Kcnj5 Cas9-CKO Strategy

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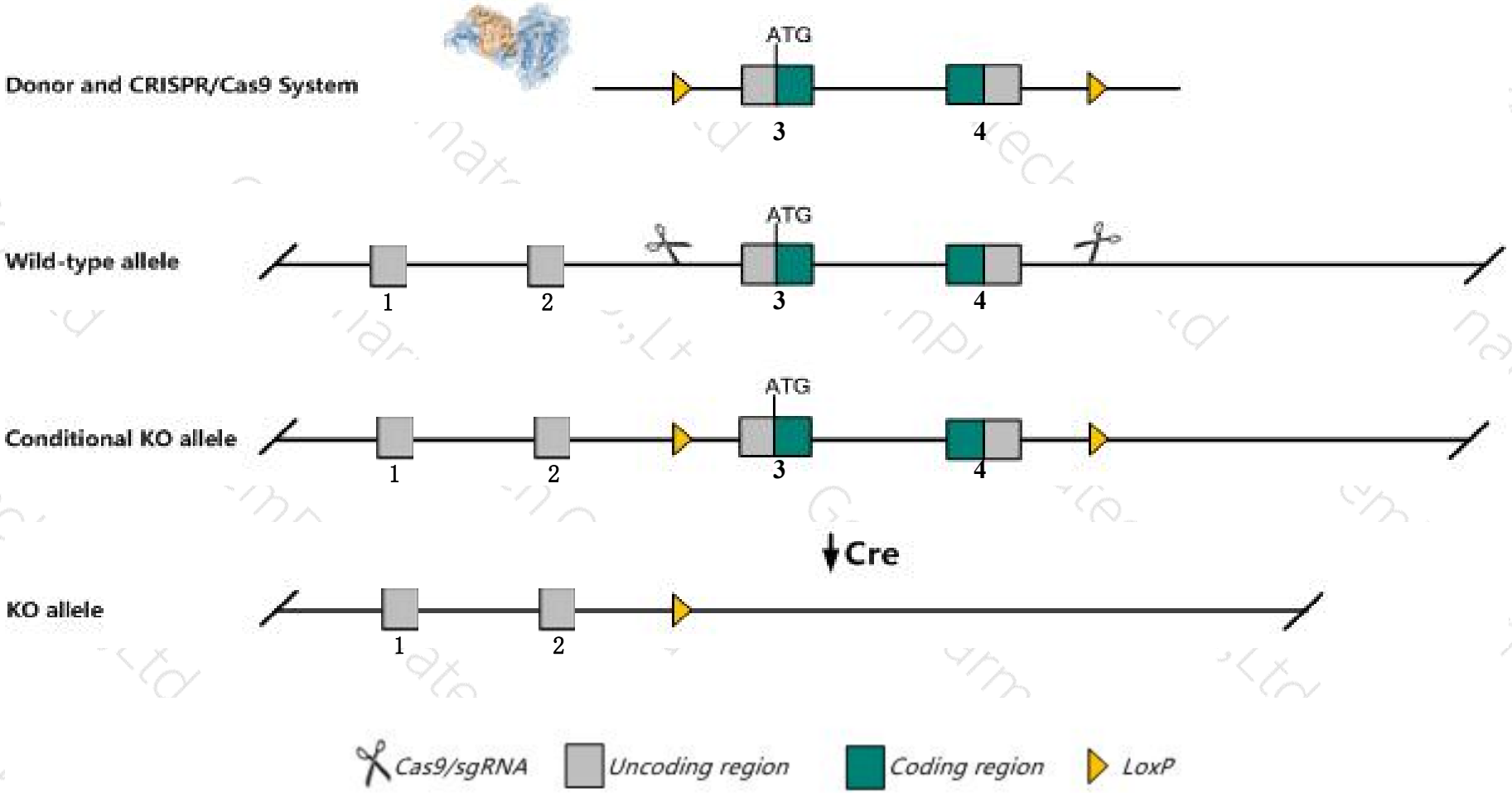
Project Overview

Project Name	***Kcnj5***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcnj5* gene. The schematic diagram is as follows:



Technical routes

- The *Kcnj5* gene has 3 transcripts. According to the structure of *Kcnj5* gene, exon3-exon4 of *Kcnj5-201* (ENSMUST00000034533.6) transcript is recommended as the knockout region.The region contains all 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 *Kcnj5* gene. The brief process is as follows:CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice.Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.

- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

- According to the existing MGI data,Homozygotes for a targeted null mutation exhibit mild resting tachycardias and reduced muscarinic-gated atrial potassium channel responses to pharmacological stimulation.

- The *Kcnj5* gene is located on the Chr9. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Kcnj5 potassium inwardly-rectifying channel, subfamily J, member 5 [*Mus musculus* (house mouse)]

Gene ID: 16521, updated on 12-Aug-2019

Summary

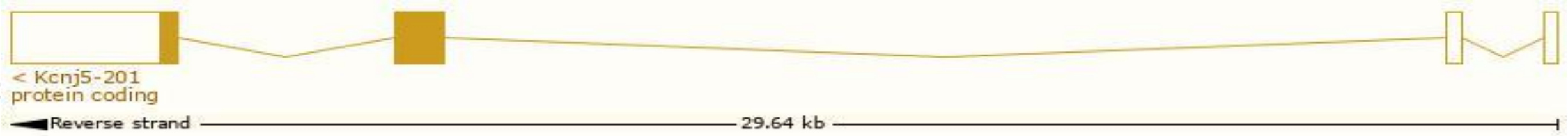
Official Symbol	Kcnj5 provided by MGI
Official Full Name	potassium inwardly-rectifying channel, subfamily J, member 5 provided by MGI
Primary source	MGI:MGI:104755
See related	Ensembl:ENSMUSG00000032034
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CIR; GIRK4; KATP-1; Kir3.4
Expression	Biased expression in heart adult (RPKM 14.0), liver E14 (RPKM 0.9) and 1 other tissue See more
Orthologs	human all

Transcript information（Ensembl）

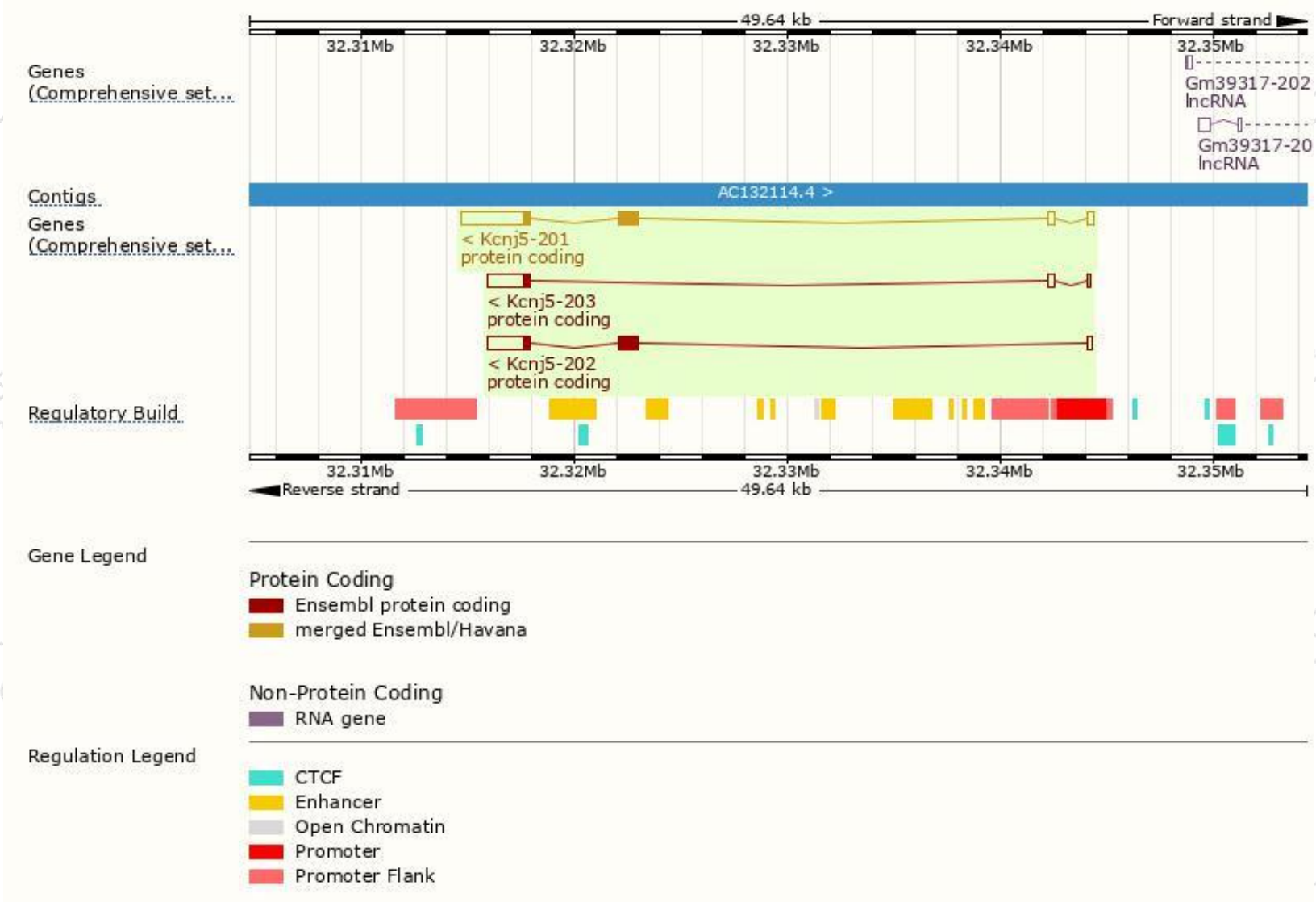
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Kcnj5-201	ENSMUST00000034533.6	4685	419aa	ENSMUSP00000034533.5	Protein coding	CCDS22952	P48545	TSL:1 GENCODE basic APPRIS P1
Kcnj5-202	ENSMUST00000214223.1	3101	419aa	ENSMUSP00000149000.1	Protein coding	CCDS22952	P48545	TSL:5 GENCODE basic APPRIS P1
Kcnj5-203	ENSMUST00000216033.1	2440	106aa	ENSMUSP00000149461.1	Protein coding	-	A0A1L1SRH1	TSL:1 GENCODE basic

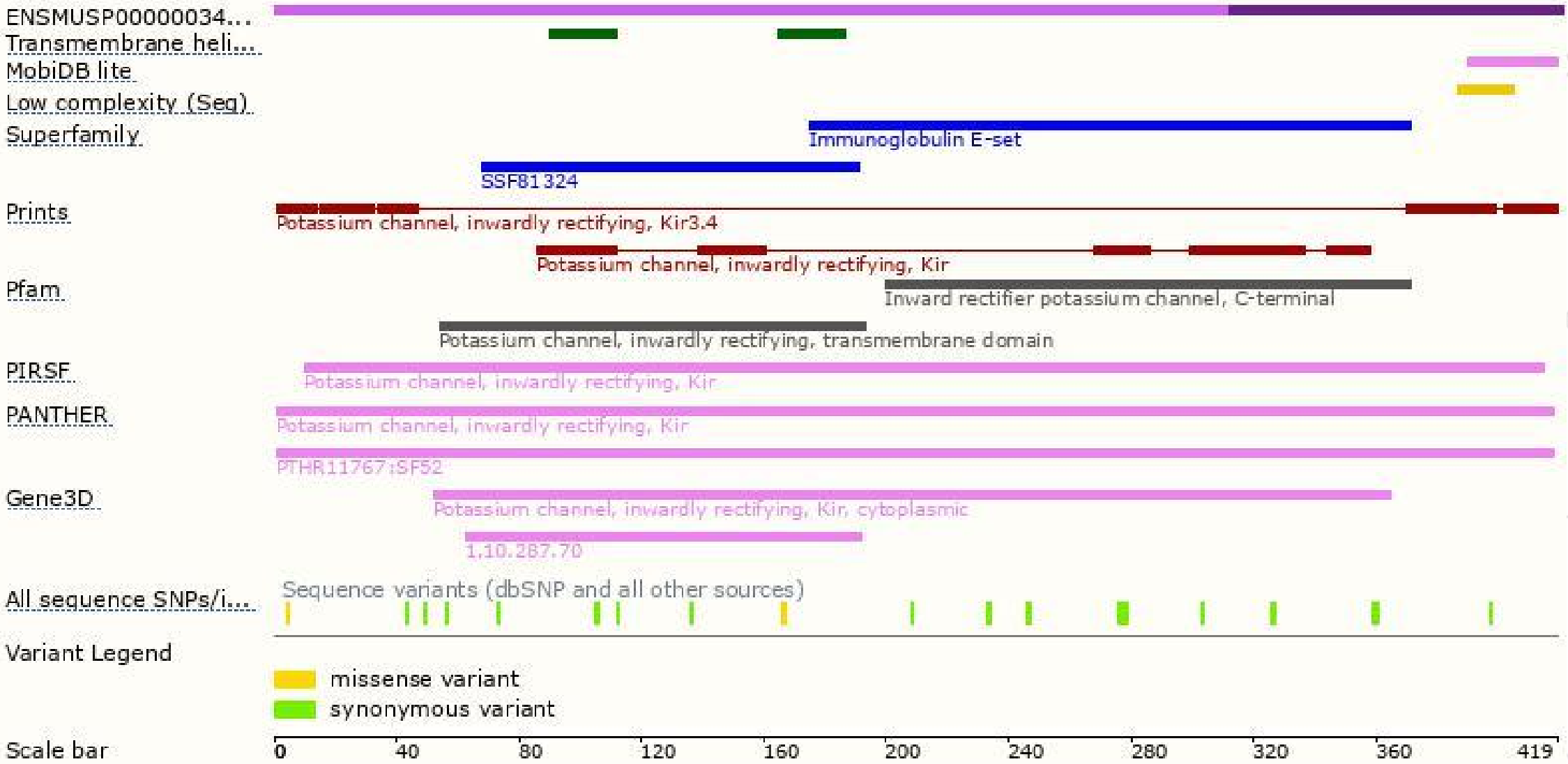
The strategy is based on the design of *Kcnj5-201* transcript,The transcription is shown below



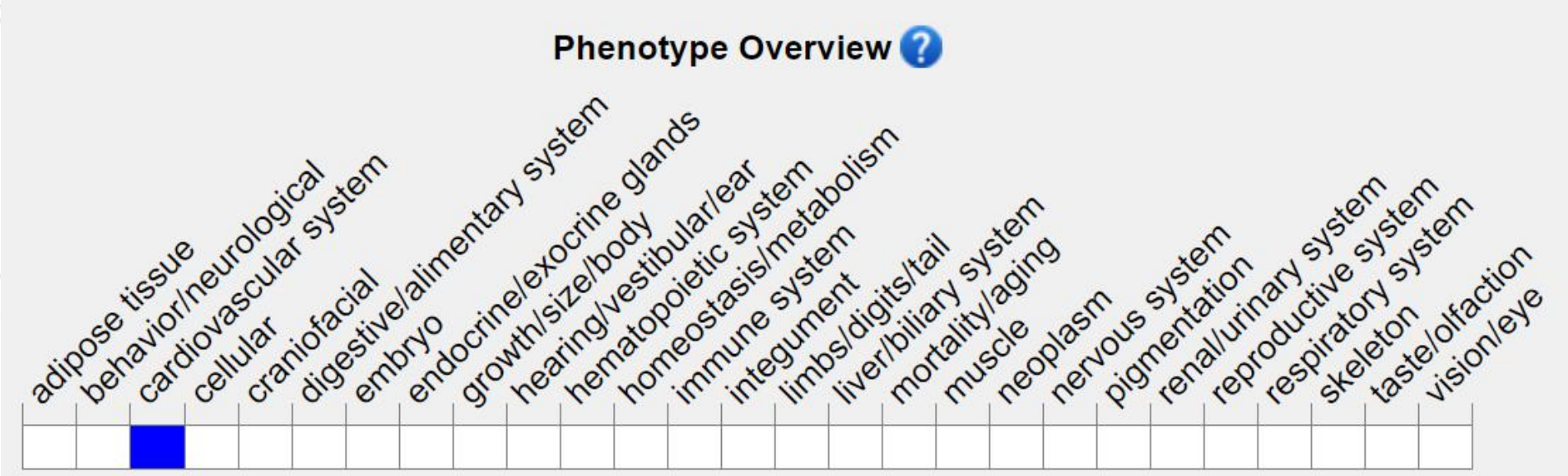
Genomic location distribution



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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