

Prkci Cas9-CKO Strategy

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Project Overview

Project Name

Prkci

Project type

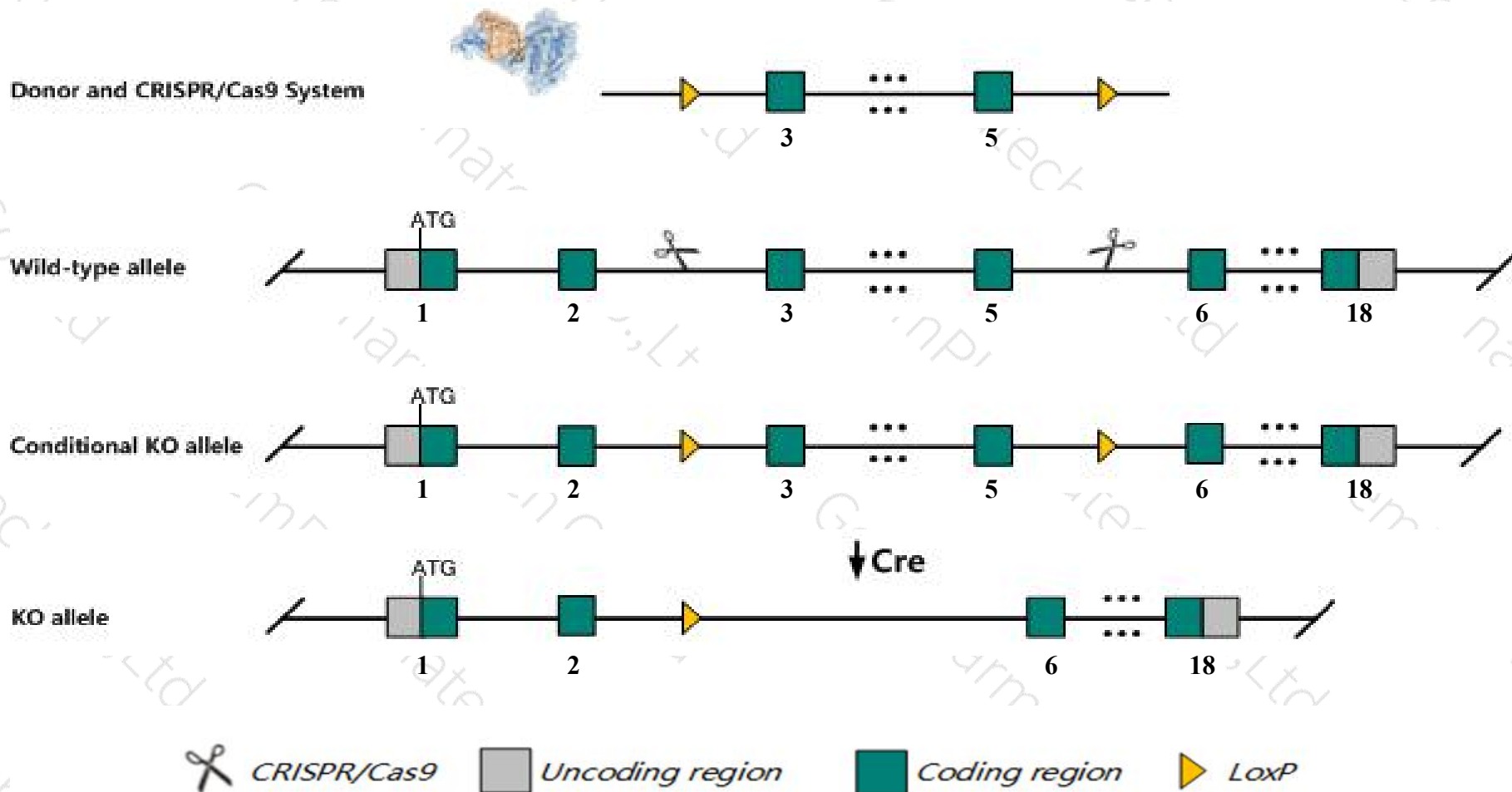
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Prkci* gene has 5 transcripts. According to the structure of *Prkci* gene, exon3-exon5 of *Prkci-201* (ENSMUST00000108249.8) transcript is recommended as the knockout region. The region contains 227bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prkci* 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.

- According to the existing MGI data, Homozygous inactivation of this gene leads to complete embryonic lethality. Muscle-specific deletion of this gene impairs glucose transport and induces metabolic and diabetic syndromes. Podocyte-specific deletion leads to altered podocyte architecture, proteinuria, and accelerated renal failure.
- The 5' region of *Prkci-205* transcript is incomplete, so the effect on it is unknown.
- The *Prkci* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Prkci protein kinase C, iota [Mus musculus (house mouse)]

Gene ID: 18759, updated on 5-Feb-2019

Summary



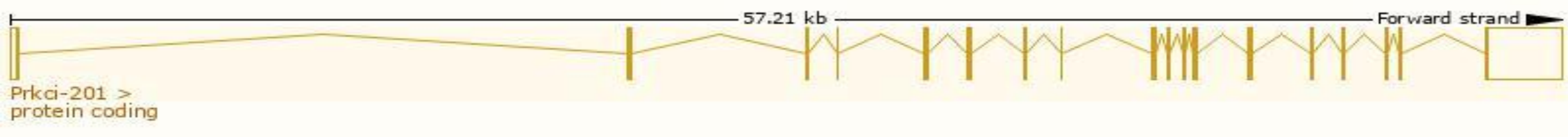
Official Symbol	Prkci provided by MGI
Official Full Name	protein kinase C, iota provided by MGI
Primary source	MGI:MGI:99260
See related	Ensembl:ENSMUSG00000037643
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2310021H13Rik, AI427505, PKClambda, Pkci, Pkcl, Prkcl, aPKClambda, mKIAA4165
Expression	Ubiquitous expression in bladder adult (RPKM 26.7), placenta adult (RPKM 19.4) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

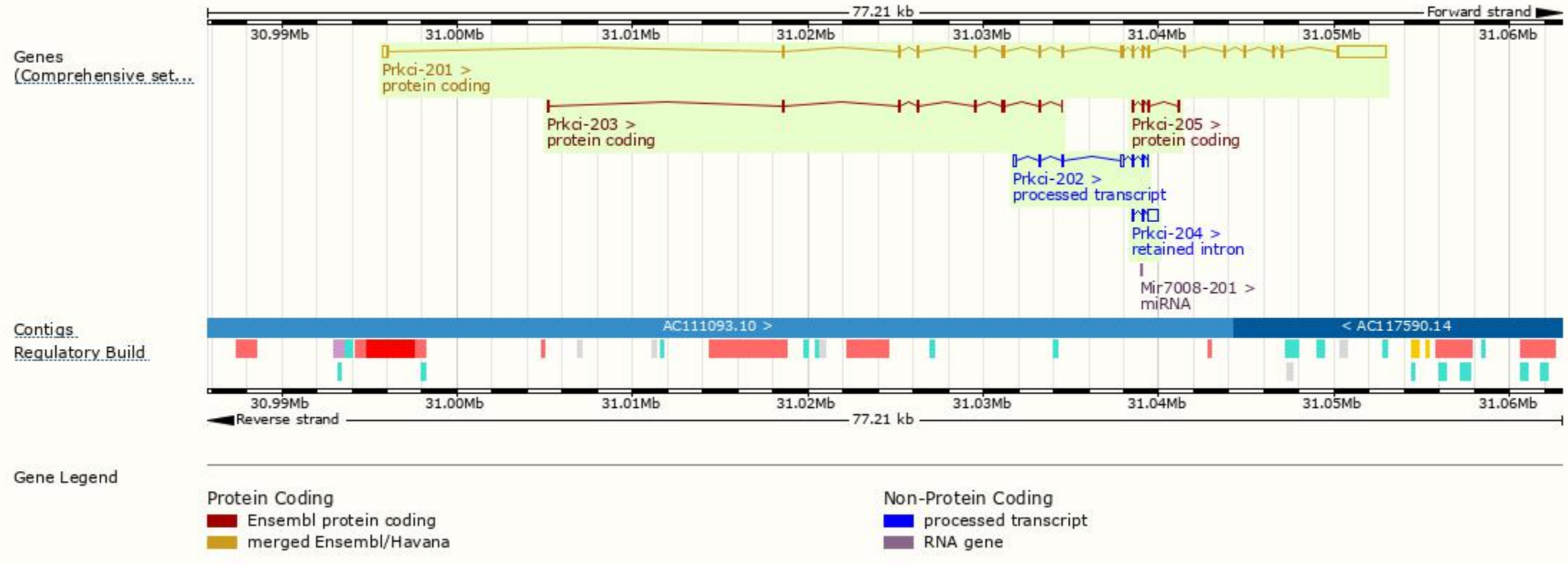
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prkci-201	ENSMUST00000108249.8	4708	595aa	Protein coding	CCDS17289	Q62074	TSL:1 GENCODE basic APPRIS P1
Prkci-203	ENSMUST00000130238.1	614	183aa	Protein coding	-	D3YXY0	CDS 3' incomplete TSL:5
Prkci-205	ENSMUST00000136086.1	456	118aa	Protein coding	-	F6QWV4	CDS 5' incomplete TSL:3
Prkci-202	ENSMUST00000123971.7	688	No protein	Processed transcript	-	-	TSL:3
Prkci-204	ENSMUST00000130706.1	722	No protein	Retained intron	-	-	TSL:3

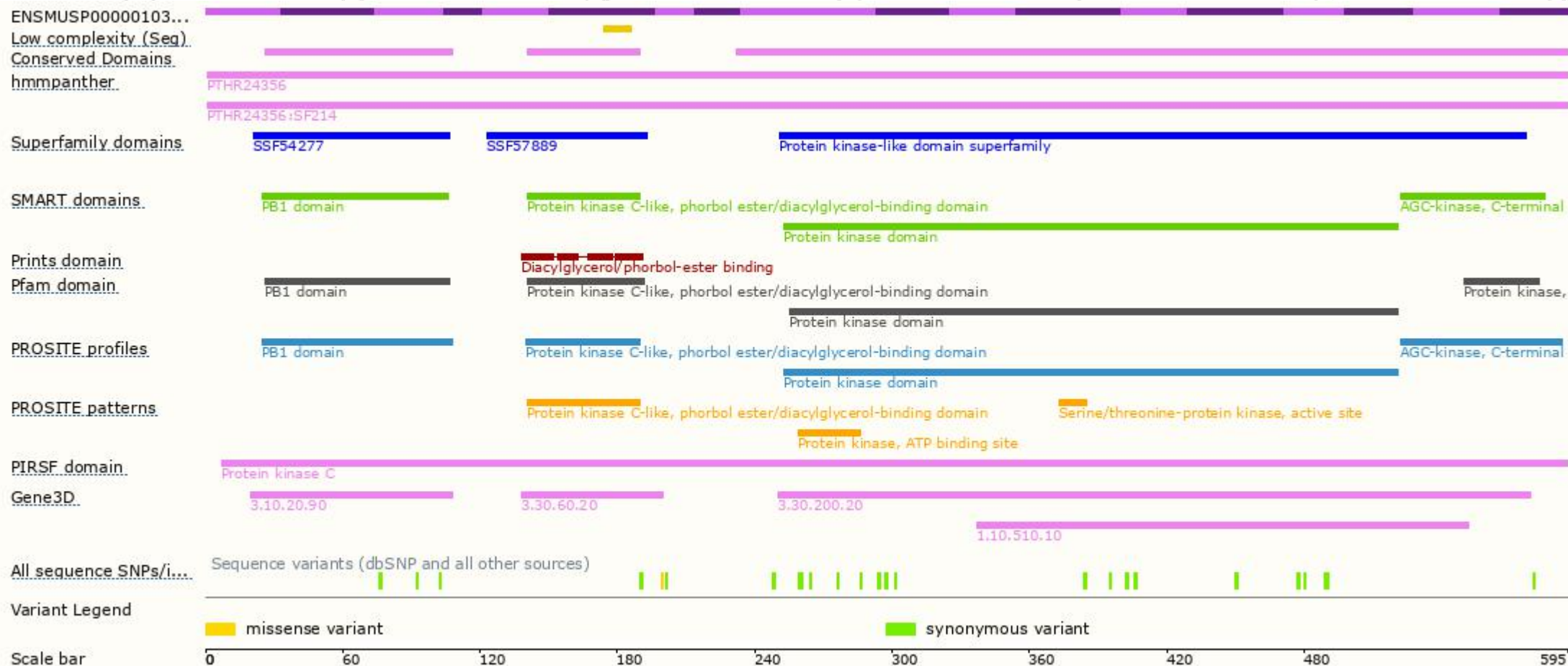
The strategy is based on the design of *Prkci-201* transcript,The transcription is shown below



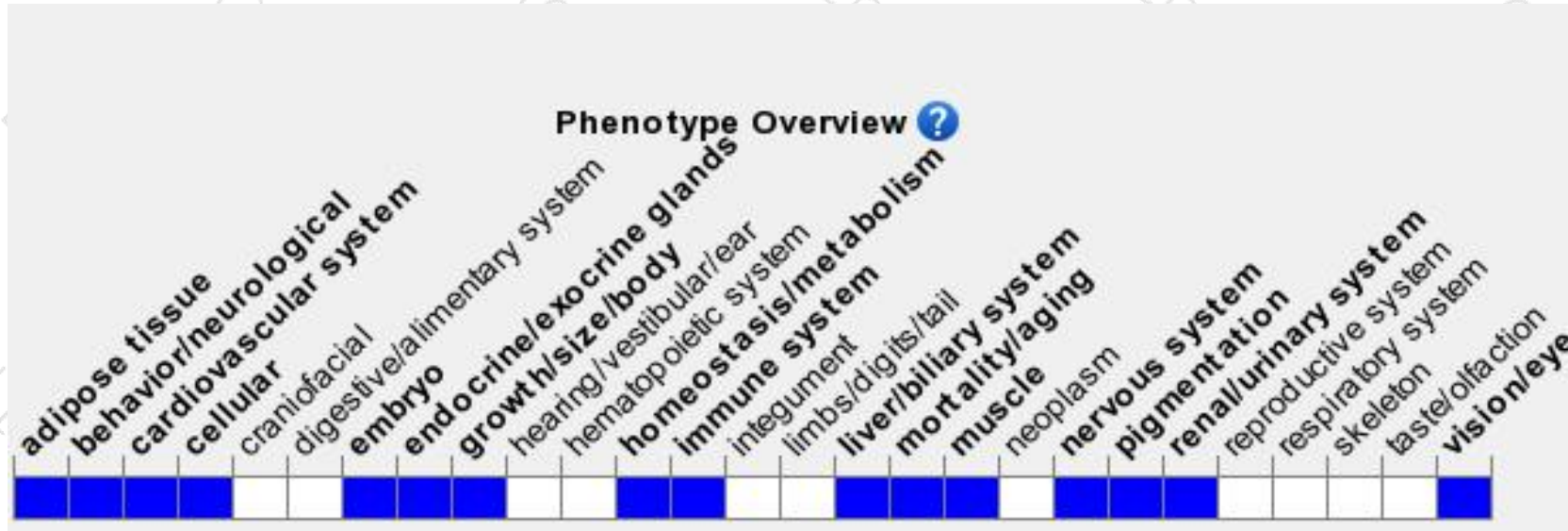
Genomic location distribution



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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Muscle-specific deletion of this gene impairs glucose transport and induces metabolic and diabetic syndromes. Podocyte-specific deletion leads to altered podocyte architecture, proteinuria, and accelerated renal failure.

If you have any questions, you are welcome to inquire.

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