Uvrag Cas9-CKO Strategy

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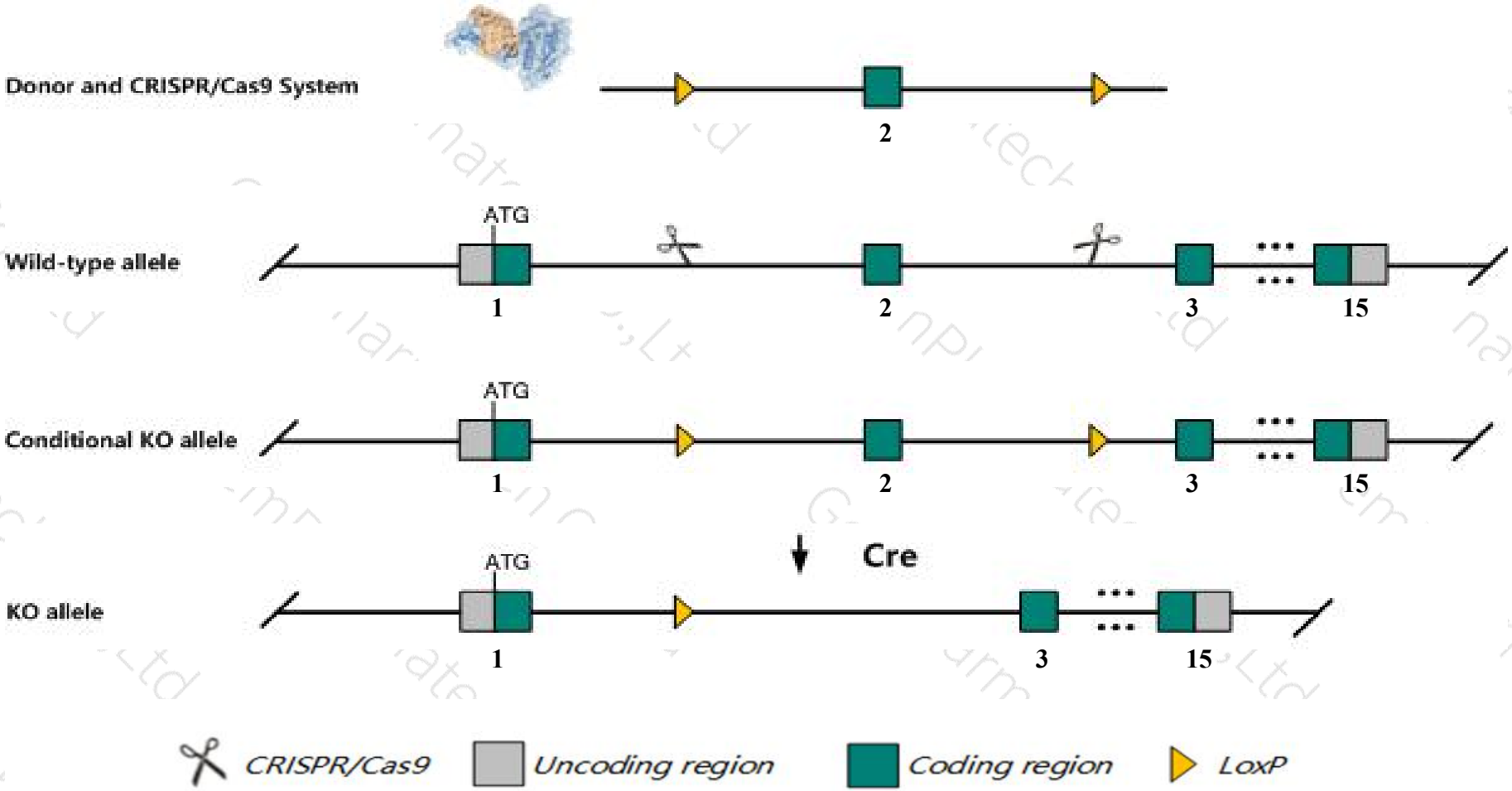
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Uvrag* gene has 8 transcripts. According to the structure of *Uvrag* gene, exon2 of *Uvrag-201* (ENSMUST00000037968.9) transcript is recommended as the knockout region.The region contains 118bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Uvrag* 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 transposon induced knock-out allele are viable and fertile but exhibit impaired autophagic flux, autophagosome accumulation in the heart, and age-related cardiomyopathy associated with compromised cardiac function and heart inflammation.

➢ The *Uvrag* 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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Uvrag UV radiation resistance associated gene [Mus musculus (house mouse)]

Gene ID: 78610, updated on 31-Jan-2019

Summary

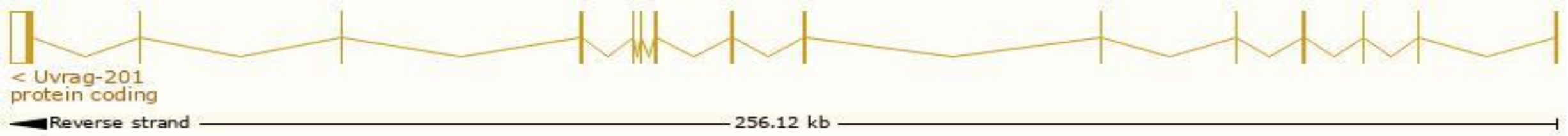
Official Symbol	Uvrag provided by MGI
Official Full Name	UV radiation resistance associated gene provided by MGI
Primary source	MGI:MGI:1925860
See related	Ensembl:ENSMUSG00000035354
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9530039D02Rik, AI648770, BB124205, Uvrag1, Uvragl
Expression	Ubiquitous expression in spleen adult (RPKM 13.8), thymus adult (RPKM 12.8) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

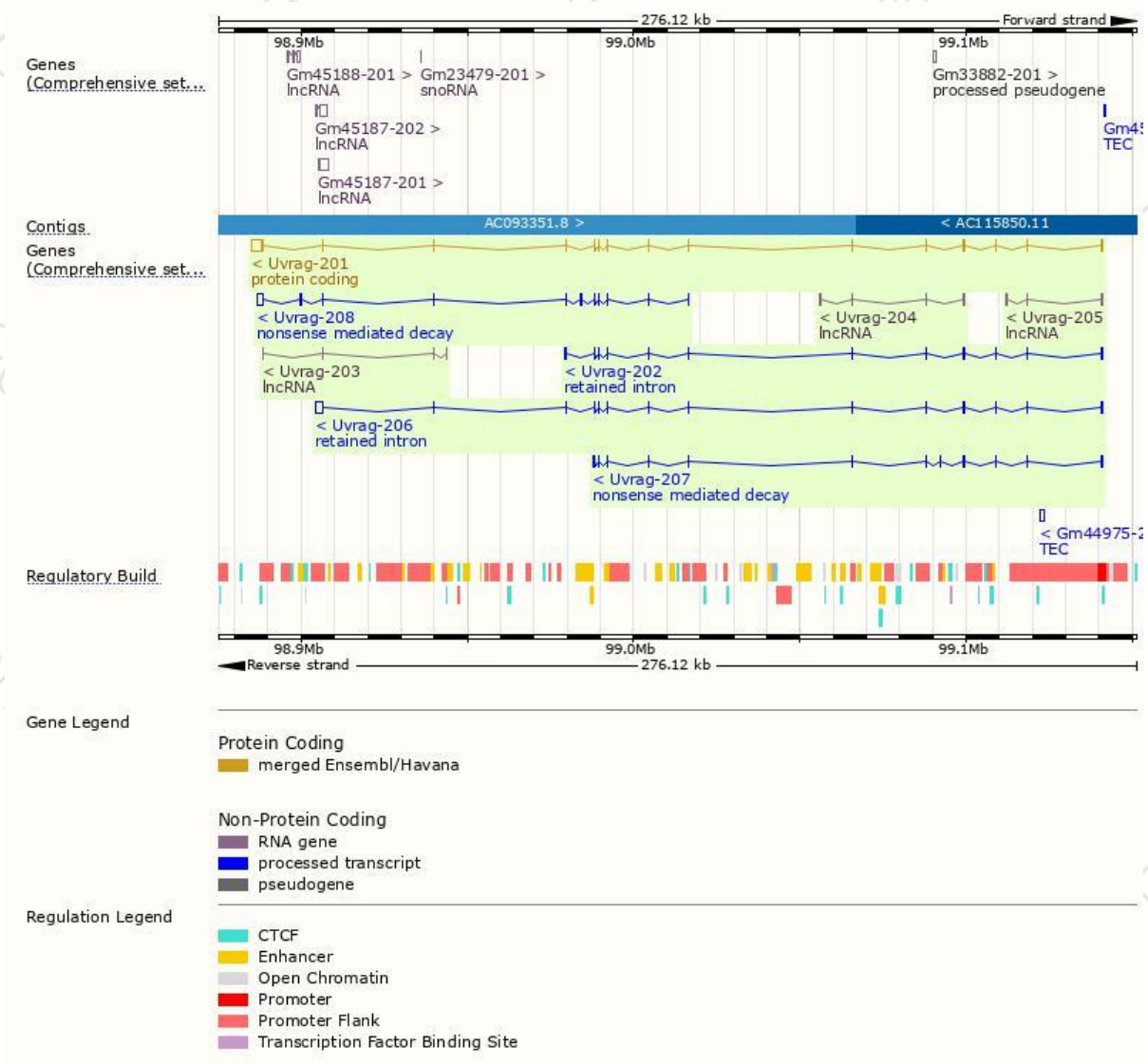
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Uvrag-201	ENSMUST00000037968.9	5157	698aa	Protein coding	CCDS21476	Q8K245	TSL:1 GENCODE basic APPRIS P1
Uvrag-208	ENSMUST00000209123.1	3147	162aa	Nonsense mediated decay	-	A0A140LHA4	CDS 5' incomplete TSL:1
Uvrag-207	ENSMUST00000208992.1	1577	150aa	Nonsense mediated decay	-	A0A140LI21	TSL:1
Uvrag-206	ENSMUST00000208609.1	3725	No protein	Retained intron	-	-	TSL:1
Uvrag-202	ENSMUST00000207032.1	1792	No protein	Retained intron	-	-	TSL:1
Uvrag-205	ENSMUST00000208502.1	654	No protein	lncRNA	-	-	TSL:1
Uvrag-203	ENSMUST00000207919.1	376	No protein	lncRNA	-	-	TSL:3
Uvrag-204	ENSMUST00000208012.1	366	No protein	lncRNA	-	-	TSL:3

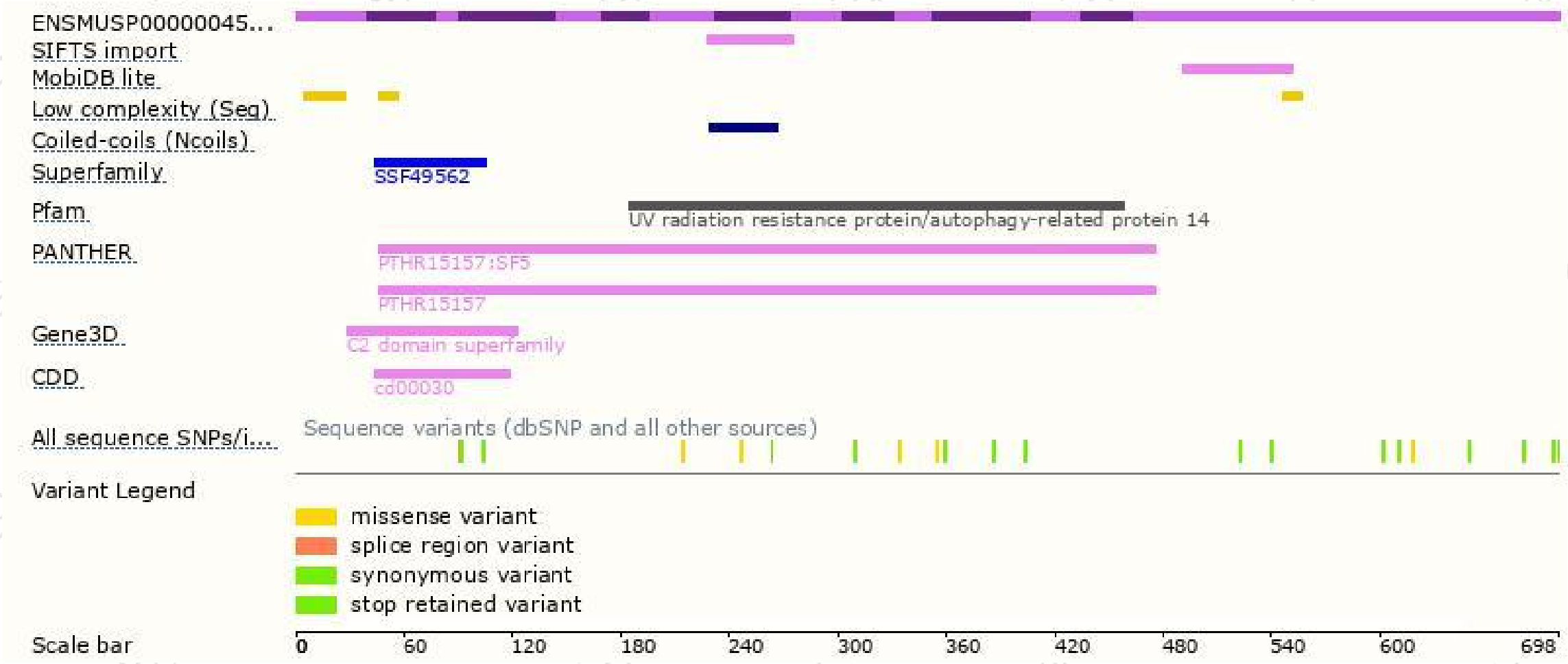
The strategy is based on the design of *Uvrag-201* transcript,The transcription is shown below



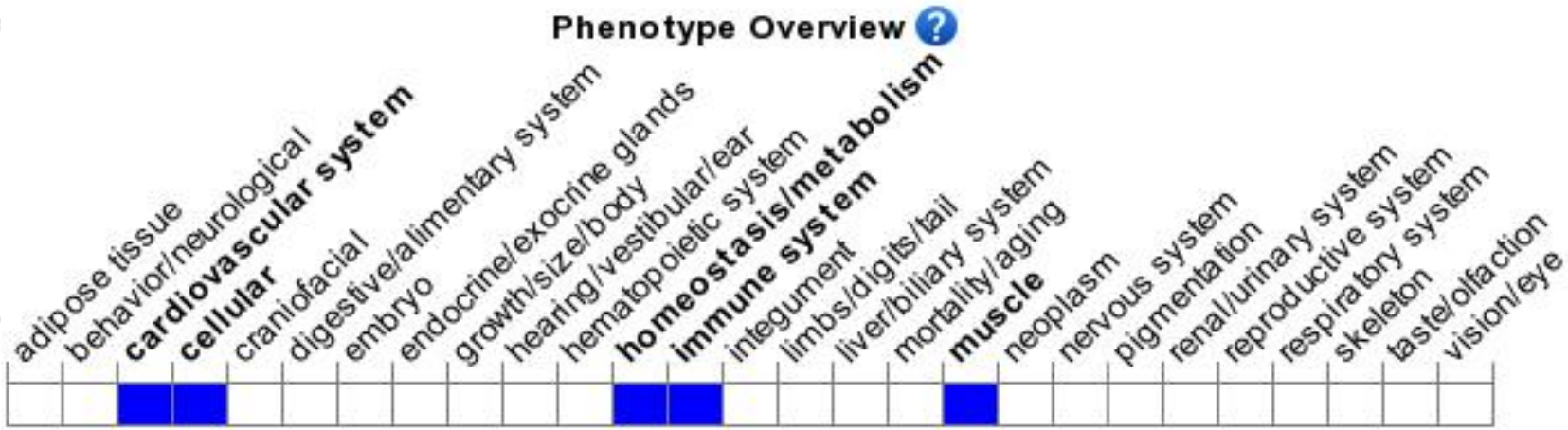
Genomic location distribution



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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