Bag1 Cas9-CKO *Strategy*

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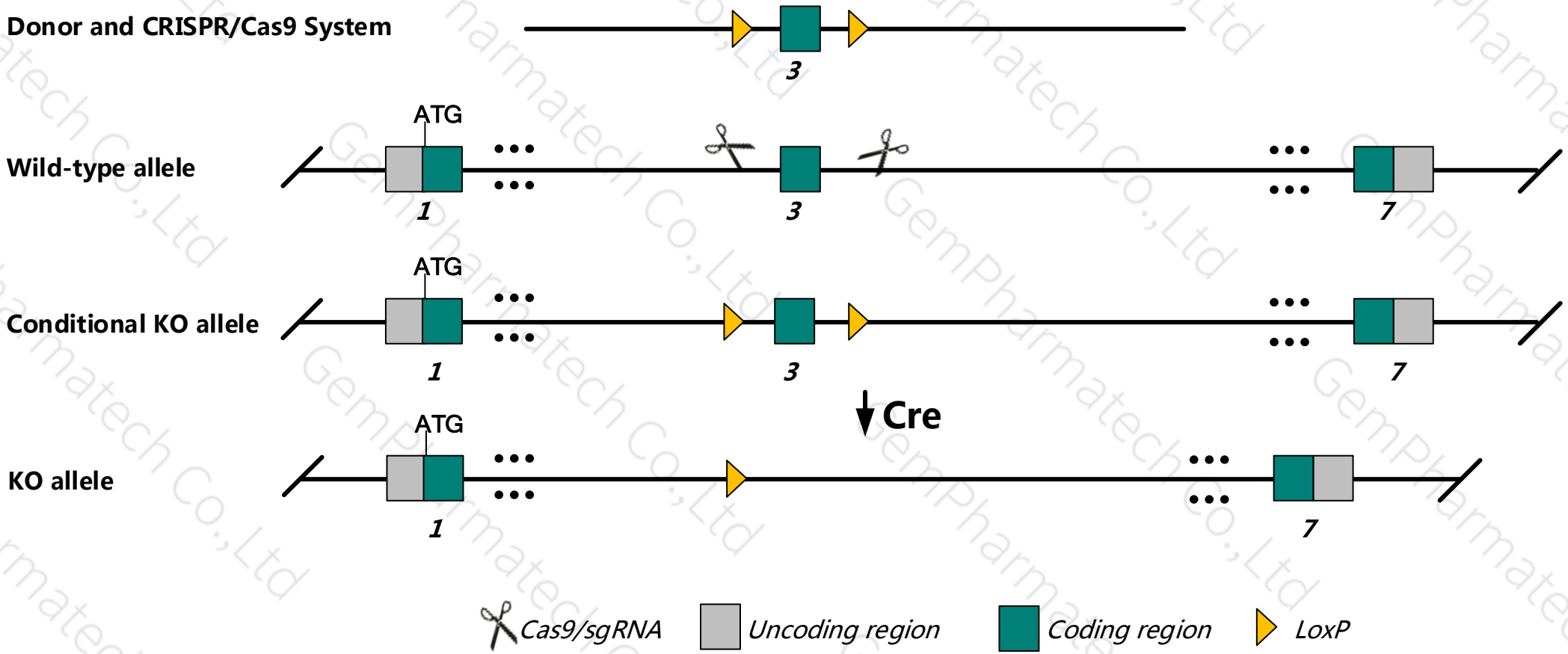
Project Overview

Project Name	*Bag1*
Project type	Cas9-CKO
Animal background	C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the Bag1 gene. The schematic diagram is as follows:



Technical routes

- The Bag1 gene has 4 transcripts.According to the structure of Bag1 gene, exon3 of Bag1-202 transcript is recommended as the knockout region.The region contains 83bp coding seqence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Bag1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA 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 was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues or cell types.

Notice

- According to the existing MGI data，Homozygous null mice display embryonic lethality and liver hypoplasia.

- The *Bag1* 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information （NCBI）

Bag1 BCL2-associated athanogene 1 [*Mus musculus* (house mouse)]

Gene ID: 12017, updated on 31-Jan-2019

Summary

Official Symbol	Bag1 provided by MGI
Official Full Name	BCL2-associated athanogene 1 provided by MGI
Primary source	MGI:MGI:108047
See related	Ensembl:ENSMUSG00000028416
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	BAG-1; Rap46
Summary	The oncogene Bcl2 encodes a membrane protein that blocks a step in a pathway leading to apoptosis or programmed cell death. The protein encoded by this gene binds to Bcl2 protein and is referred to as Bcl2-associated athanogene. It enhances the anti-apoptotic effects of Bcl2 and represents a link between growth factor receptors and anti-apoptotic mechanisms. At least two protein isoforms are encoded by this mRNA through the use of a non-AUG (CUG) start site and an alternative, downstream, AUG translation initiation site. [provided by RefSeq, Jul 2008]
Expression	Ubiquitous expression in stomach adult (RPKM 201.2), adrenal adult (RPKM 182.6) and 28 other tissues See more
Orthologs	human all

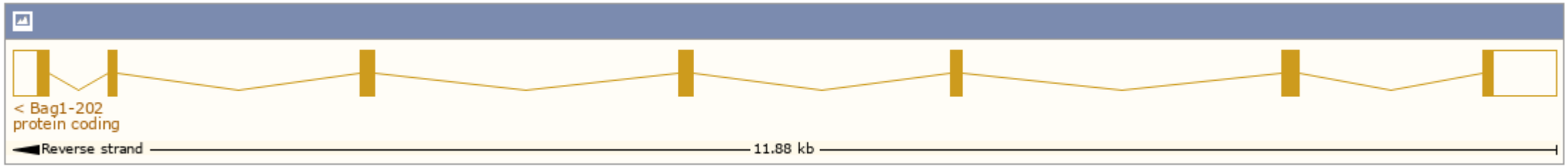
Transcript information（Ensembl）

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

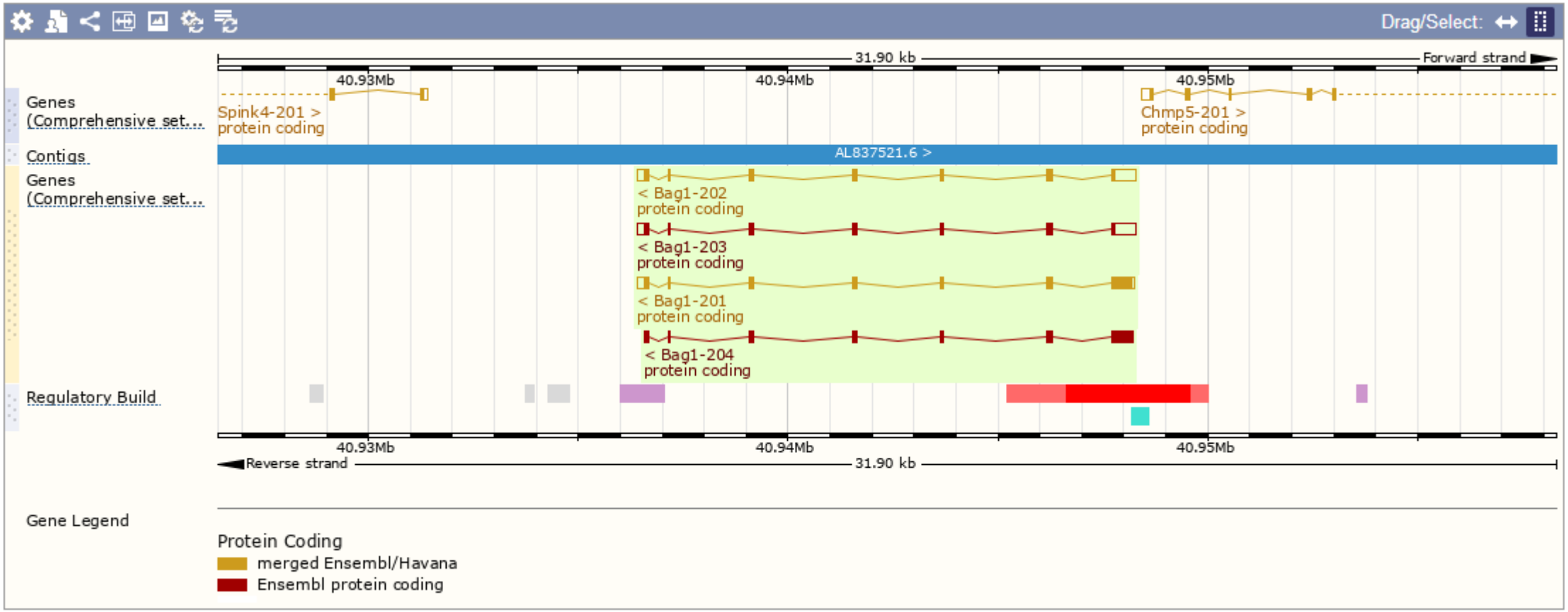
Show/hide columns (1 hidden) Filter

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bag1-203	ENSMUST00000191273.6	1348	219aa	Protein coding	CCDS51139	Q60739	TSL:1 GENCODE basic APPRIS ALT2
Bag1-202	ENSMUST00000108089.7	1336	219aa	Protein coding	CCDS51139	Q60739	TSL:1 GENCODE basic APPRIS ALT2
Bag1-204	ENSMUST00000215842.1	1068	355aa	Protein coding	CCDS38713	A0A1L1SRT0	TSL:1 GENCODE basic APPRIS P3
Bag1-201	ENSMUST00000030125.4	1295	355aa	Protein coding	-	F6TCF9	TSL:1 GENCODE basic APPRIS ALT2

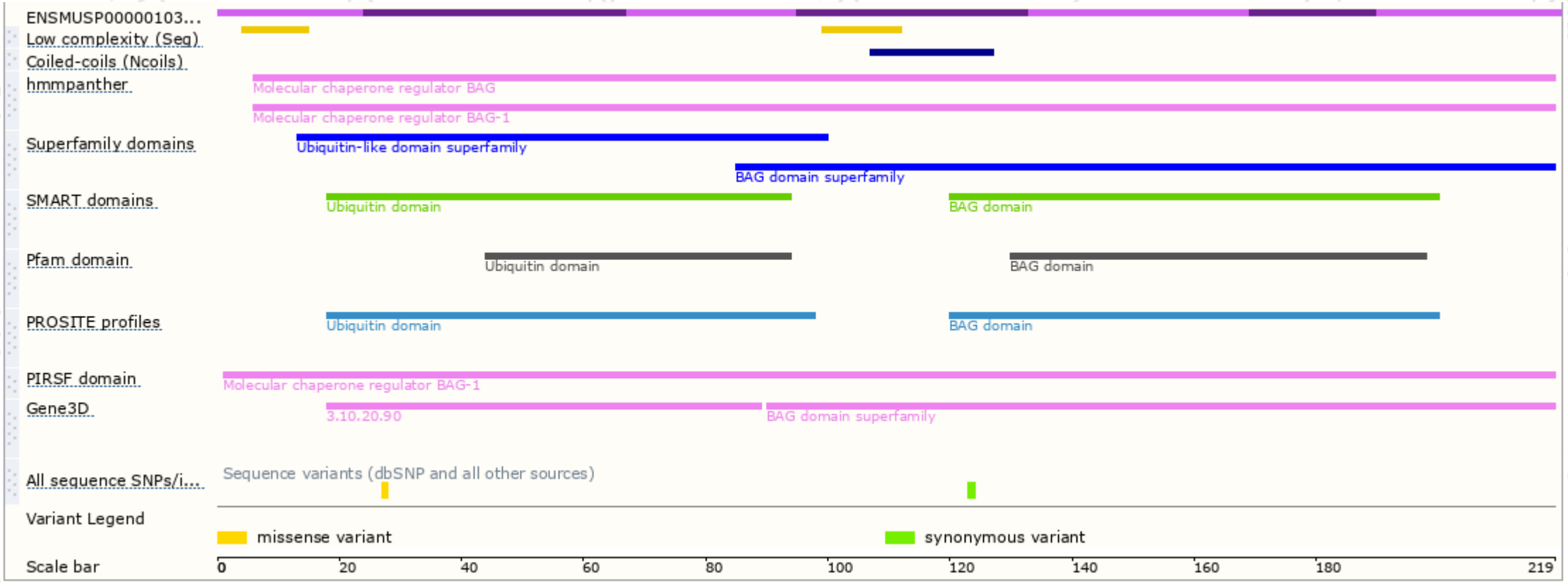
The strategy is based on the design of *Bag1-202* transcript,The transcription is shown below



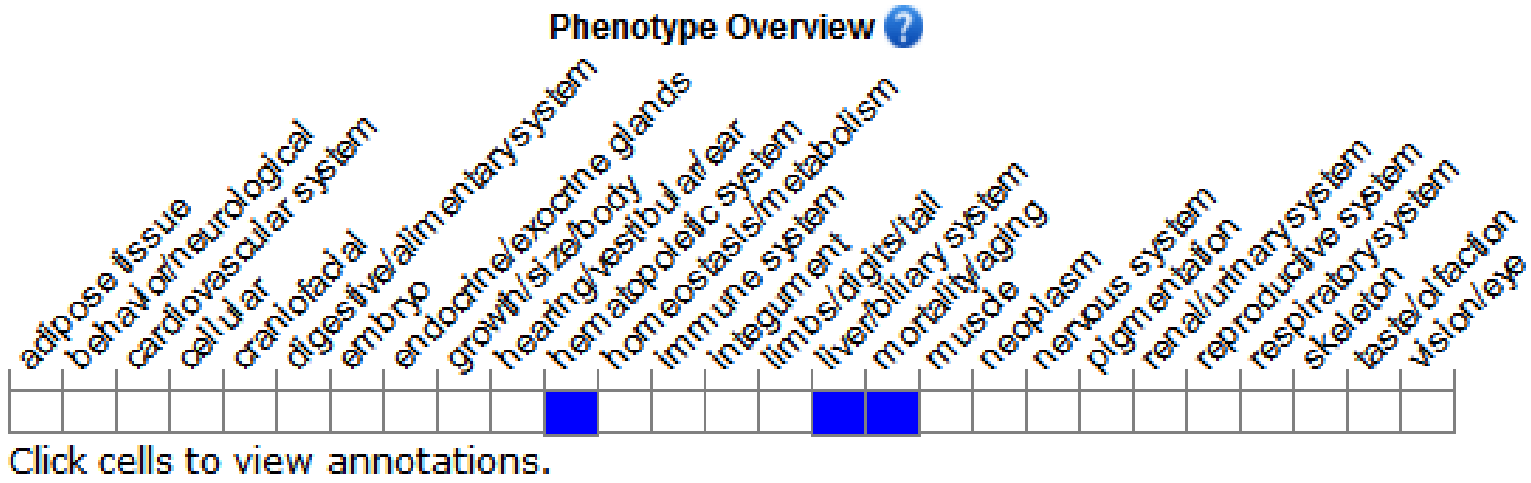
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



According to the existing MGI data,Homozygous null mice display embryonic lethality and liver hypoplasia.

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

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