Ptprn Cas9-CKO Strategy

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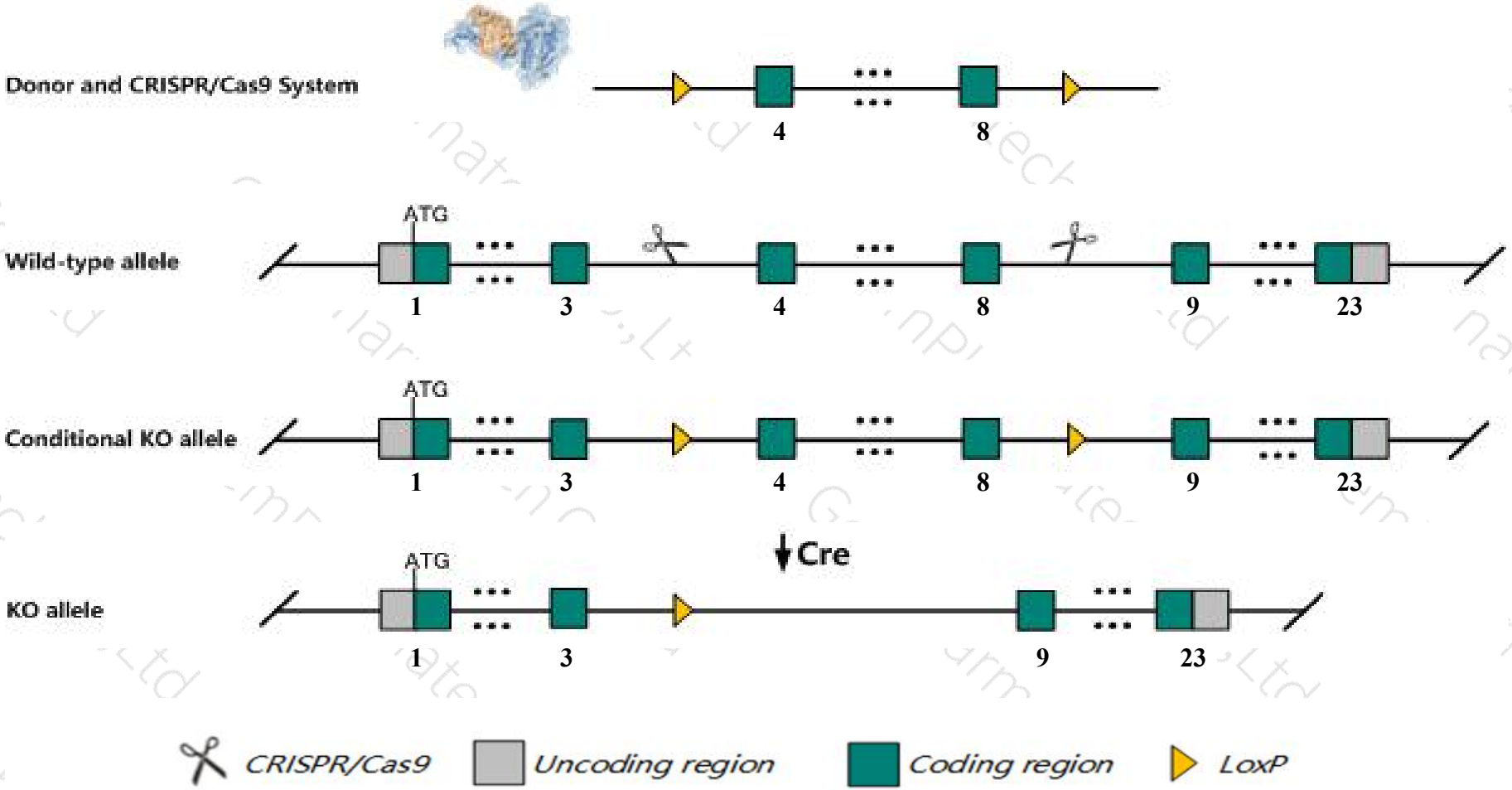
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Ptprn* gene has 6 transcripts. According to the structure of *Ptprn* gene, exon4-exon8 of *Ptprn-201* (ENSMUST00000027404.11) transcript is recommended as the knockout region.The region contains 878bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ptprn* 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,Mice homozygous for a disruption in this gene on a NOD background display insulitis and increased susceptibility to autoimmune diabetes.

- The *Ptprn* gene is located on the Chr1. 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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Ptprn protein tyrosine phosphatase, receptor type, N [*Mus musculus* (house mouse)]

Gene ID: 19275, updated on 12-Aug-2019

Summary

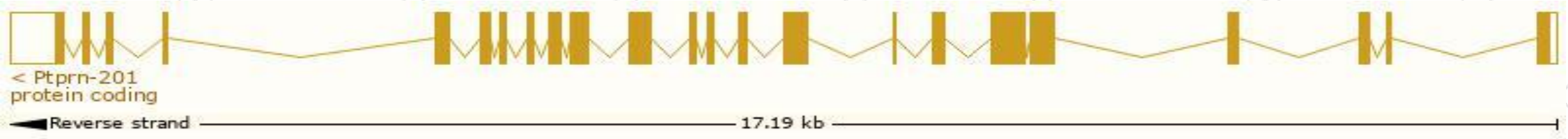
Official Symbol	Ptprn provided by MGI
Official Full Name	protein tyrosine phosphatase, receptor type, N provided by MGI
Primary source	MGI:MGI:102765
See related	Ensembl:ENSMUSG00000026204
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	IA-2; mIA-A; mKIAA4064
Expression	Biased expression in frontal lobe adult (RPKM 72.5), cortex adult (RPKM 72.0) and 6 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

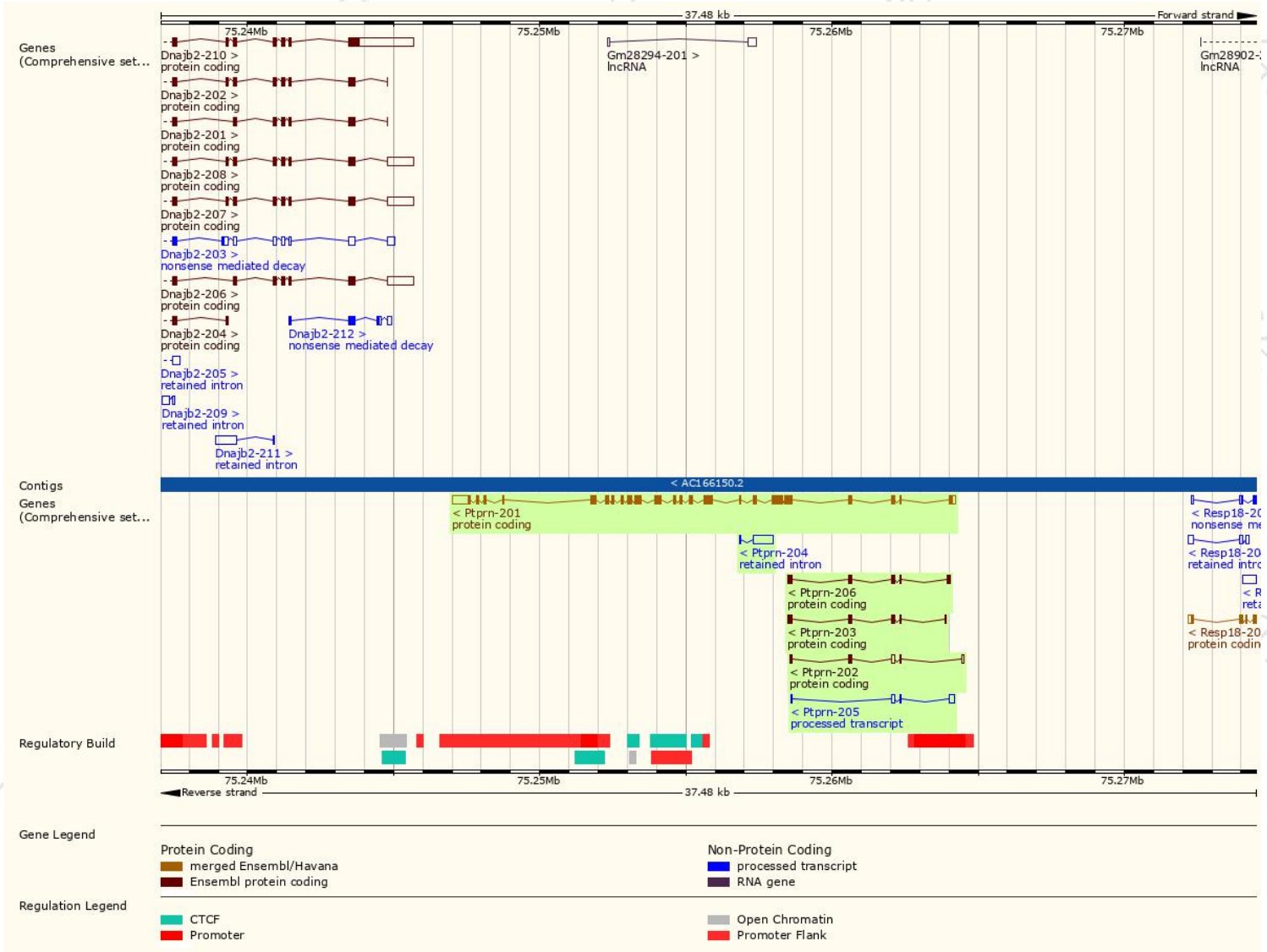
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptprn-201	ENSMUST00000027404.11	3554	981aa	Protein coding	CCDS35625	A6MDD2	TSL:1 GENCODE basic APPRIS P1
Ptprn-206	ENSMUST00000189769.6	512	170aa	Protein coding	-	A0A087WQF2	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Ptprn-203	ENSMUST00000186178.6	459	141aa	Protein coding	-	A0A087WPU7	CDS 3' incomplete TSL:2
Ptprn-202	ENSMUST00000185849.6	410	62aa	Protein coding	-	A0A087WQ67	CDS 3' incomplete TSL:3
Ptprn-204	ENSMUST00000187216.1	728	No protein	Retained intron	-	-	TSL:3
Ptprn-205	ENSMUST00000188401.1	425	No protein	lncRNA	-	-	TSL:3

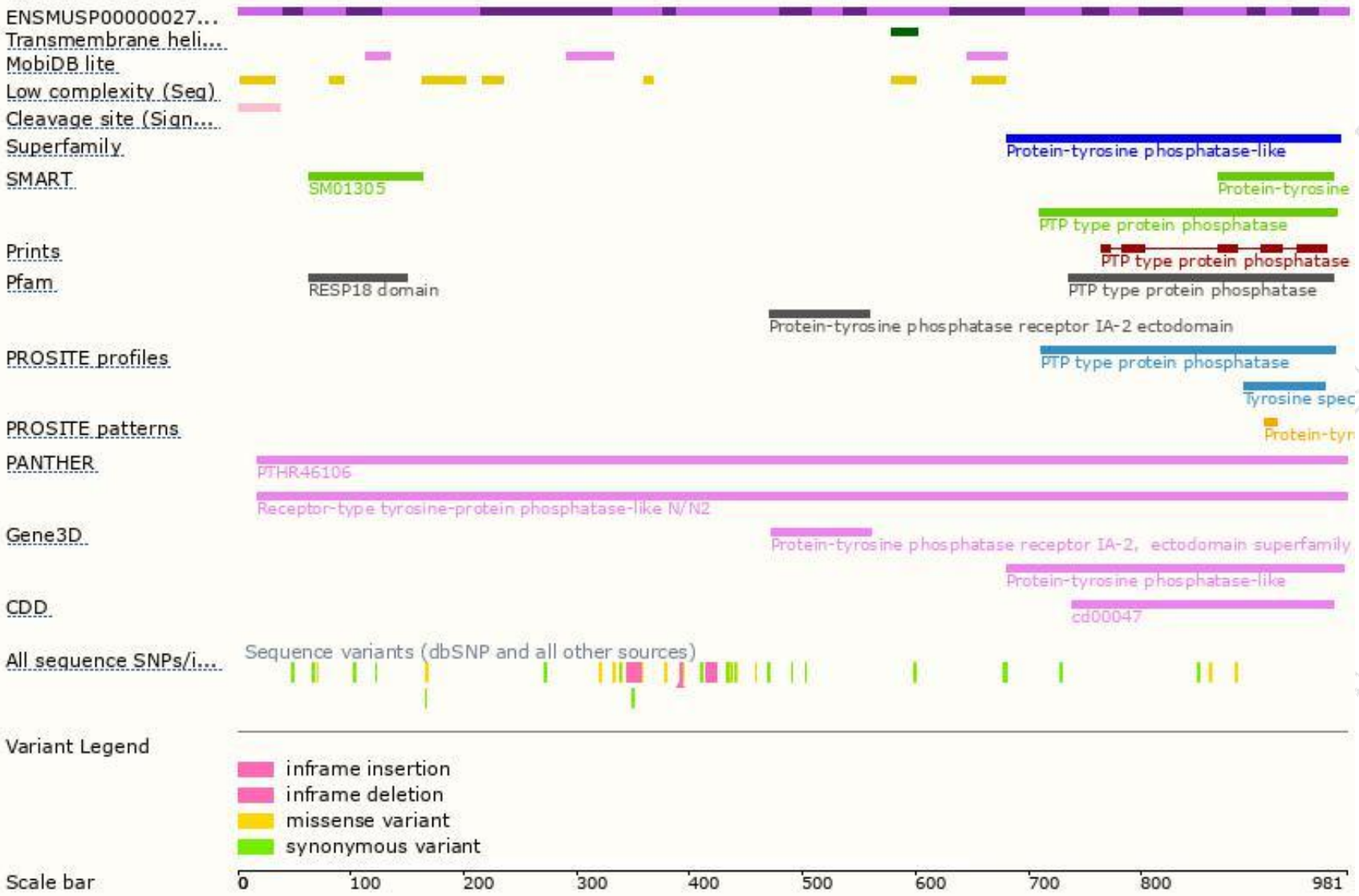
The strategy is based on the design of *Ptprn-201* transcript,The transcription is shown below



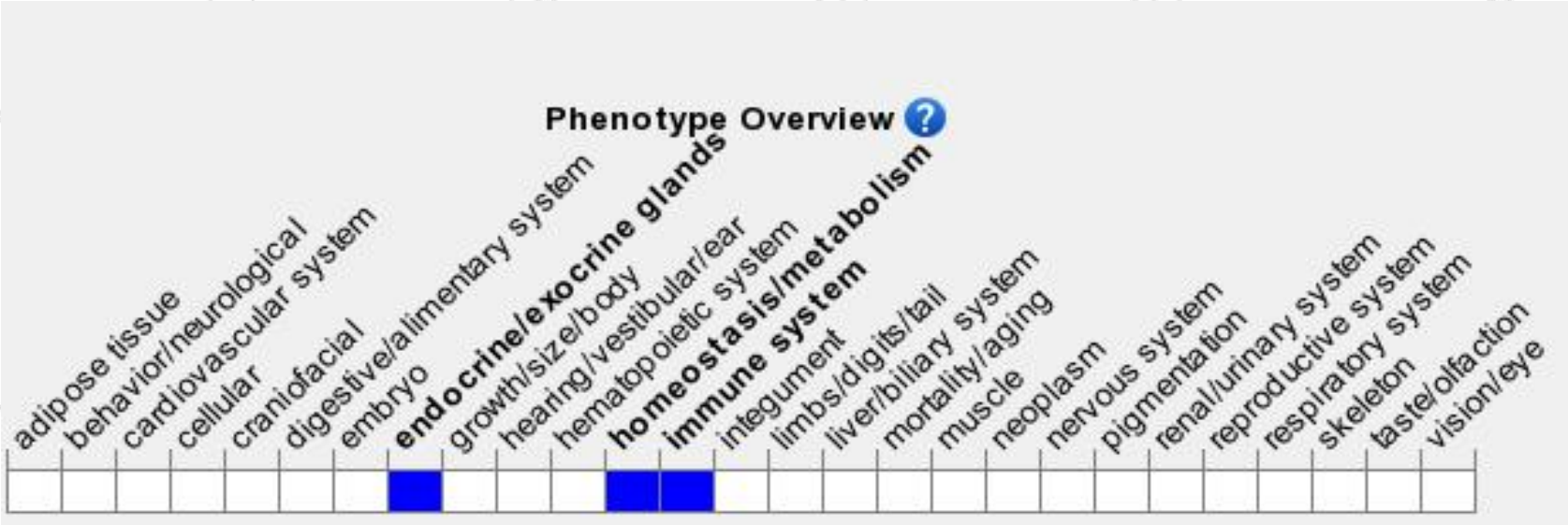
Genomic location distribution



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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