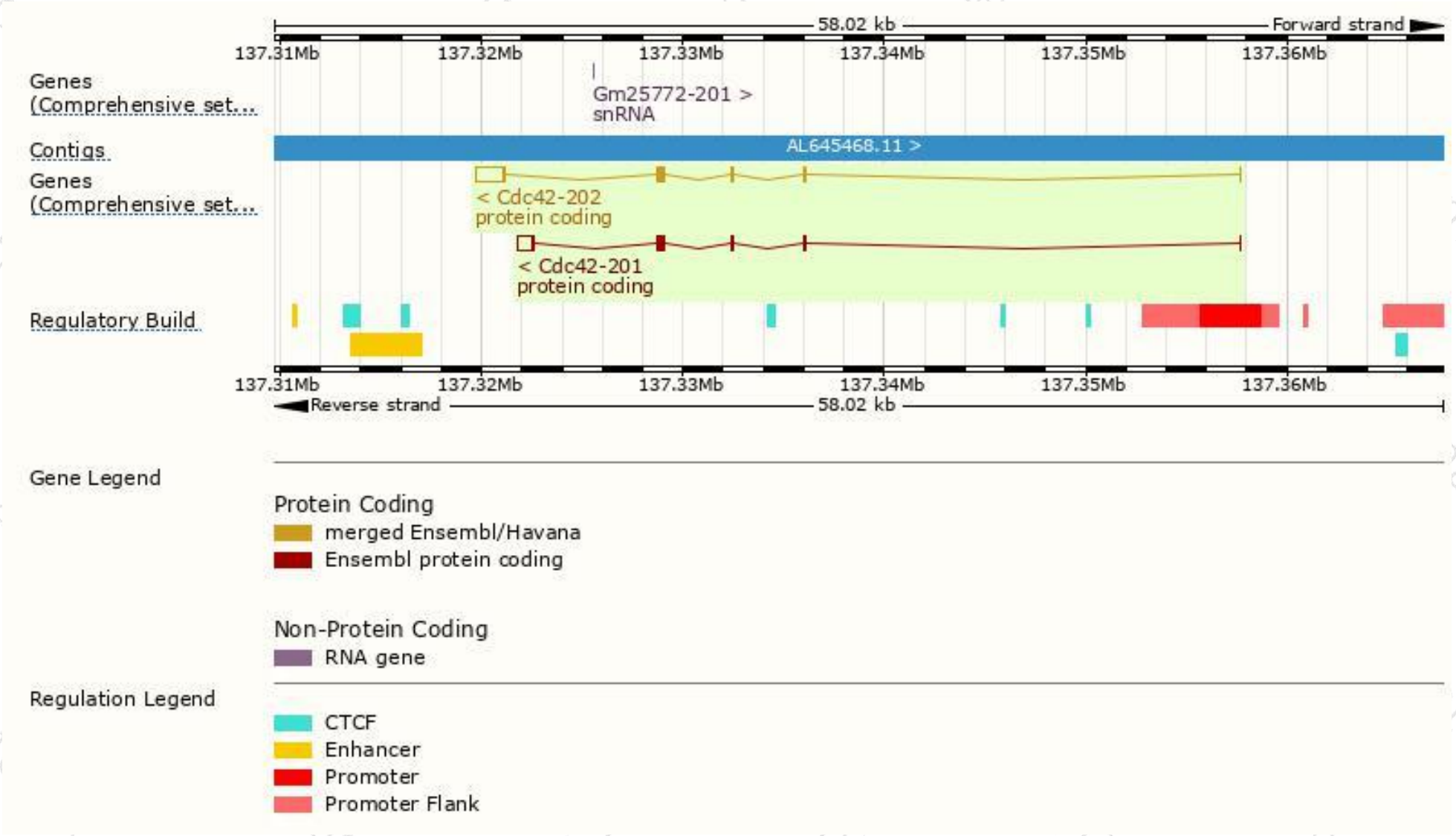
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdc42-202	ENSMUST00000051477.12	2108	191aa	Protein coding	CCDS18816	P60766	TSL:1 GENCODE basic APPRIS P3
Cdc42-201	ENSMUST00000030417.9	1448	191aa	Protein coding	CCDS57305	P60766	TSL:2 GENCODE basic APPRIS ALT1

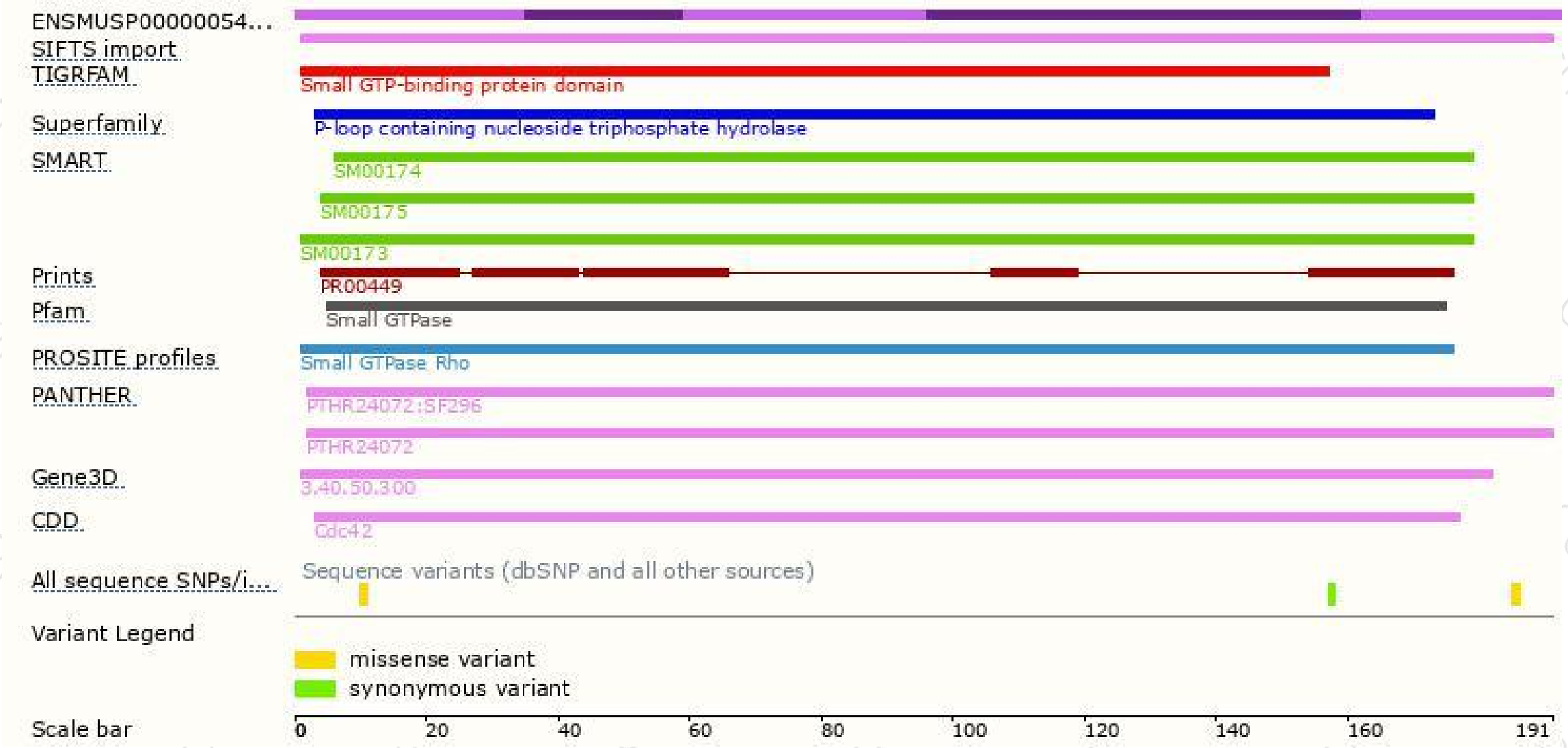
The strategy is based on the design of *Cdc42-202* transcript,The transcription is shown below



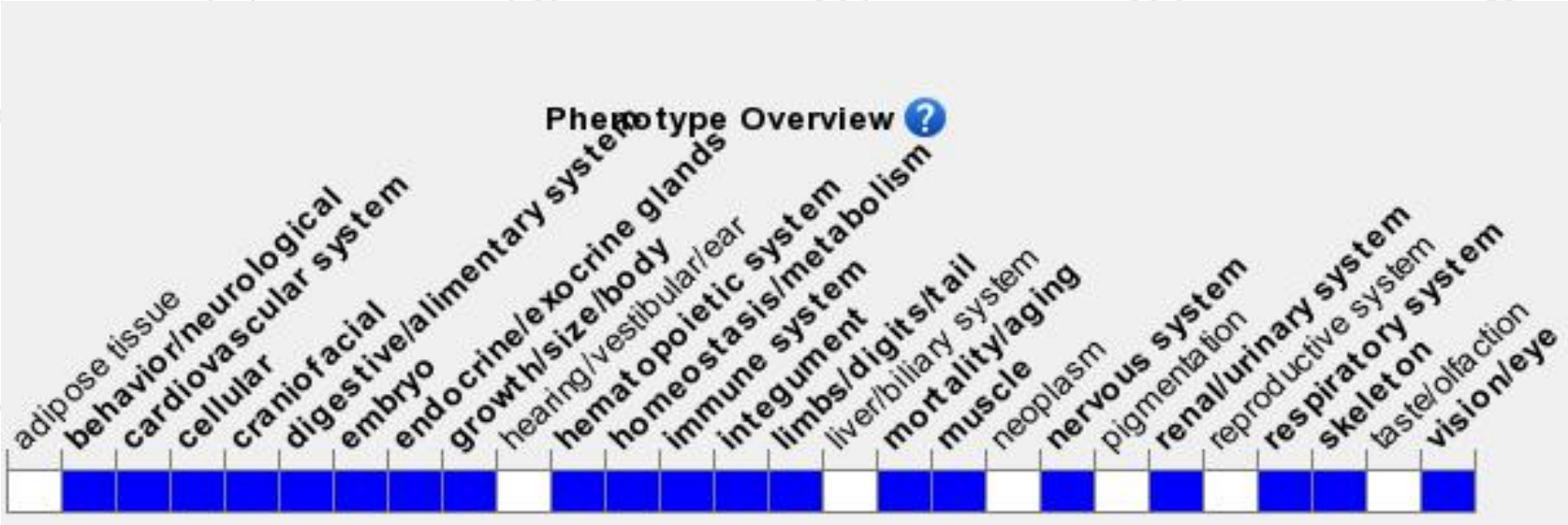
Genomic location distribution



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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