Rbp4 Cas9-CKO Strategy

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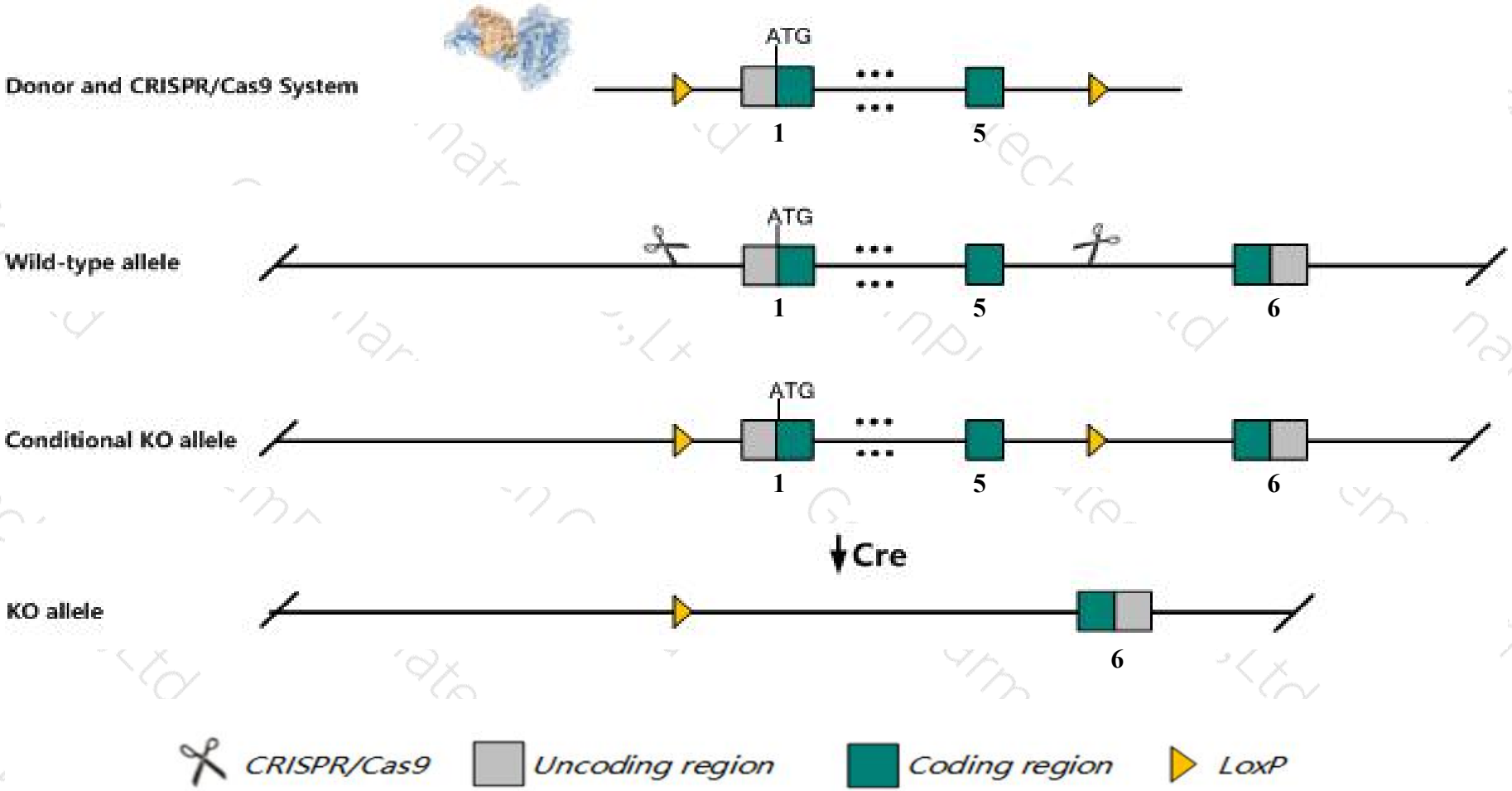
Project Overview

Project Name	***Rbp4***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rbp4* gene. The schematic diagram is as follows:



Technical routes

- The *Rbp4* gene has 4 transcripts. According to the structure of *Rbp4* gene, exon1-exon5 of *Rbp4-201* (ENSMUST00000025951.13) 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 *Rbp4* 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 null allele show abnormal retinal function and retinol level, delayed heart trabeculation, and increased myocyte proliferation and fibronectin deposition in cardiac jelly and nascent valves. Homozygotes for another null allele show testicular defects on a vitamin A-deficient diet.

- The *Rbp4* gene is located on the Chr19. 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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Rbp4 retinol binding protein 4, plasma [Mus musculus (house mouse)]

Gene ID: 19662, updated on 12-Mar-2019

Summary

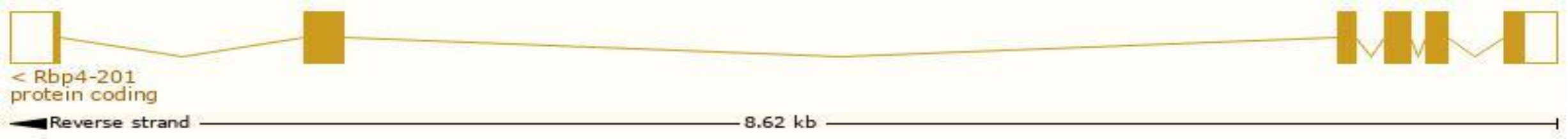
Official Symbol	Rbp4 provided by MGI
Official Full Name	retinol binding protein 4, plasma provided by MGI
Primary source	MGI:MGI:97879
See related	Ensembl:ENSMUSG00000024990
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Rbp-4
Expression	Biased expression in liver adult (RPKM 1256.0), liver E18 (RPKM 733.2) and 6 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

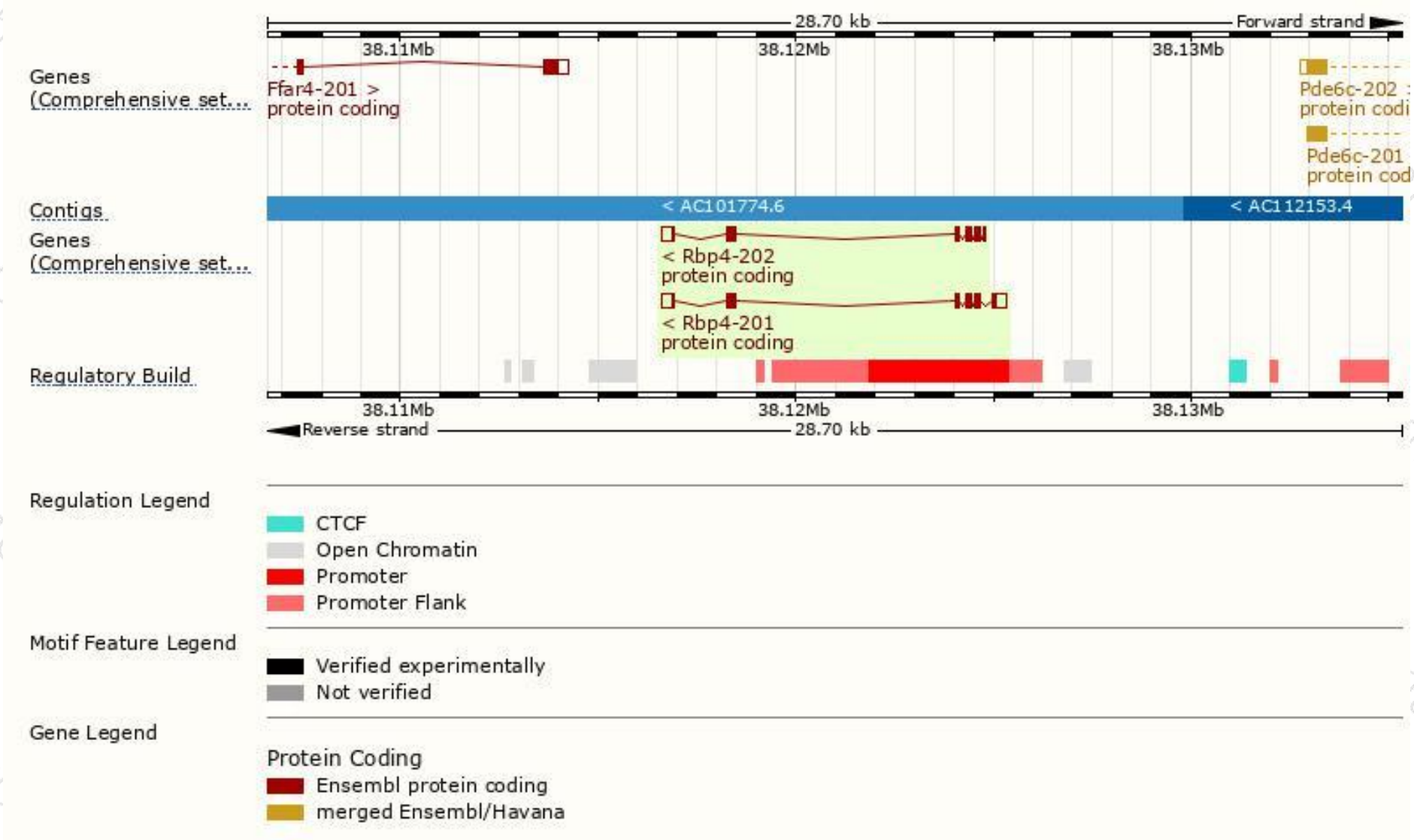
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rbp4-201	ENSMUST00000025951.13	1161	245aa	Protein coding	CCDS50430	H7BWY6	TSL:1 GENCODE basic
Rbp4-202	ENSMUST00000112335.3	937	201aa	Protein coding	CCDS29784	Q00724	TSL:1 GENCODE basic APPRIS P1
Rbp4-204	ENSMUST00000237287.1	581	122aa	Protein coding	-	-	CDS 3' incomplete
Rbp4-203	ENSMUST00000236283.1	410	104aa	Protein coding	-	-	CDS 3' incomplete

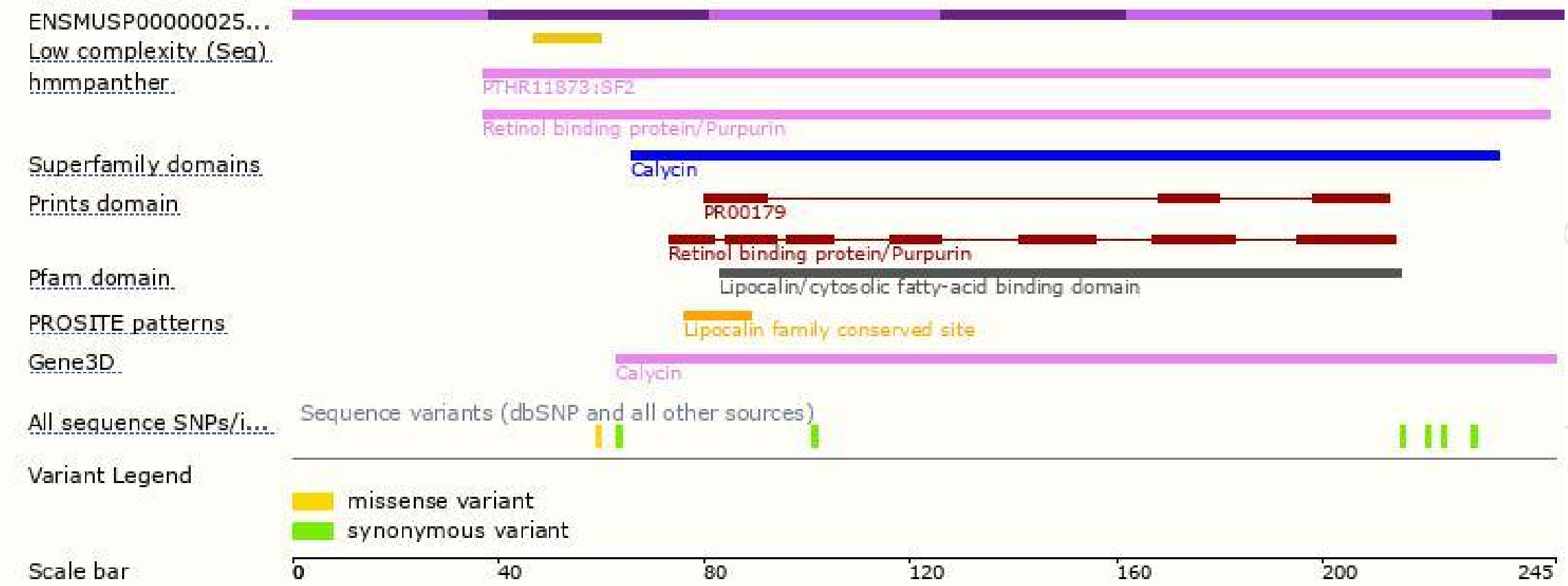
The strategy is based on the design of *Rbp4-201* transcript,The transcription is shown below



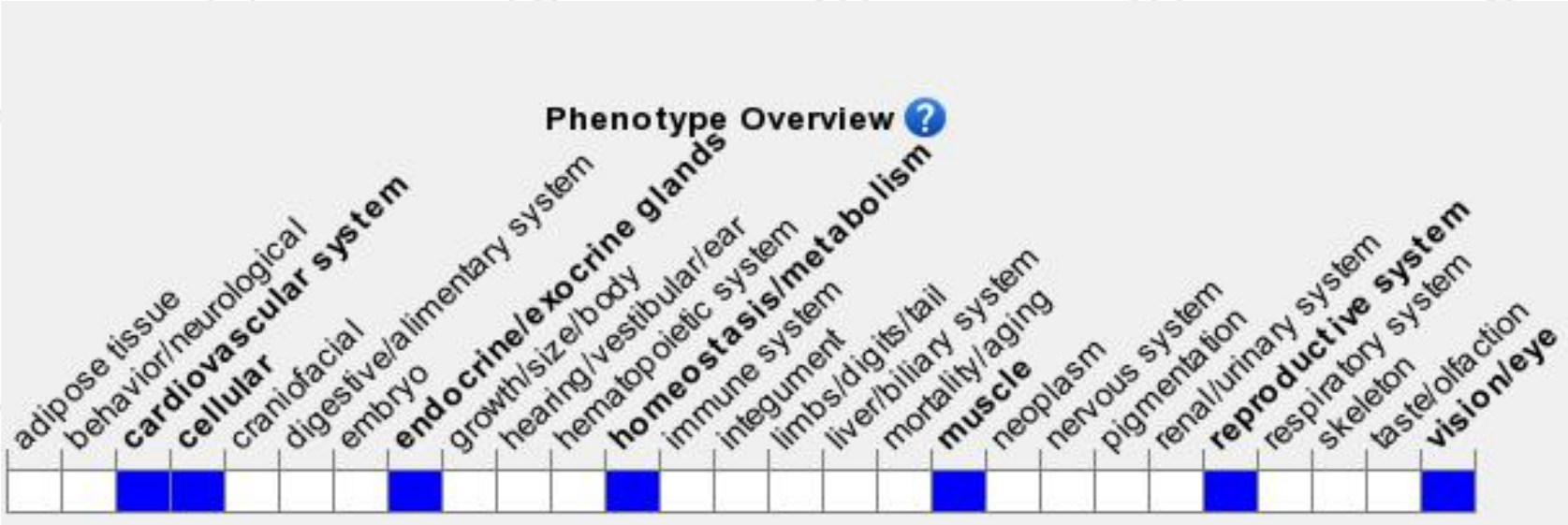
Genomic location distribution



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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