

Map2k6 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Map2k6

Project type

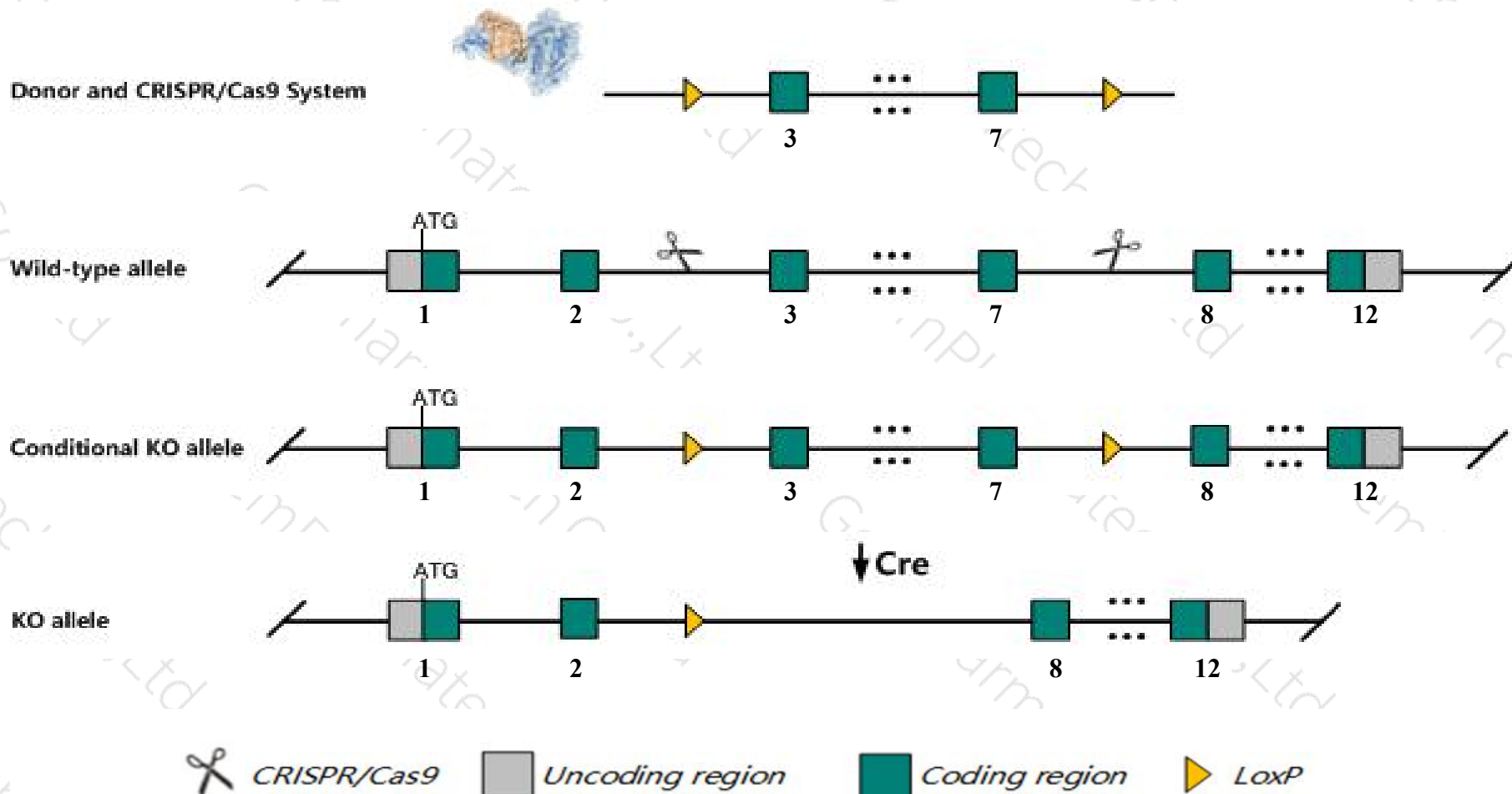
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Map2k6* gene. The schematic diagram is as follows:



Technical routes

- The *Map2k6* gene has 5 transcripts. According to the structure of *Map2k6* gene, exon3-exon7 of *Map2k6-201* (ENSMUST00000020949.11) transcript is recommended as the knockout region. The region contains 452bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Map2k6* 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.

- According to the existing MGI data, mice homozygous for null targeted mutations of this gene are viable, grow normally and have no gross physical or histologic abnormalities.
- The *Map2k6* 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)

Map2k6 mitogen-activated protein kinase kinase 6 [*Mus musculus* (house mouse)]

Gene ID: 26399, updated on 24-Oct-2019

Summary



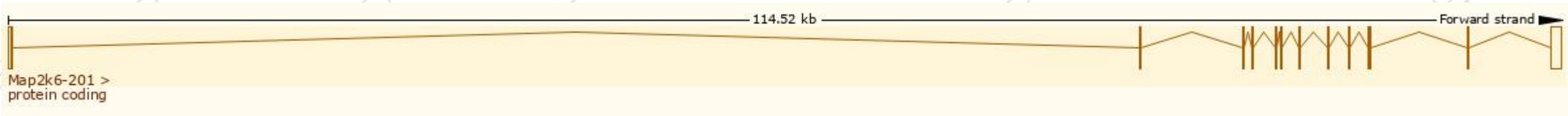
Official Symbol	Map2k6 provided by MGI
Official Full Name	mitogen-activated protein kinase kinase 6 provided by MGI
Primary source	MGI:MGI:1346870
See related	Ensembl:ENSMUSG00000020623
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	MEK6; MKK6; MAPKK6; Prkmk6; SAPKK3; MAPKK 6
Expression	Broad expression in CNS E11.5 (RPKM 3.9), CNS E14 (RPKM 3.3) and 23 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

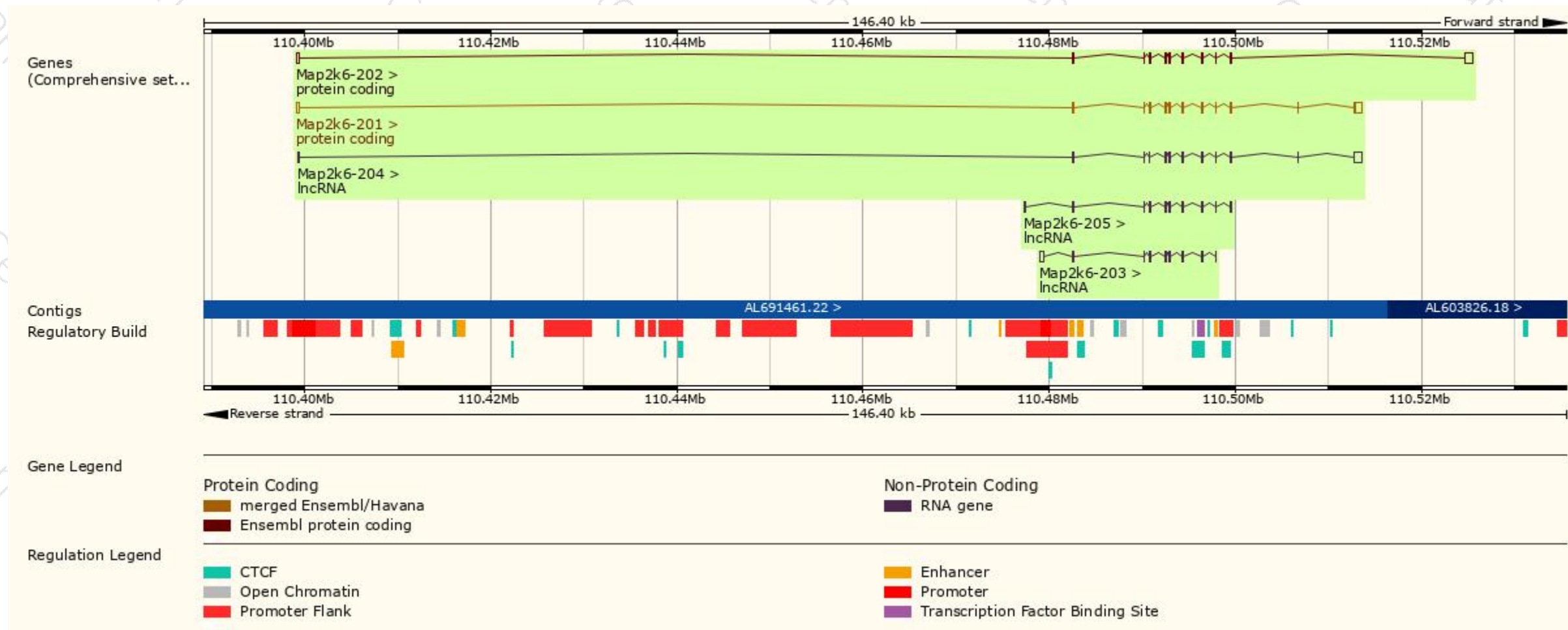
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Map2k6-201	ENSMUST00000020949.11	2068	334aa	Protein coding	CCDS25592	P70236 Q543Z5	TSL:1 GENCODE basic APPRIS P1
Map2k6-202	ENSMUST00000100260.1	2088	293aa	Protein coding	-	A2AGS2	TSL:1 GENCODE basic
Map2k6-204	ENSMUST00000146084.7	1869	No protein	lncRNA	-	-	TSL:1
Map2k6-203	ENSMUST00000133920.1	1074	No protein	lncRNA	-	-	TSL:1
Map2k6-205	ENSMUST00000146540.7	925	No protein	lncRNA	-	-	TSL:3

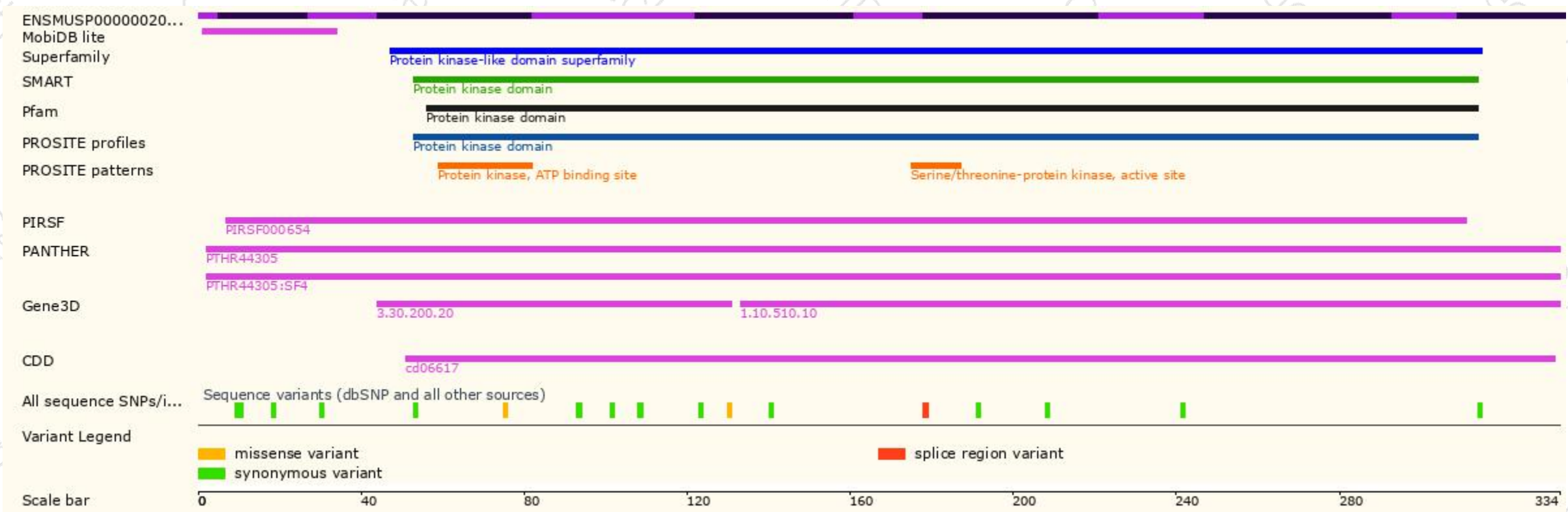
The strategy is based on the design of *Map2k6-201* transcript, the transcription is shown below:



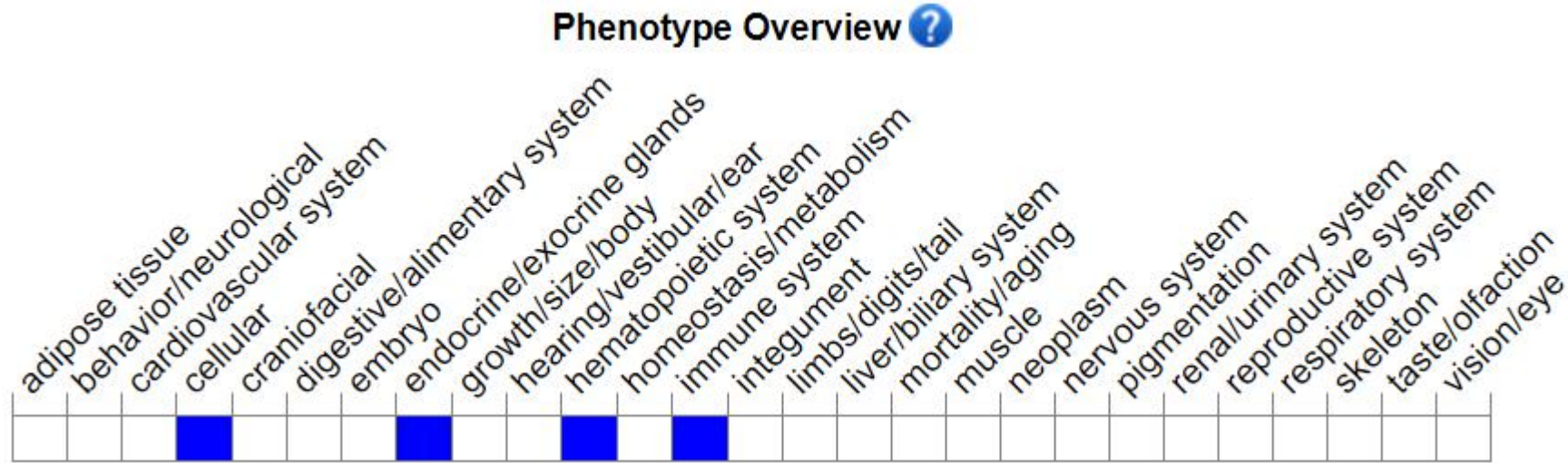
Genomic location distribution



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 null targeted mutations of this gene are viable, grow normally and have no gross physical or histologic abnormalities.

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

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