Fbxo7 Cas9-CKO Strategy

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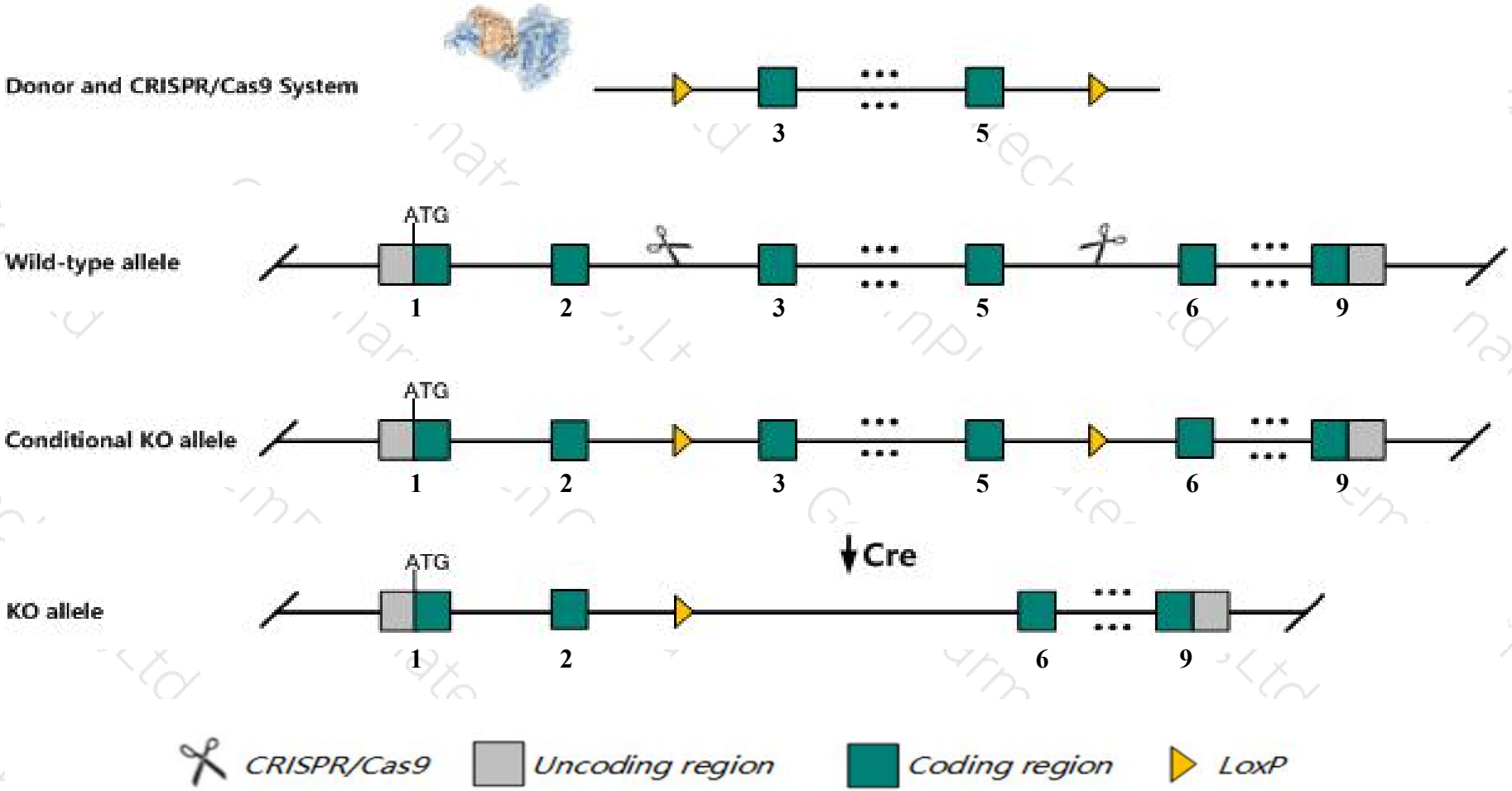
Project Overview

Project Name	***Fbxo7***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fbxo7* gene. The schematic diagram is as follows:



Technical routes

- The *Fbxo7* gene has 7 transcripts. According to the structure of *Fbxo7* gene, exon3-exon5 of *Fbxo7-204* (ENSMUST00000130320.7) transcript is recommended as the knockout region.The region contains 457bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Fbxo7* 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 increased pro-B cell and pro-erythroblast numbers. Homozygotes for a hypomorphic allele show anemia due to a shortened erythrocyte half-life, impaired spermatogenesis, male infertility, altered T cell phenotypes, and increased susceptibility to bacterial infection.

➢ The KO region is close to 5'UTR region of the *A230060F14Rik* gene. Knockout the region may affect the expression of *A230060F14Rik* gene.

➢ The *Fbxo7* gene is located on the Chr10. 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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Fbxo7 F-box protein 7 [*Mus musculus* (house mouse)]

Gene ID: 69754, updated on 12-Aug-2019

Summary

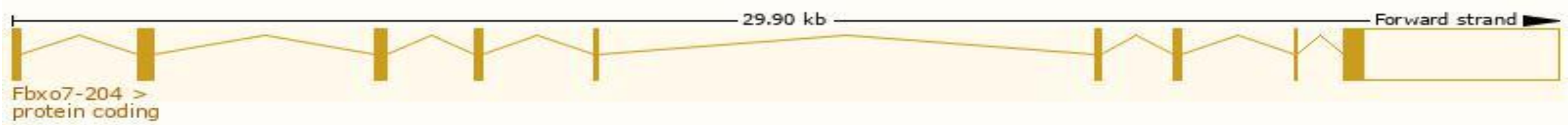
Official Symbol	Fbxo7 provided by MGI
Official Full Name	F-box protein 7 provided by MGI
Primary source	MGI:MGI:1917004
See related	Ensembl:ENSMUSG00000001786
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C85118; AI117679; AW260462; 2410015K21Rik; A230052G17Rik
Expression	Ubiquitous expression in kidney adult (RPKM 26.7), liver E14.5 (RPKM 23.1) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

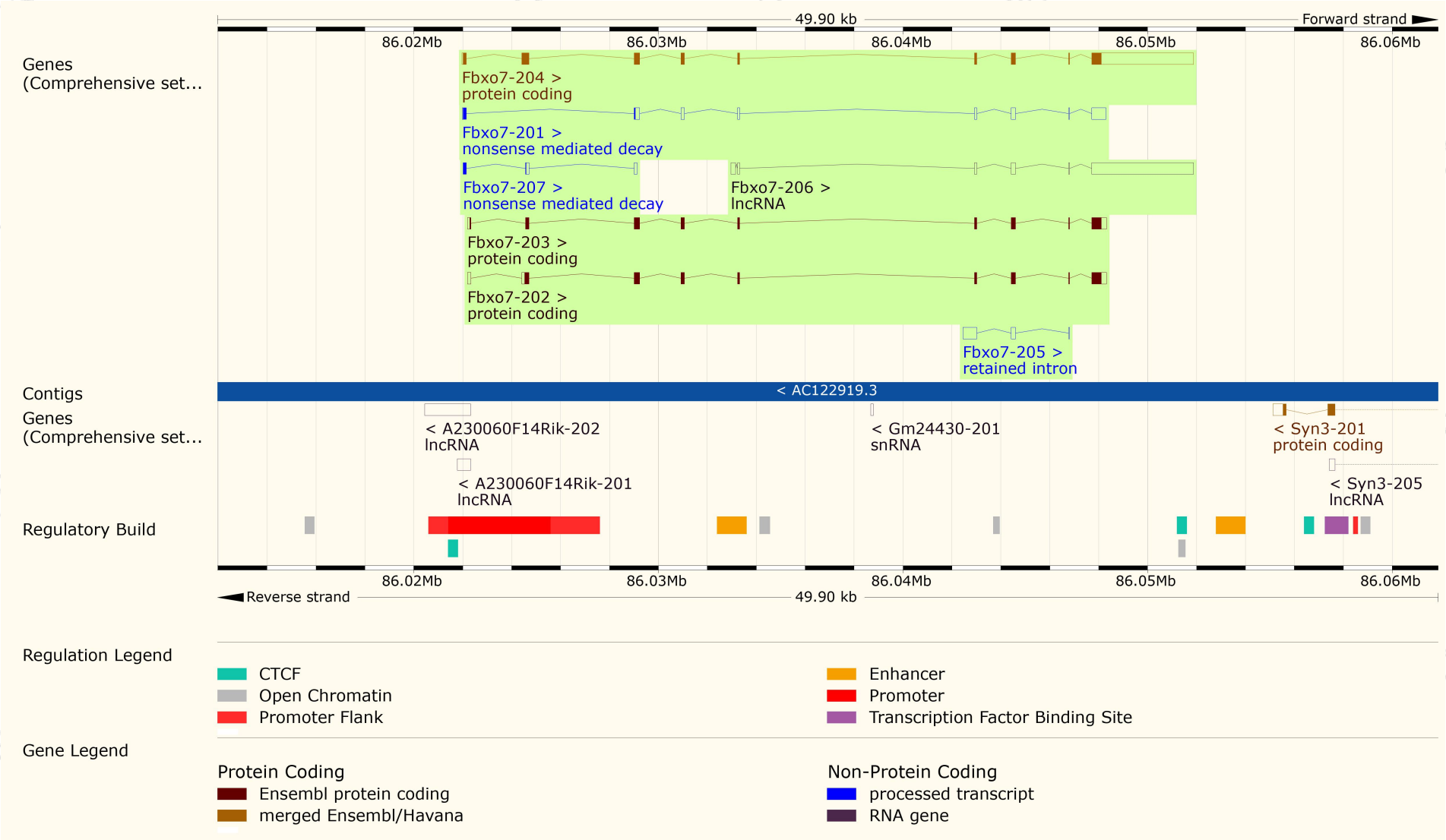
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fbxo7-204	ENSMUST00000130320.7	5388	523aa	Protein coding	CCDS24095	Q3U7U3	TSL:1 GENCODE basic APPRIS P3
Fbxo7-202	ENSMUST00000117597.1	1799	442aa	Protein coding	CCDS83740	Q3UGI9	TSL:1 GENCODE basic APPRIS ALT2
Fbxo7-203	ENSMUST00000120344.7	1655	444aa	Protein coding	CCDS78875	Q3UD93	TSL:1 GENCODE basic APPRIS ALT2
Fbxo7-201	ENSMUST00000001837.13	1498	56aa	Nonsense mediated decay	-	F8WIP1	TSL:5
Fbxo7-207	ENSMUST00000147168.1	385	49aa	Nonsense mediated decay	-	D6RJ76	TSL:5
Fbxo7-206	ENSMUST00000134490.7	4728	No protein	Processed transcript	-	-	TSL:1
Fbxo7-205	ENSMUST00000130383.1	780	No protein	Retained intron	-	-	TSL:5

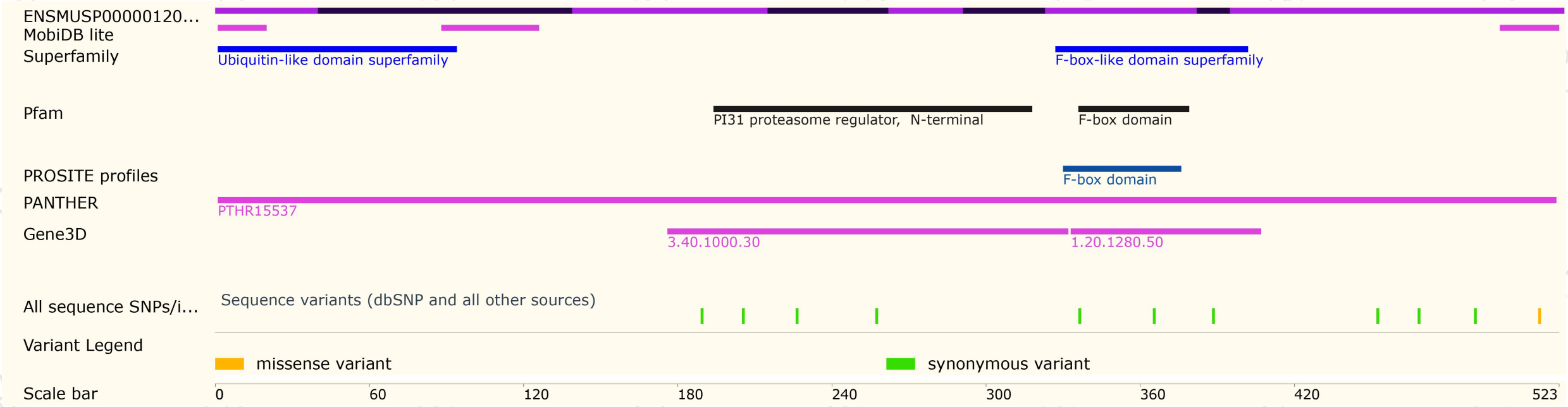
The strategy is based on the design of *Fbxo7-204* transcript,The transcription is shown below



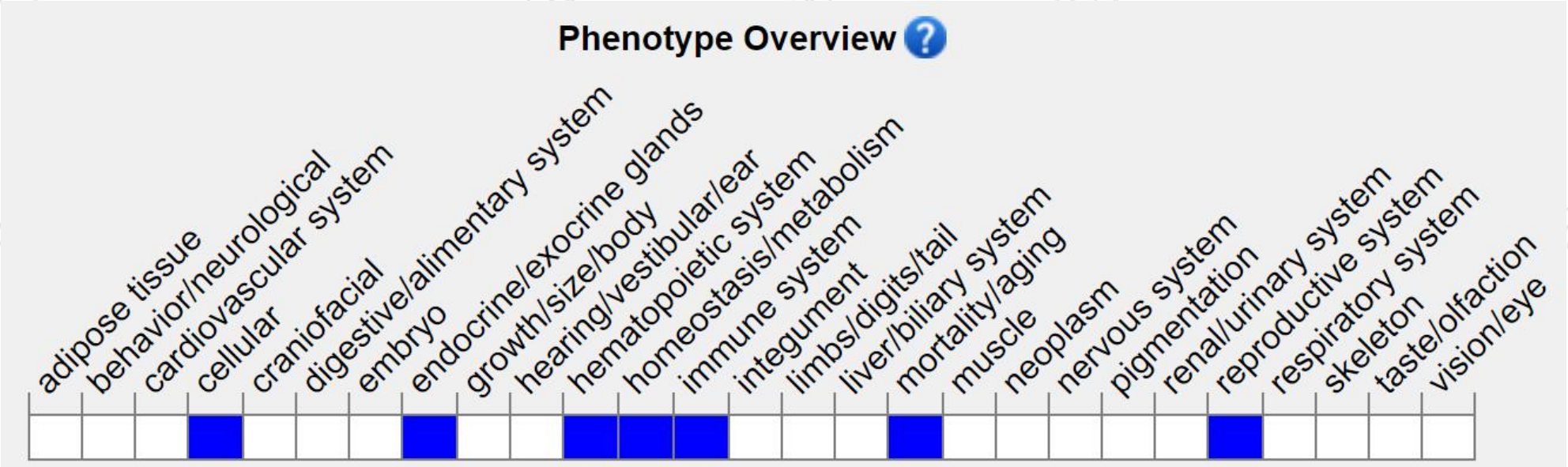
Genomic location distribution



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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