Khdrbs1 Cas9-CKO Strategy

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Design Date: 2019-9-11
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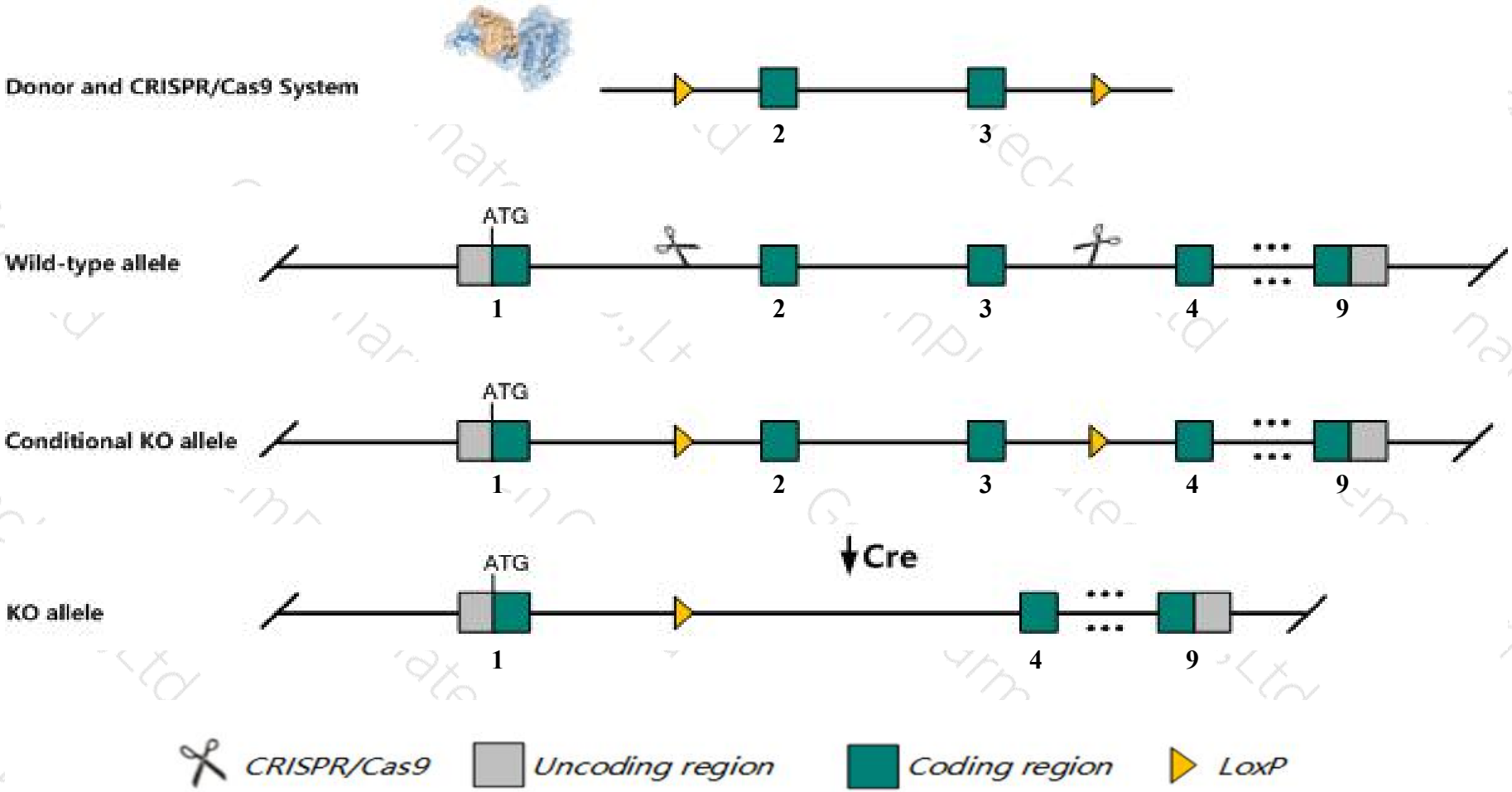
Project Overview

Project Name	***Khdrbs1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Khdrbs1* gene. The schematic diagram is as follows:



Technical routes

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- The *Khdrbs1* gene has 4 transcripts. According to the structure of *Khdrbs1* gene, exon2-exon3 of *Khdrbs1-201* (ENSMUST00000066257.5) transcript is recommended as the knockout region.The region contains 242bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Khdrbs1* 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,Homozygous mutation of this gene protects mice from age-related bone loss and the formation of fatty bone marrow. Males are infertile and females do not care for young. Some die at birth.

- The *Khdrbs1* gene is located on the Chr4. 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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Khdrbs1 KH domain containing, RNA binding, signal transduction associated 1 [Mus musculus (house mouse)]

Gene ID: 20218, updated on 31-Jan-2019

Summary

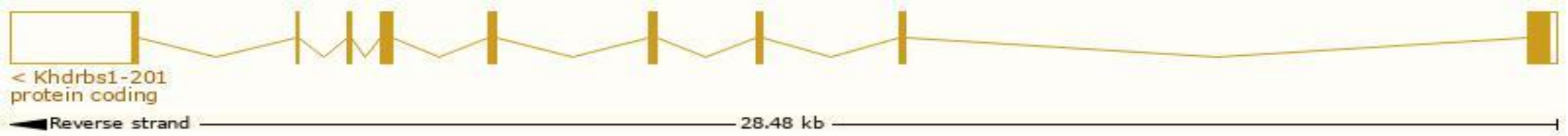
Official Symbol	Khdrbs1 provided by MGI
Official Full Name	KH domain containing, RNA binding, signal transduction associated 1 provided by MGI
Primary source	MGI:MGI:893579
See related	Ensembl:ENSMUSG00000028790
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Sam68, p62, p68
Expression	Ubiquitous expression in CNS E11.5 (RPKM 11.4), thymus adult (RPKM 9.8) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

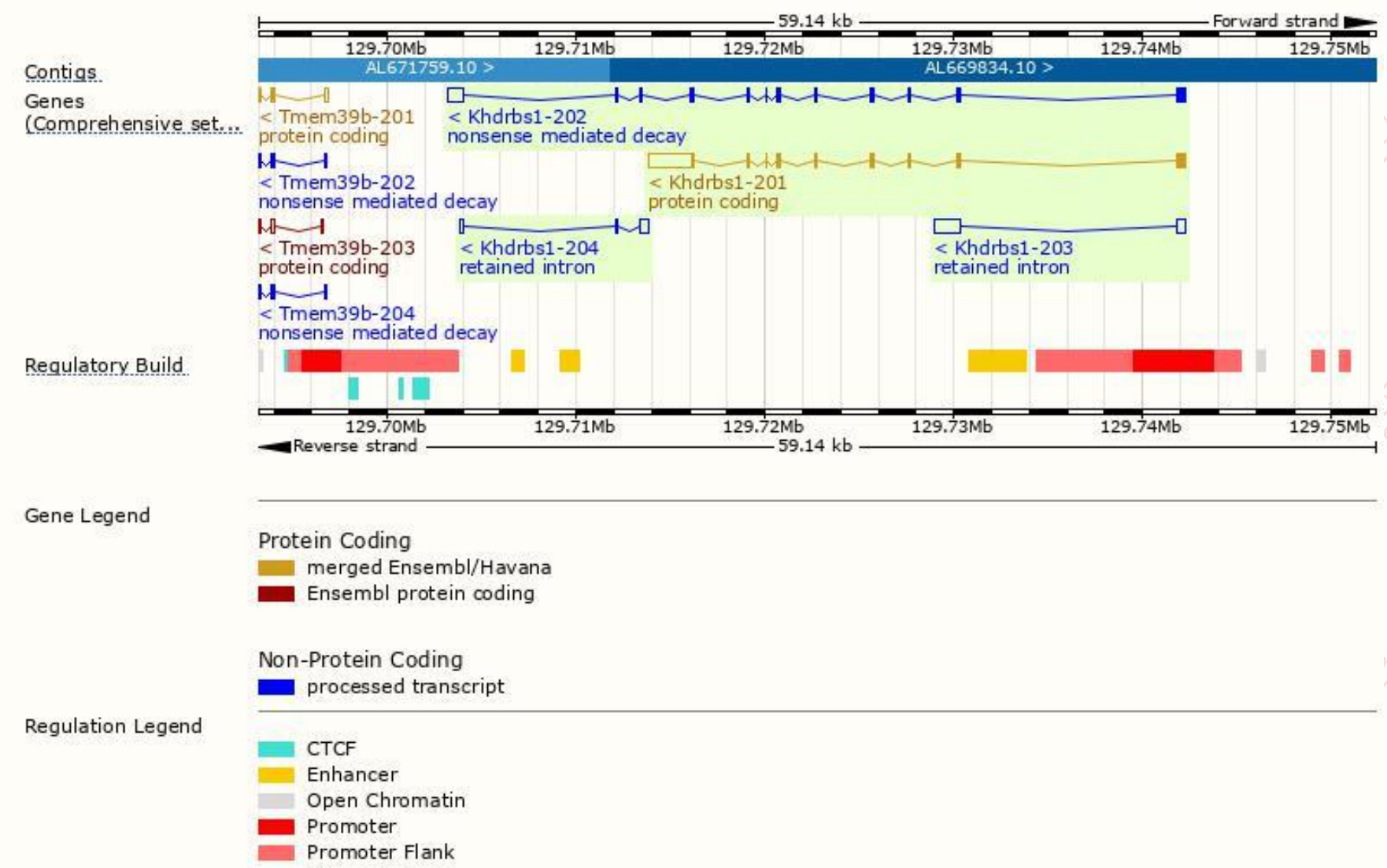
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Khdrbs1-201	ENSMUST00000066257.5	3738	443aa	Protein coding	CCDS18703	Q60749	TSL:1 GENCODE basic APPRIS P1
Khdrbs1-202	ENSMUST00000129342.7	2600	443aa	Nonsense mediated decay	-	Q60749	TSL:1
Khdrbs1-203	ENSMUST00000139281.1	1916	No protein	Retained intron	-	-	TSL:1
Khdrbs1-204	ENSMUST00000139936.1	748	No protein	Retained intron	-	-	TSL:2

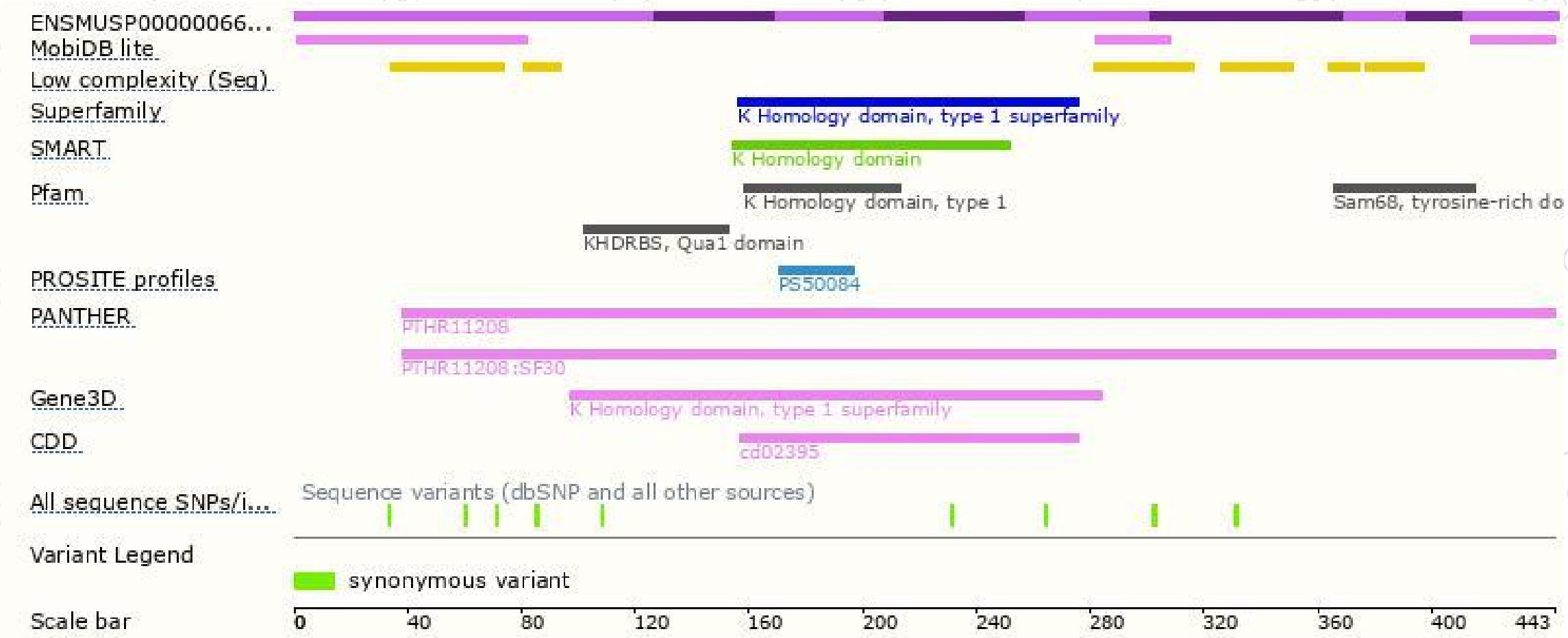
The strategy is based on the design of *Khdrbs1-201* transcript,The transcription is shown below



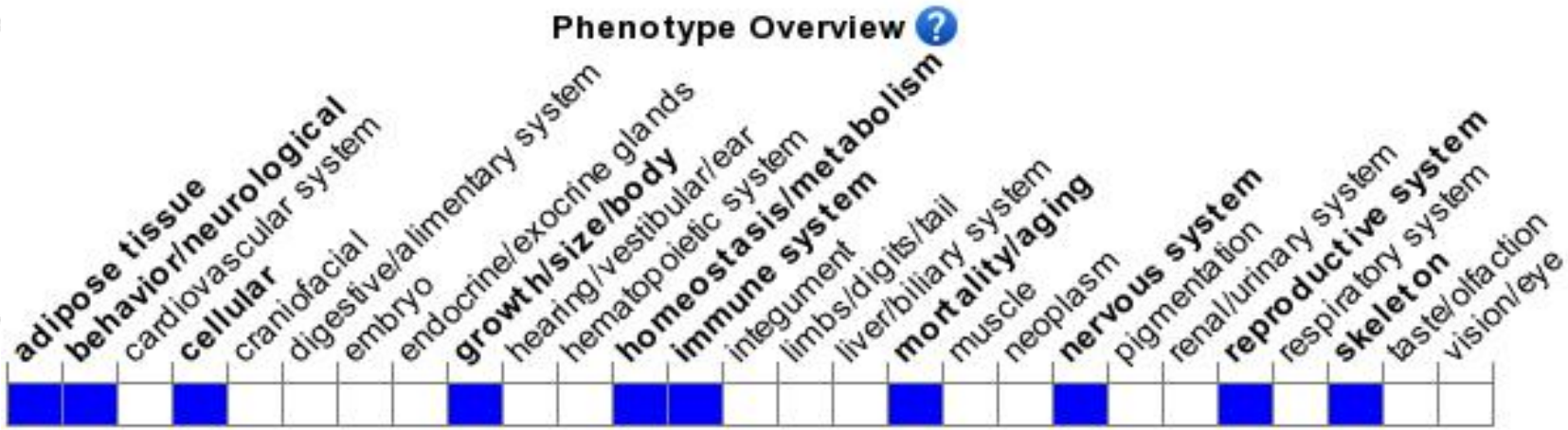
Genomic location distribution



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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