

Irf3 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Irf3

Project type

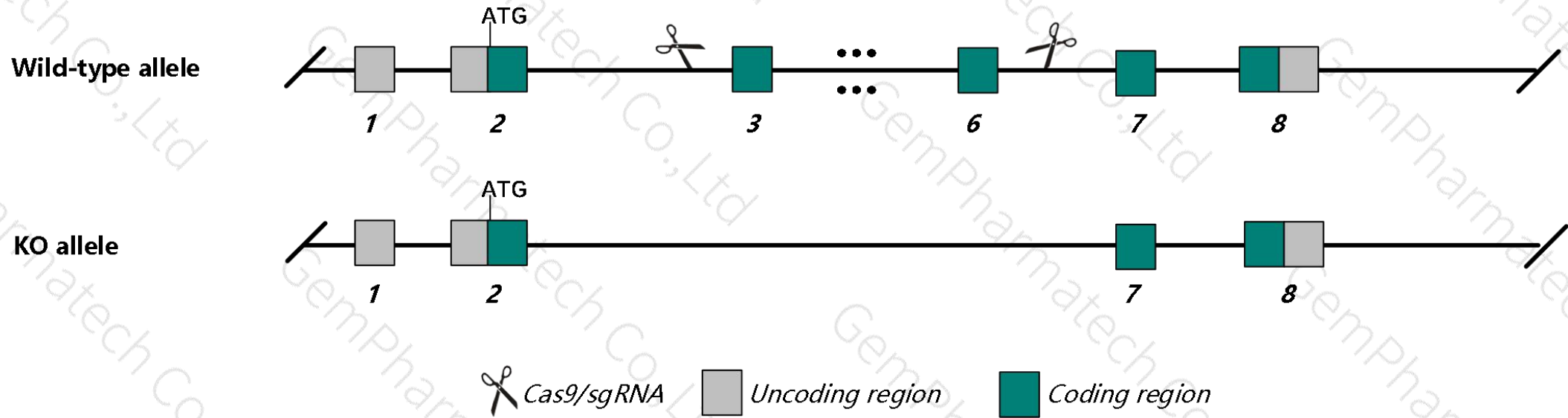
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Irf3* gene. The schematic diagram is as follows:



- The *Irf3* gene has 13 transcripts. According to the structure of *Irf3* gene, exon3-6 of *Irf3-201* (ENSMUST00000003284.15) transcript is recommended as the knockout region. The region contains 796bp of coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Irf3* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, homozygous null mice are more susceptible to viral infection and exhibit lower serum interferon levels in response to viral infection.
- Transcripts 210,212 may not be affected, and the effect on transcripts 203,204,206,211 are unknown.
- The knockout region is near to the N-terminal of *Bcl2l12* gene, this strategy may influence the regulatory function of the N-terminal of *Bcl2l12* gene.
- The *Irf3* gene is located on the Chr7. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Irf3 interferon regulatory factor 3 [*Mus musculus* (house mouse)]

Gene ID: 54131, updated on 26-Nov-2019

Summary

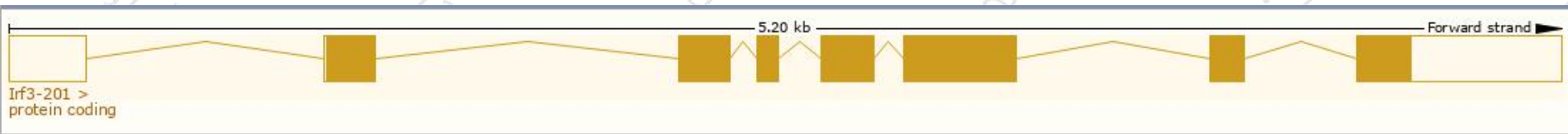
Official Symbol	Irf3 provided by MGI
Official Full Name	interferon regulatory factor 3 provided by MGI
Primary source	MGI:MGI:1859179
See related	Ensembl:ENSMUSG000000003184
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	IRF-3; C920001K05Rik
Expression	Ubiquitous expression in thymus adult (RPKM 26.3), spleen adult (RPKM 21.3) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

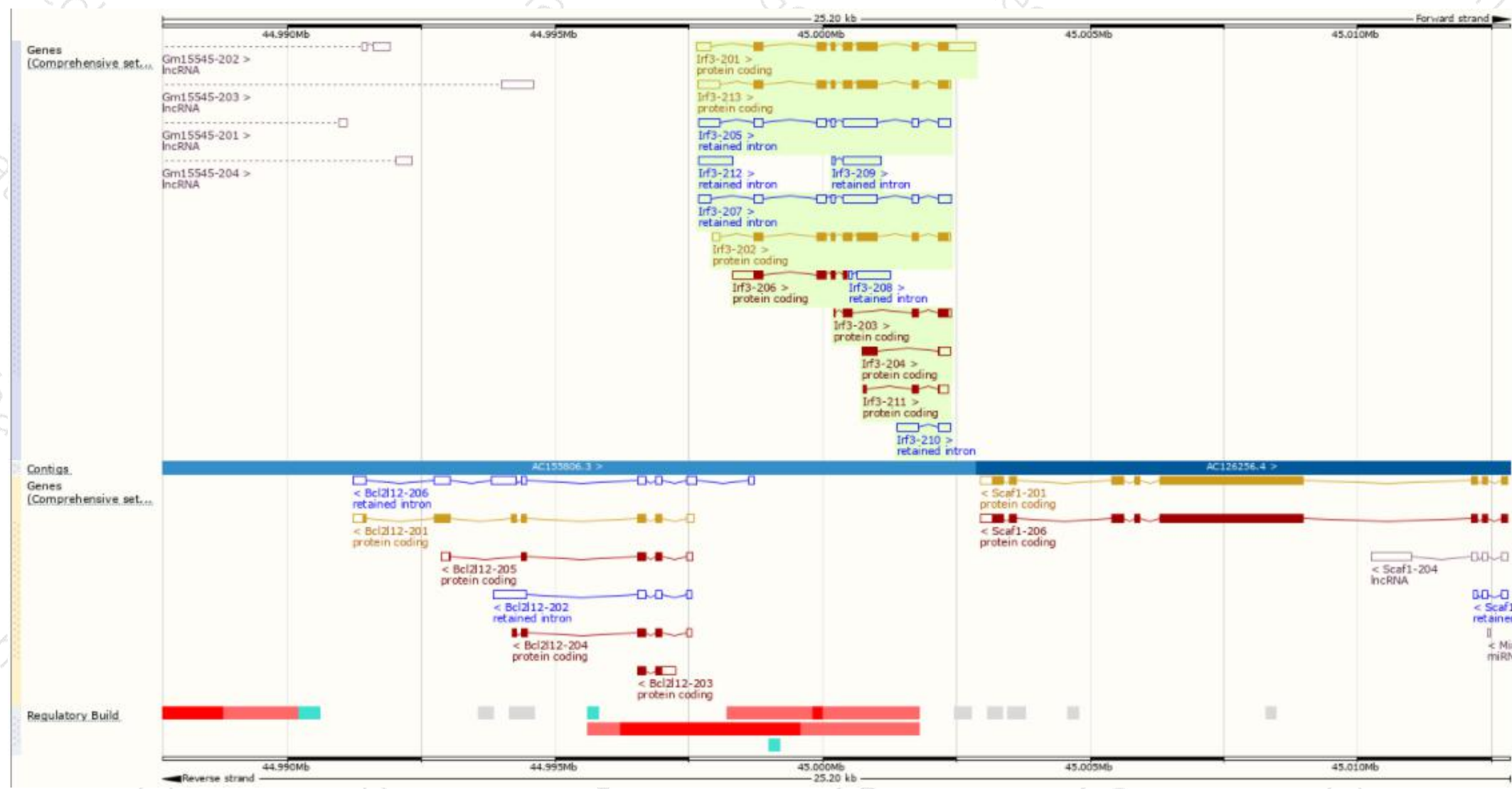
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Irf3-201	ENSMUST00000003284.15	2031	419aa	Protein coding	CCDS21224	P70671 Q3U9K6	TSL:1 GENCODE basic APPRIS P1
Irf3-213	ENSMUST000000209066.1	1712	419aa	Protein coding	CCDS21224	P70671 Q3U9K6	TSL:1 GENCODE basic APPRIS P1
Irf3-202	ENSMUST000000107834.1	1429	419aa	Protein coding	CCDS21224	P70671 Q3U9K6	TSL:1 GENCODE basic APPRIS P1
Irf3-206	ENSMUST000000207521.1	869	160aa	Protein coding	-	A0A140LHE6	CDS 3' incomplete TSL:5
Irf3-203	ENSMUST000000207128.1	537	161aa	Protein coding	-	A0A140LJE8	CDS 5' incomplete TSL:5
Irf3-204	ENSMUST000000207129.1	517	103aa	Protein coding	-	A0A140LJD9	CDS 5' incomplete TSL:2
Irf3-211	ENSMUST000000208958.1	369	68aa	Protein coding	-	A0A140LI96	CDS 5' incomplete TSL:3
Irf3-205	ENSMUST000000207476.1	1797	No protein	Retained intron	-	-	TSL:2
Irf3-207	ENSMUST000000207555.1	1641	No protein	Retained intron	-	-	TSL:2
Irf3-209	ENSMUST000000208767.1	774	No protein	Retained intron	-	-	TSL:3
Irf3-208	ENSMUST000000208143.1	659	No protein	Retained intron	-	-	TSL:2
Irf3-212	ENSMUST000000209006.1	635	No protein	Retained intron	-	-	TSL:NA
Irf3-210	ENSMUST000000208906.1	629	No protein	Retained intron	-	-	TSL:2

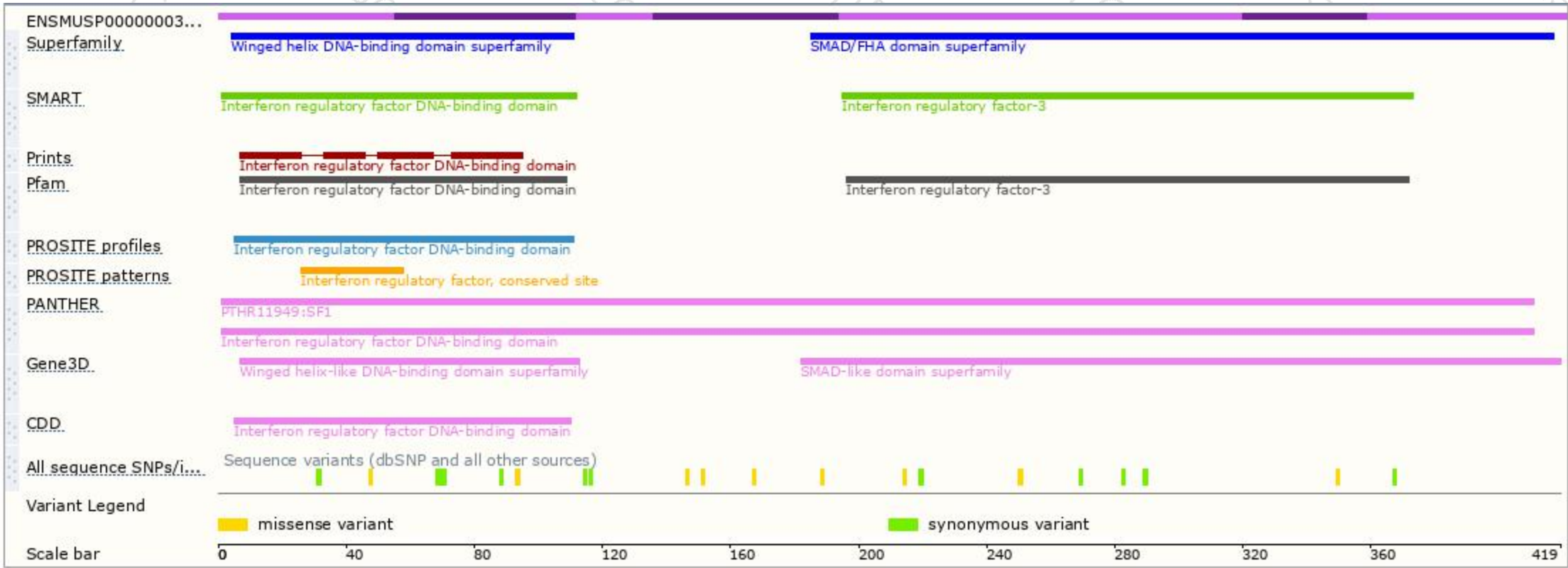
The strategy is based on the design of *Irf3-201* transcript,The transcription is shown below



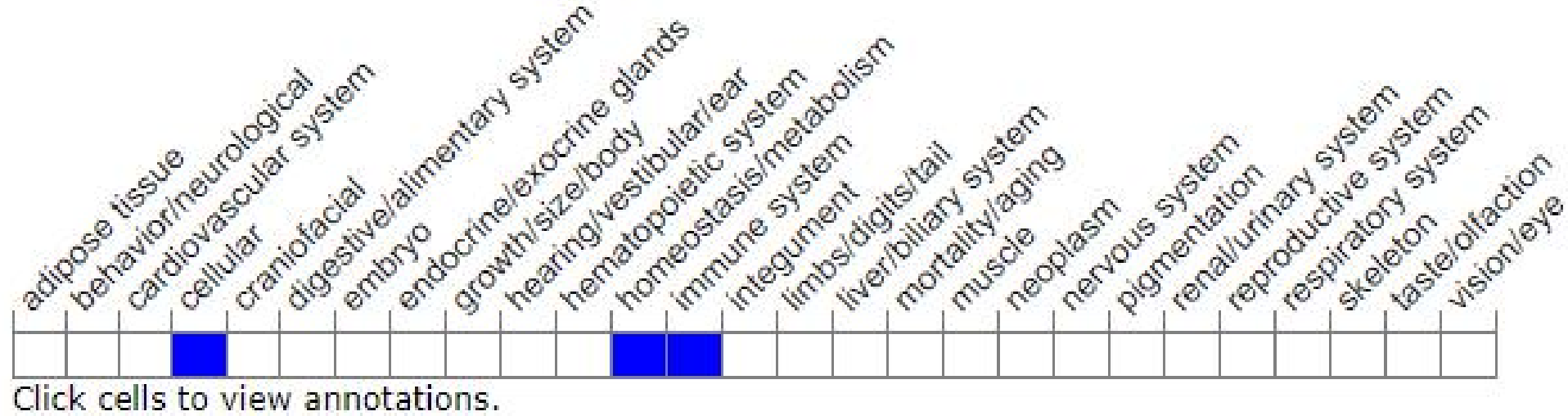
Genomic location distribution



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, homozygous null mice are more susceptible to viral infection and exhibit lower serum interferon levels in response to viral infection.

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

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