Map2k3 Cas9-CKO Strategy

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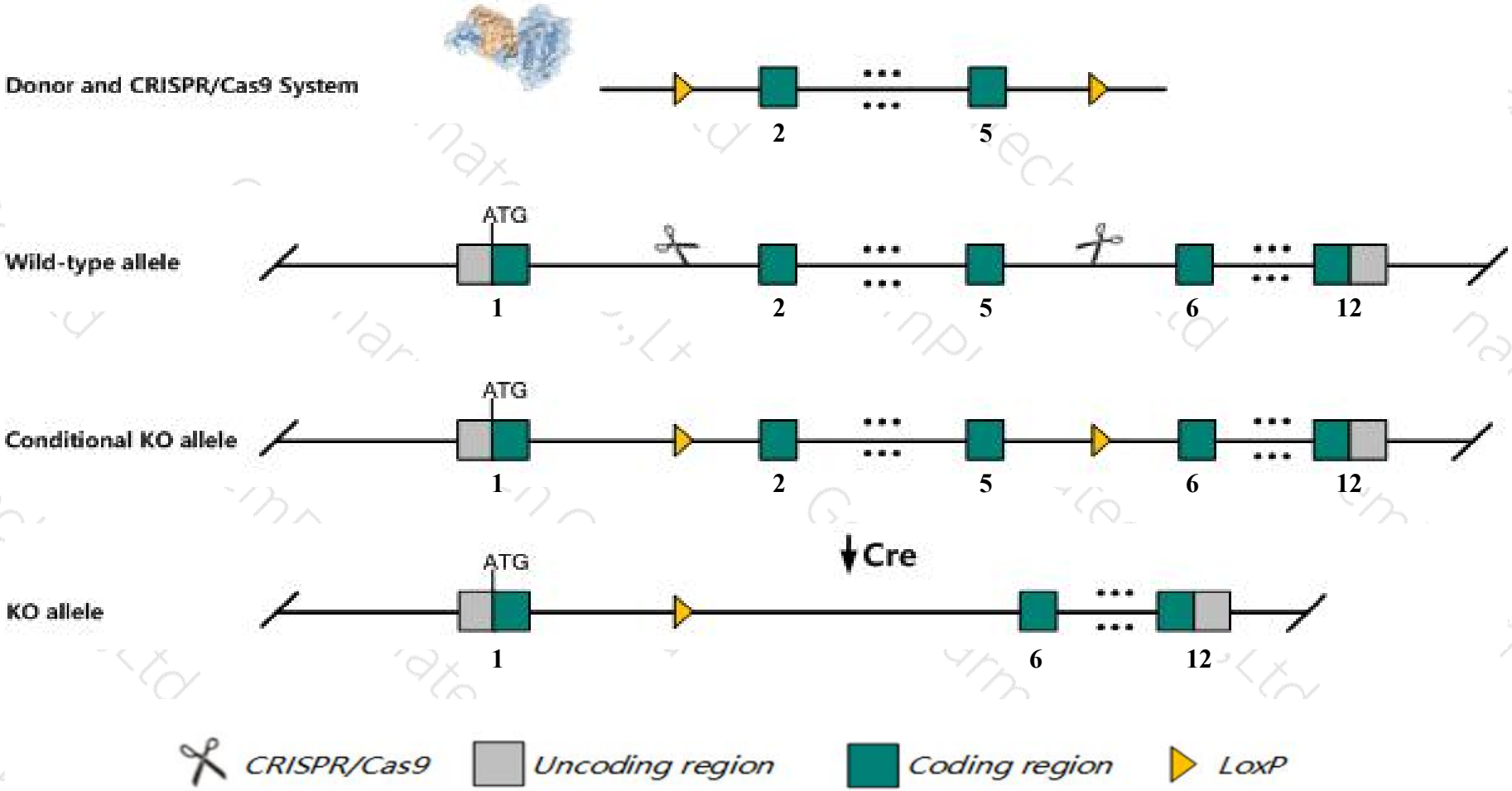
Project Overview

Project Name	***Map2k3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Map2k3* gene. The schematic diagram is as follows:



Technical routes

- The *Map2k3* gene has 6 transcripts. According to the structure of *Map2k3* gene, exon2-exon5 of *Map2k3-201* (ENSMUST00000019076.9) transcript is recommended as the knockout region.The region contains 350bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Map2k3* 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 disruptions in this gene are viable and fertile but display abnormalities in cytokine production.

- Transcript 204 is unaffected.

- The *Map2k3* gene is located on the Chr11. 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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Map2k3 mitogen-activated protein kinase kinase 3 [*Mus musculus* (house mouse)]

Gene ID: 26397, updated on 12-Aug-2019

Summary

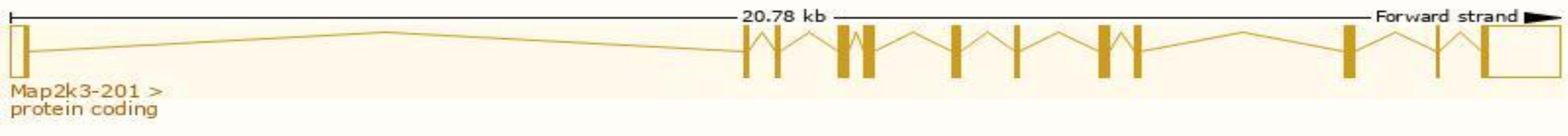
Official Symbol	Map2k3 provided by MGI
Official Full Name	mitogen-activated protein kinase kinase 3 provided by MGI
Primary source	MGI:MGI:1346868
See related	Ensembl:ENSMUSG00000018932
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	MEK3; MKK3; MKK3b; Prkmk3; MAPKK 3; AW212142
Expression	Ubiquitous expression in large intestine adult (RPKM 35.9), small intestine adult (RPKM 30.3) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

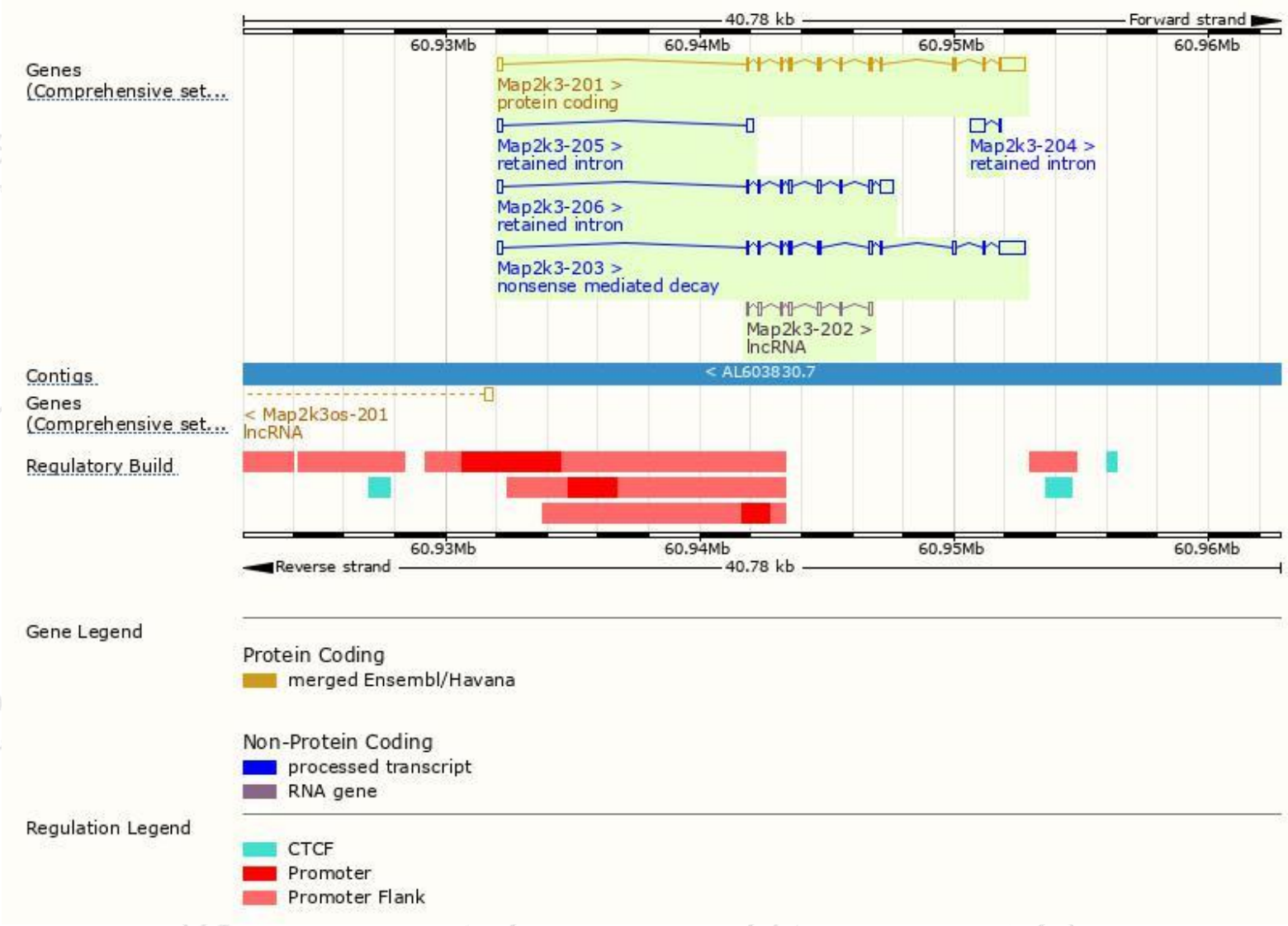
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Map2k3-201	ENSMUST00000019076.9	2198	347aa	Protein coding	CCDS24804	O09110 Q5SWN9	TSL:1 GENCODE basic APPRIS P1
Map2k3-203	ENSMUST00000130269.1	2096	173aa	Nonsense mediated decay	-	A0A0R4J1Q6	TSL:1
Map2k3-206	ENSMUST00000145828.7	1346	No protein	Retained intron	-	-	TSL:1
Map2k3-204	ENSMUST00000137609.1	600	No protein	Retained intron	-	-	TSL:2
Map2k3-205	ENSMUST00000137739.1	455	No protein	Retained intron	-	-	TSL:2
Map2k3-202	ENSMUST00000126043.1	694	No protein	lncRNA	-	-	TSL:5

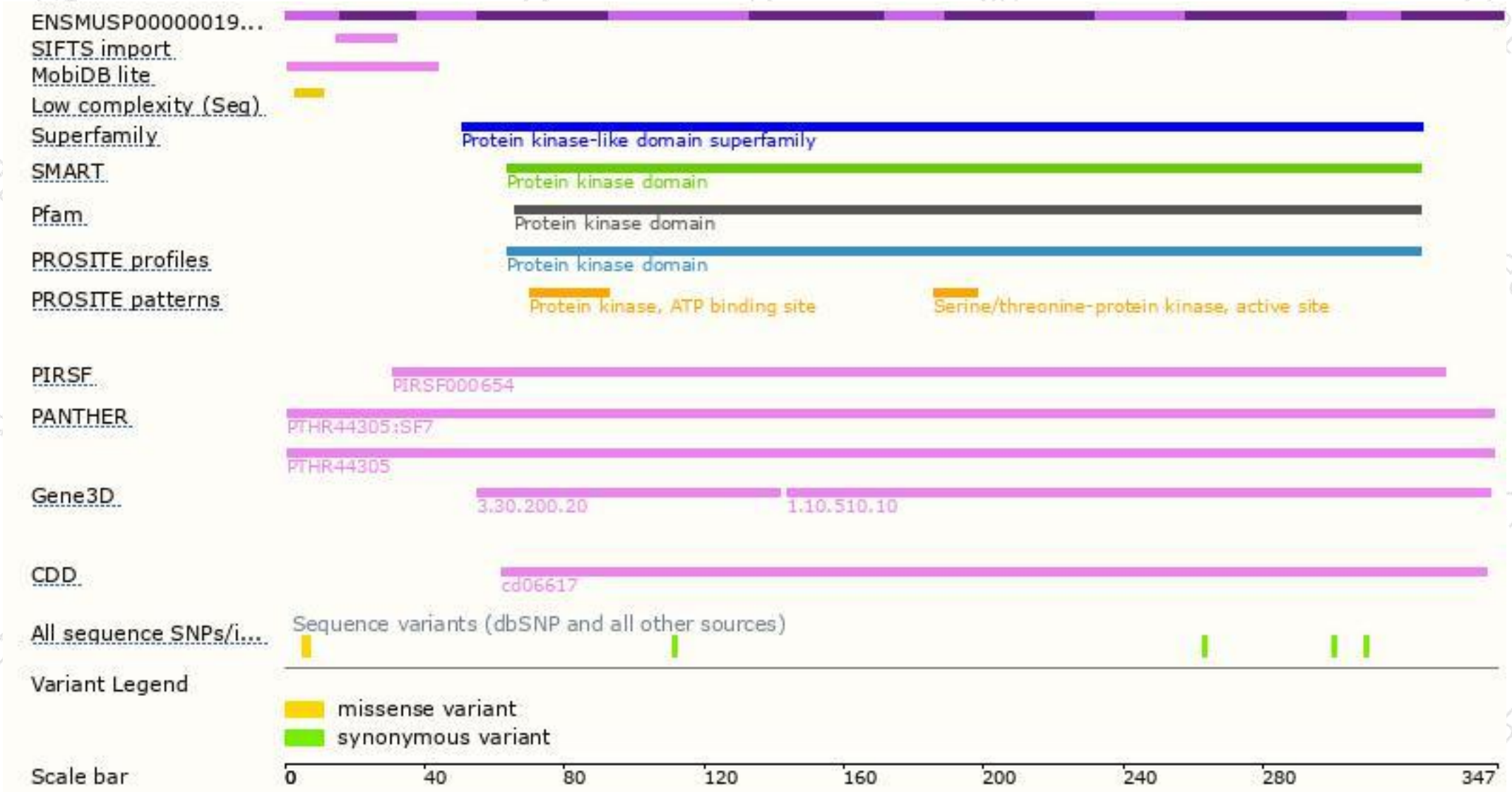
The strategy is based on the design of *Map2k3-201* transcript,The transcription is shown below



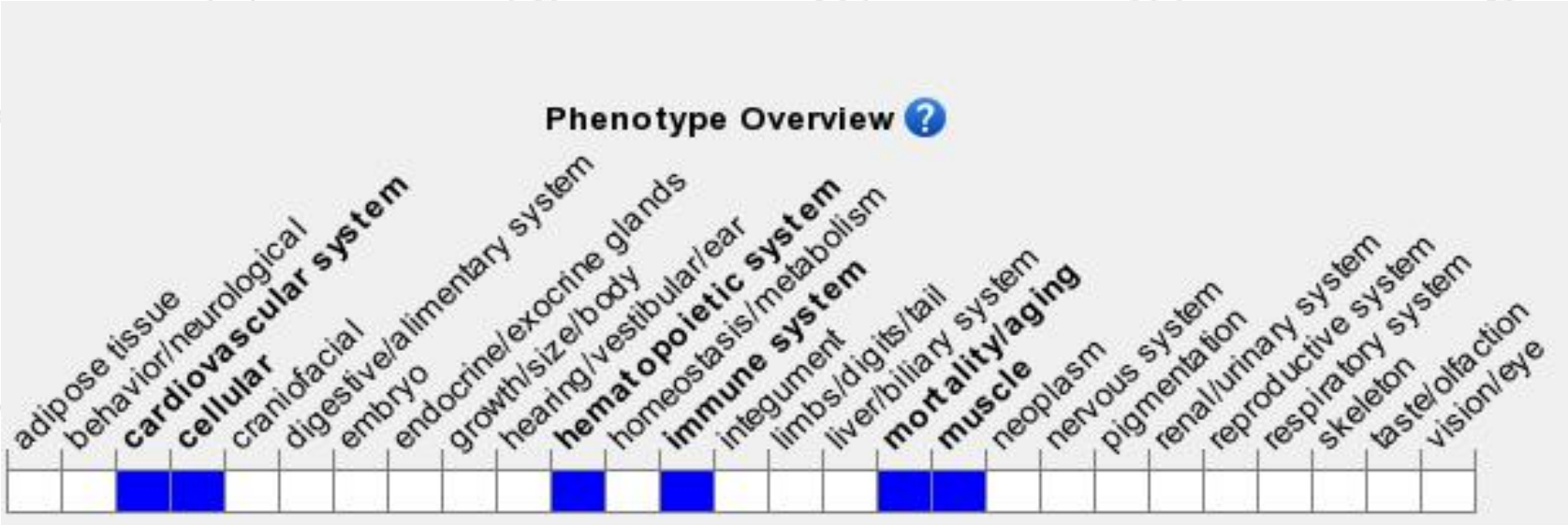
Genomic location distribution



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/).

According to the existing MGI data,Mice homozygous for disruptions in this gene are viable and fertile but display abnormalities in cytokine production.

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

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