

Zbp1 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Zbp1

Project type

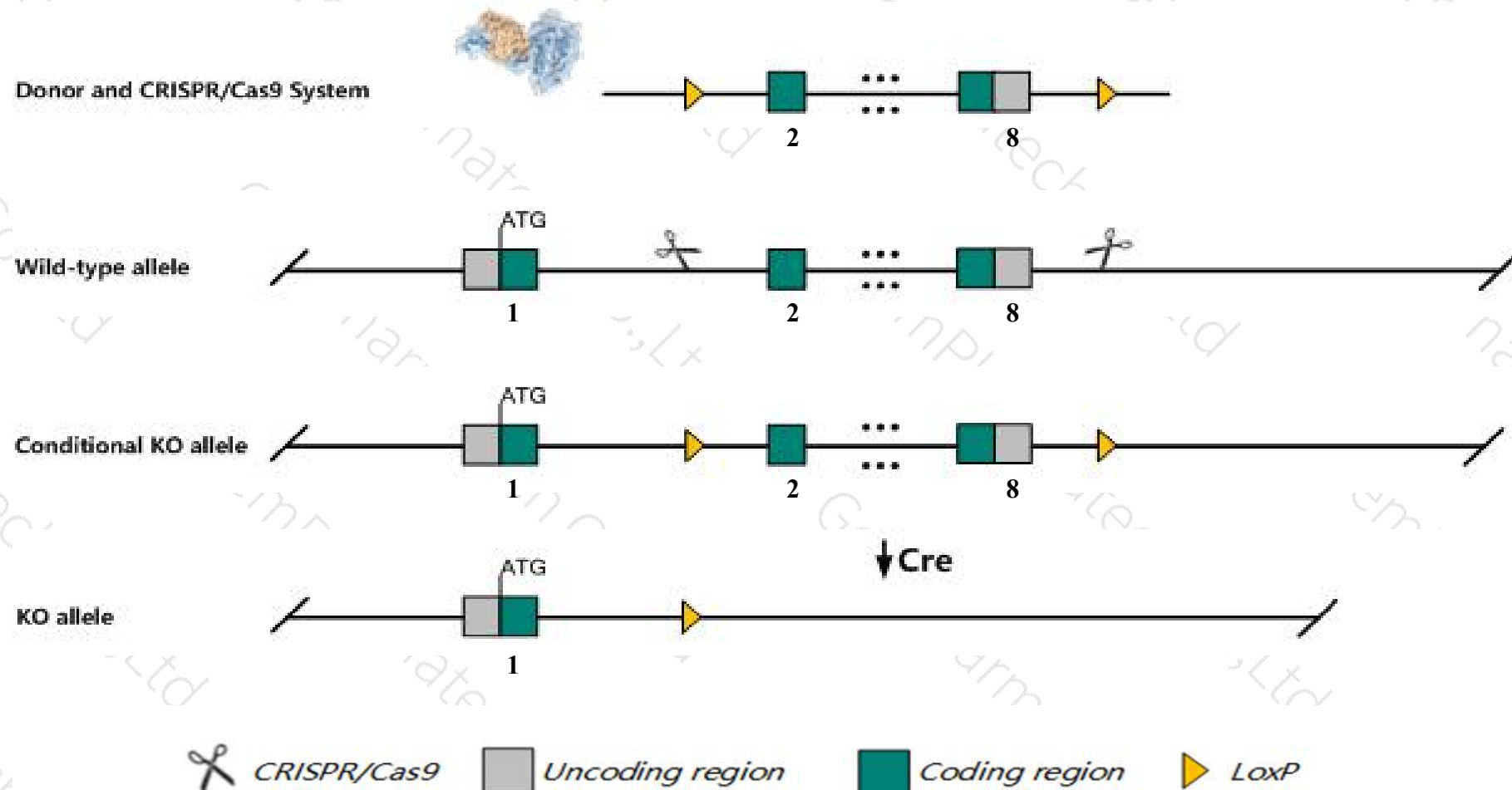
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zbp1* gene. The schematic diagram is as follows:



- The *Zbp1* gene has 3 transcripts. According to the structure of *Zbp1* gene, exon2-exon8 of *Zbp1-201* (ENSMUST00000029018.13) transcript is recommended as the knockout region. The region contains 1202bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Zbp1* 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 a knock-out allele display normal innate immune activation by double-stranded B-form DNA (B-DNA) as well as normal adaptive immune responses to DNA vaccination.
- The *Zbp1* gene is located on the Chr2. 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)

Zbp1 Z-DNA binding protein 1 [Mus musculus (house mouse)]

Gene ID: 58203, updated on 19-Mar-2019

Summary



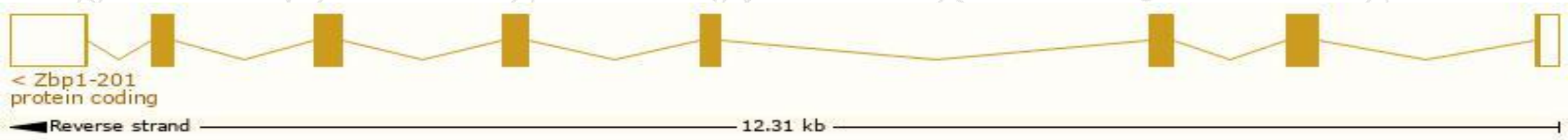
Official Symbol	Zbp1 provided by MGI
Official Full Name	Z-DNA binding protein 1 provided by MGI
Primary source	MGI:MGI:1927449
See related	Ensembl:ENSMUSG00000027514
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2010010H03Rik, Dai, Dlm1, mZaDLM
Expression	Biased expression in large intestine adult (RPKM 22.2), thymus adult (RPKM 15.0) and 13 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

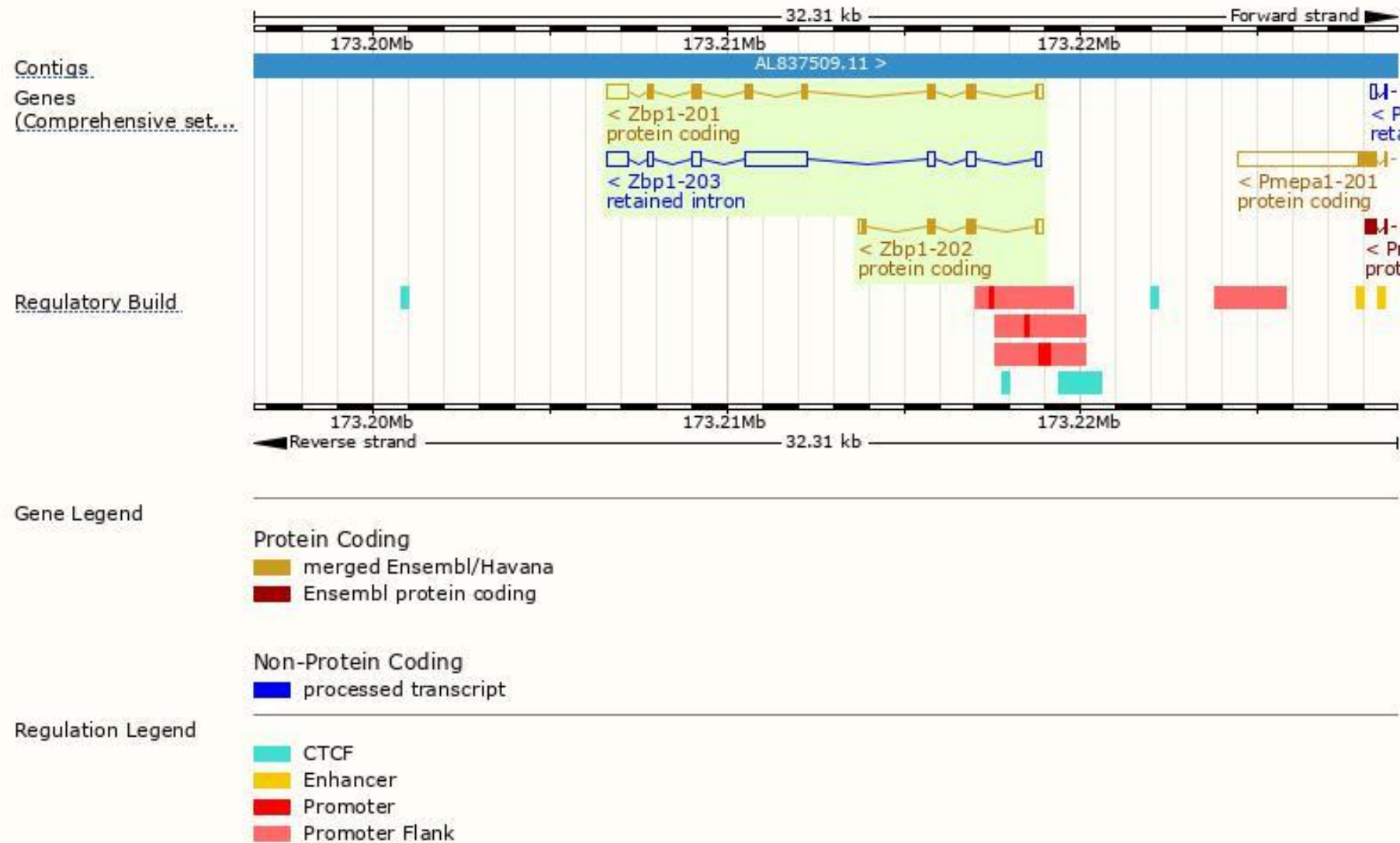
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zbp1-201	ENSMUST00000029018.13	1989	411aa	Protein coding	CCDS17142	A2APF7	TSL:1 GENCODE basic APPRIS P1
Zbp1-202	ENSMUST00000109116.2	770	187aa	Protein coding	CCDS50813	Q9QY24	TSL:1 GENCODE basic
Zbp1-203	ENSMUST00000146802.1	3325	No protein	Retained intron	-	-	TSL:1

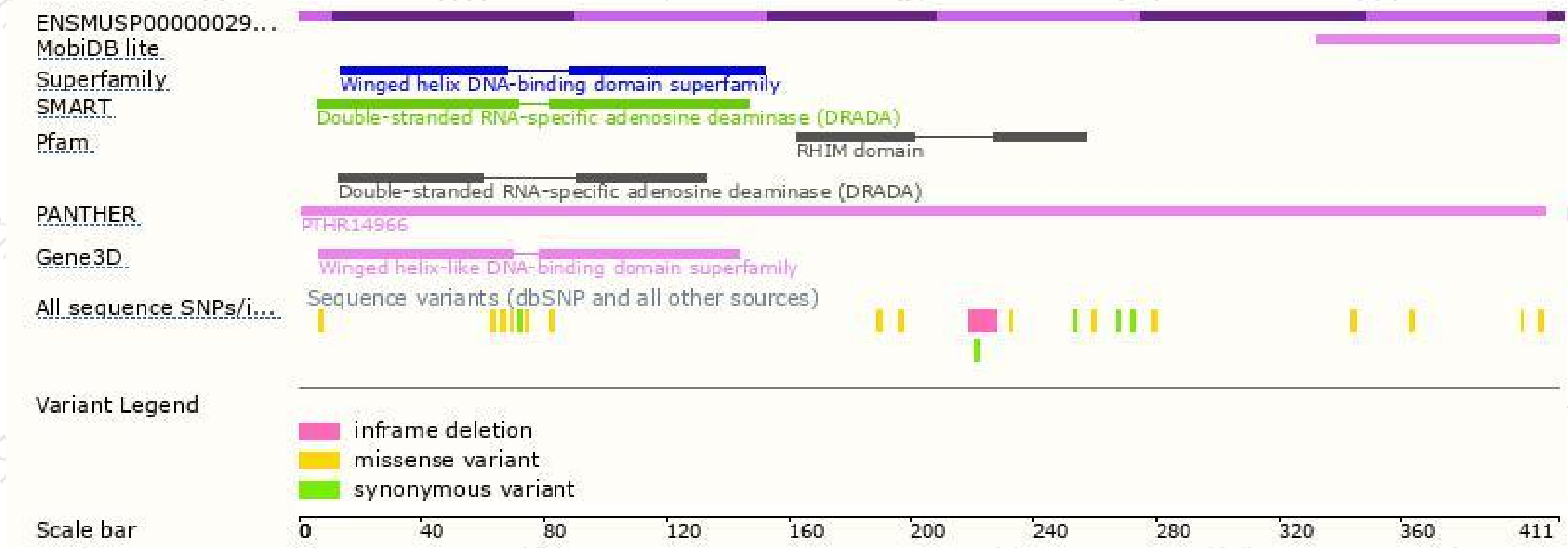
The strategy is based on the design of *Zbp1-201* transcript,The transcription is shown below



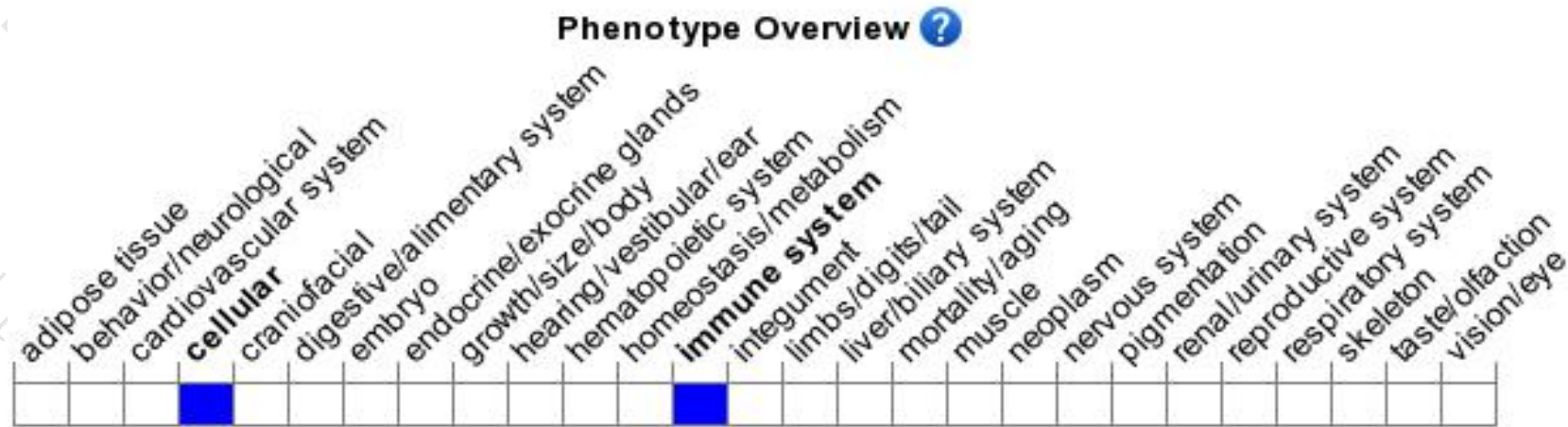
Genomic location distribution



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 a knock-out allele display normal innate immune activation by double-stranded B-form DNA (B-DNA) as well as normal adaptive immune responses to DNA vaccination.

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

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