Kcnj11 Cas9-CKO Strategy

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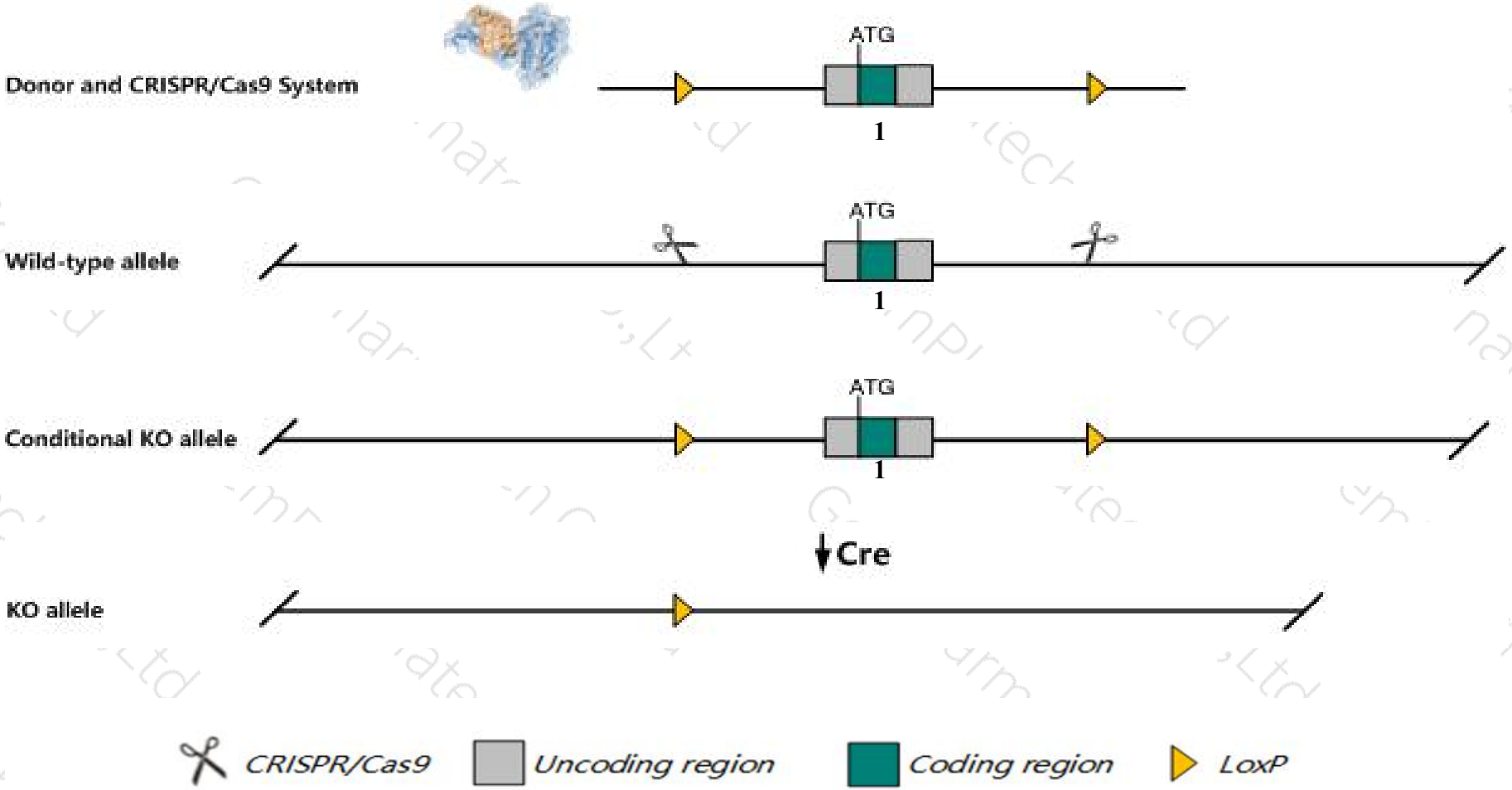
Project Overview

Project Name	***Kcnj11***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcnj11* gene. The schematic diagram is as follows:



Technical routes

- The *Kcnj11* gene has 5 transcripts. According to the structure of *Kcnj11* gene, exon1 of *Kcnj11-205* (ENSMUST00000211674.1) 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 *Kcnj11* 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 impaired insulin secretion, mild glucose intolerance, reduced glucagon secretion in response to hypoglycemia, hypoxia-induced seizure susceptibility, and stress-induced arrhythmia and sudden death.

- The *Kcnj11* gene is located on the Chr7. 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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Kcnj11 potassium inwardly rectifying channel, subfamily J, member 11 [Mus musculus (house mouse)]

Gene ID: 16514, updated on 9-Mar-2019

Summary

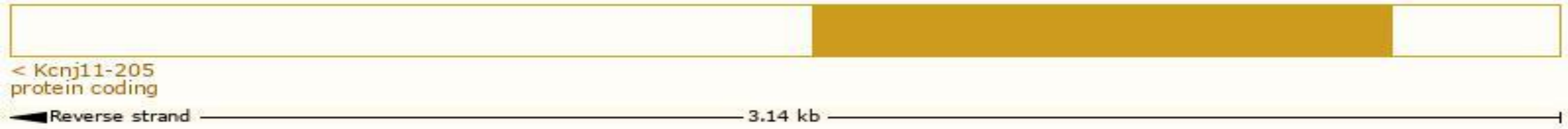
Official Symbol	Kcnj11 provided by MGI
Official Full Name	potassium inwardly rectifying channel, subfamily J, member 11 provided by MGI
Primary source	MGI:MGI:107501
See related	Ensembl:ENSMUSG00000096146
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Kir6.2, mBIR
Expression	Biased expression in heart adult (RPKM 35.0), cortex adult (RPKM 10.2) and 7 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

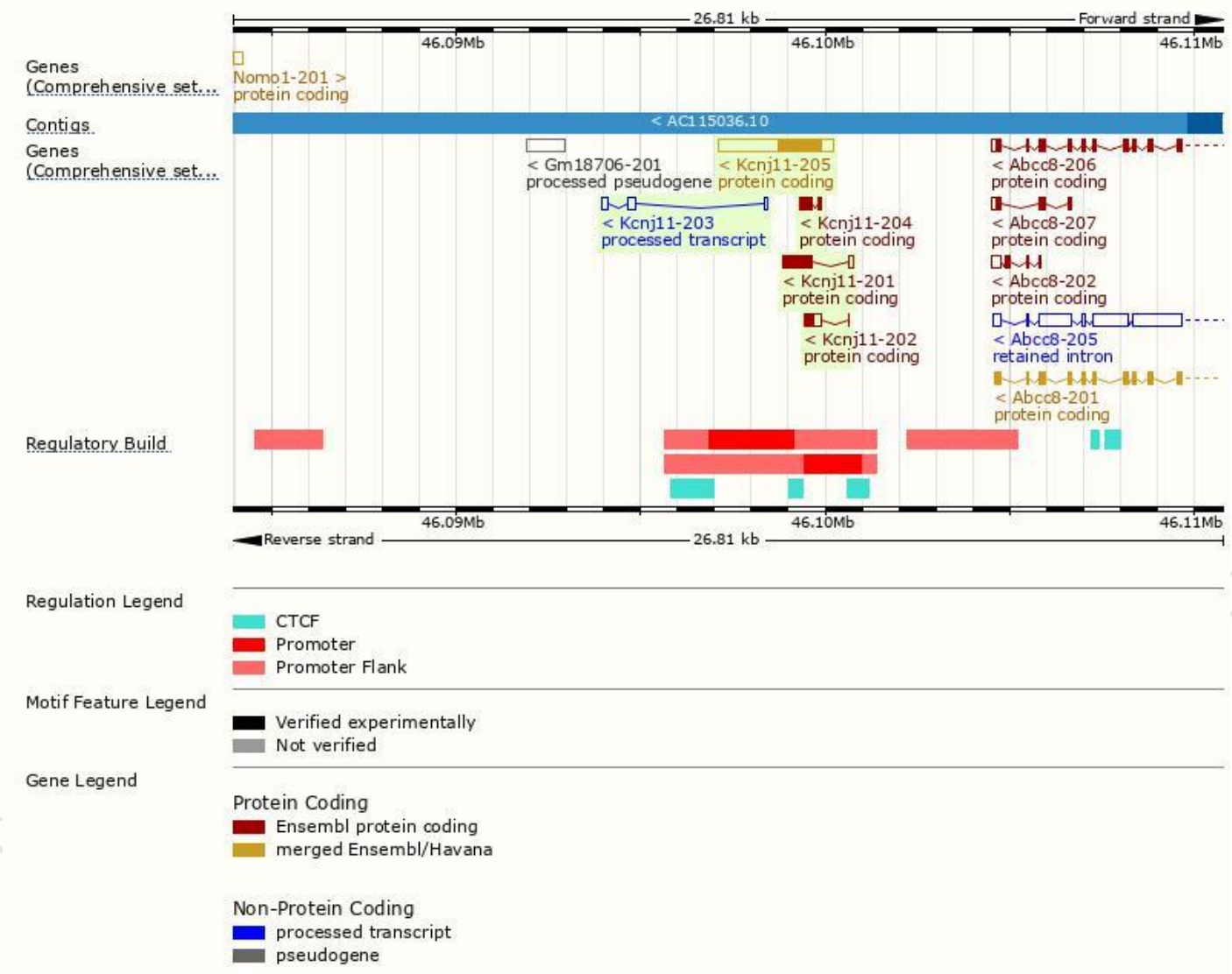
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcnj11-205	ENSMUST00000211674.1	3142	390aa	Protein coding	CCDS21274	Q61743	TSL:NA GENCODE basic APPRIS P1
Kcnj11-201	ENSMUST00000180081.2	917	254aa	Protein coding	-	A0A1C7CYV4	CDS 3' incomplete TSL:2
Kcnj11-202	ENSMUST00000209291.1	494	83aa	Protein coding	-	A0A1B0GS56	CDS 3' incomplete TSL:2
Kcnj11-204	ENSMUST00000209881.1	434	142aa	Protein coding	-	A0A1B0GT90	CDS 3' incomplete TSL:5
Kcnj11-203	ENSMUST00000209863.1	472	No protein	Processed transcript	-	-	TSL:3

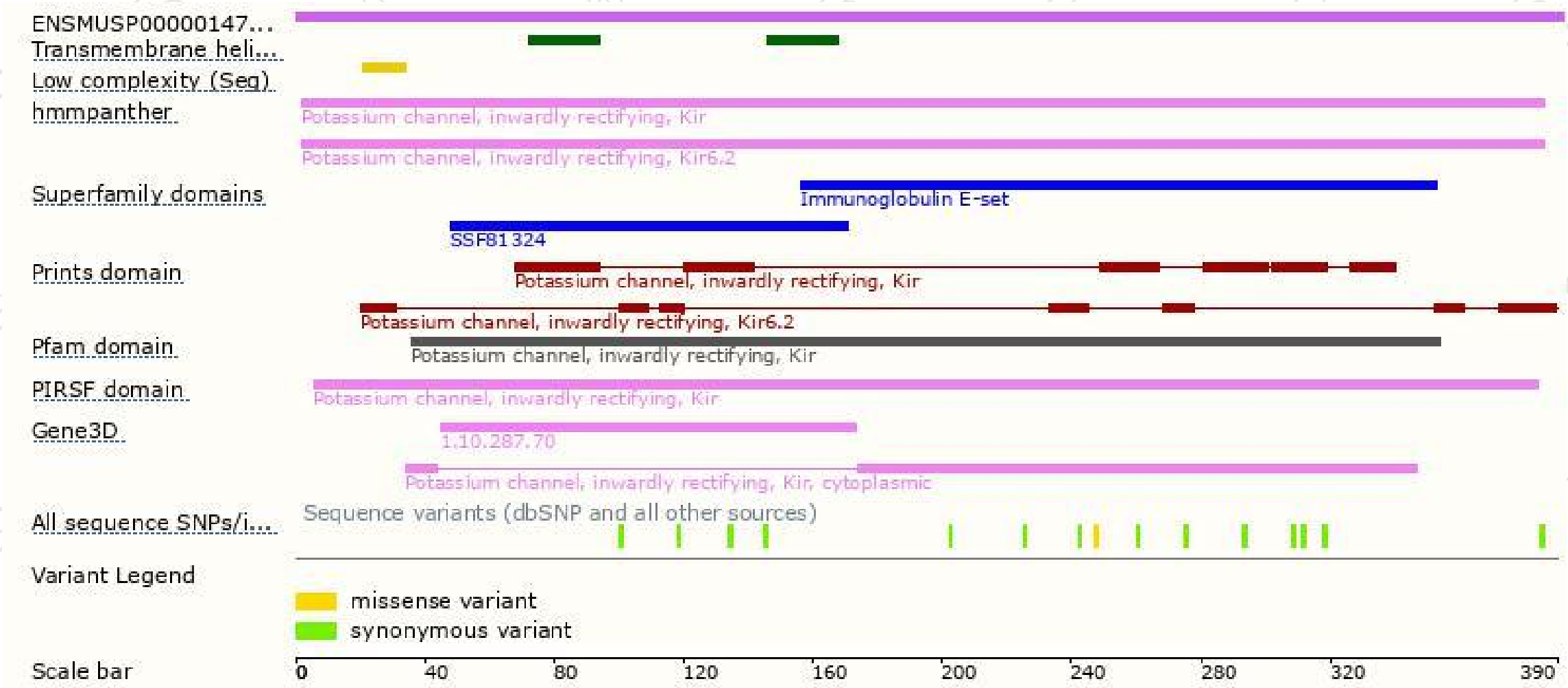
The strategy is based on the design of *Kcnj11-205* transcript,The transcription is shown below



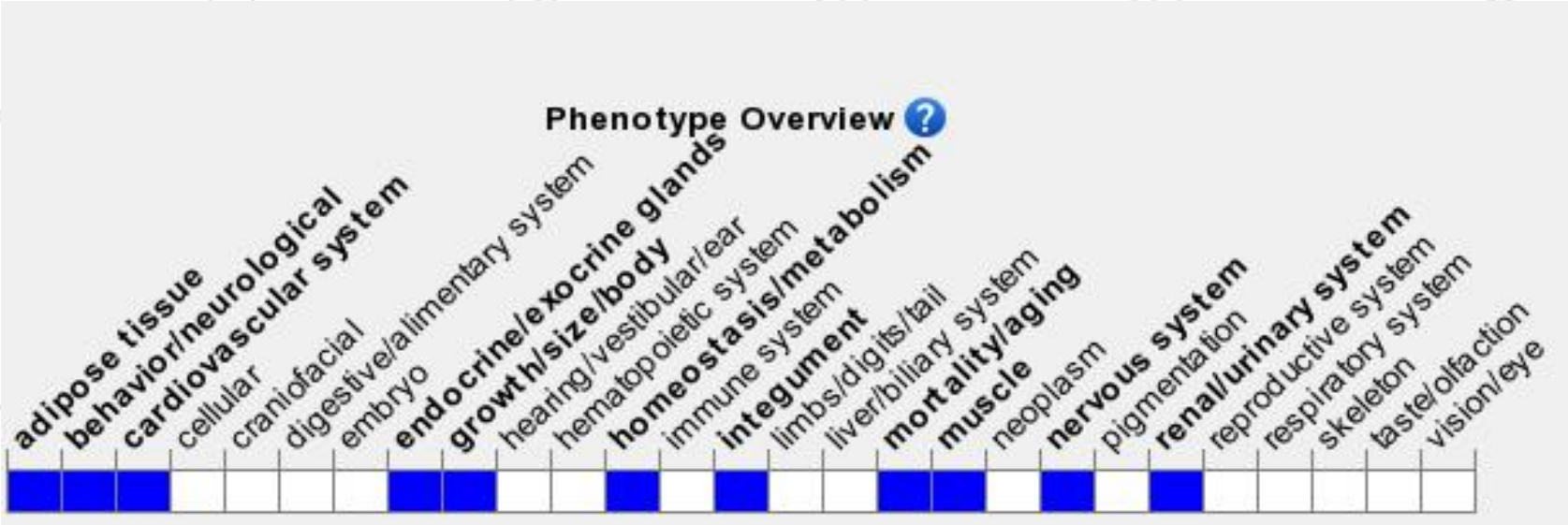
Genomic location distribution



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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