

# ***Il16 Cas9-KO Strategy***

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**Reviewer:**

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# Project Overview

**Project Name**

***Il16***

**Project type**

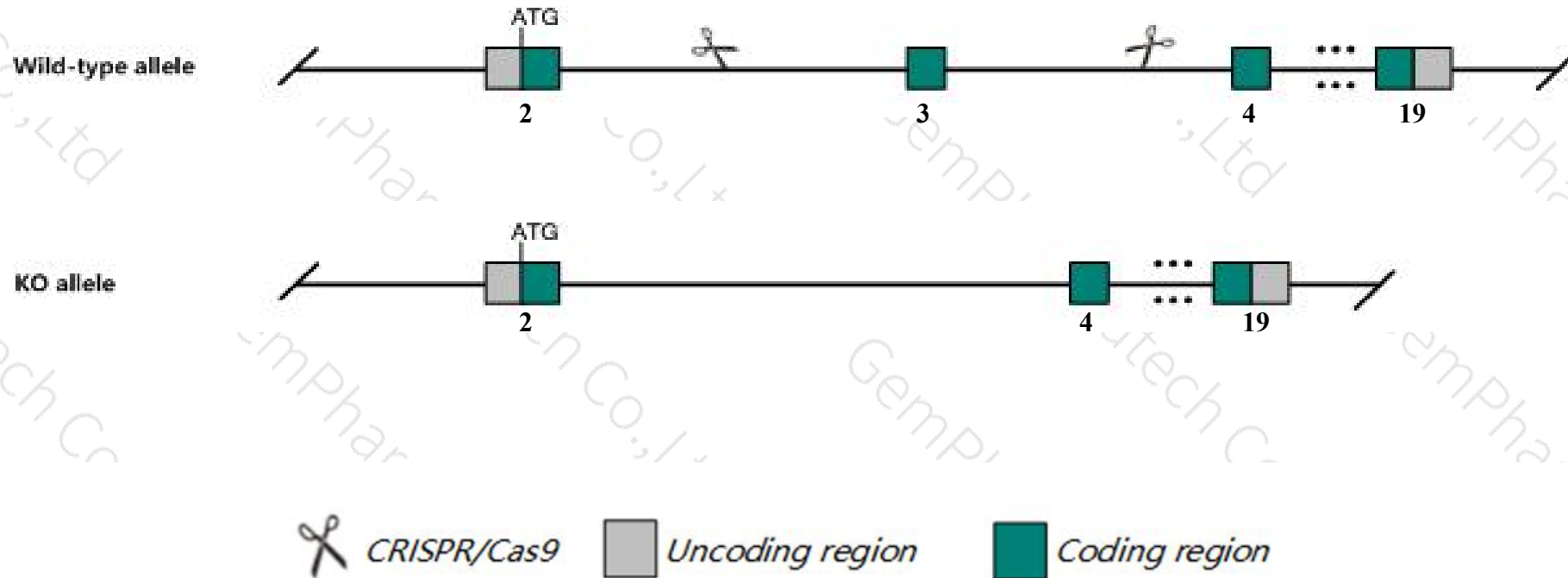
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Il16* gene. The schematic diagram is as follows:



- The *Il16* gene has 6 transcripts. According to the structure of *Il16* gene, exon3 of *Il16-201* (ENSMUST00000001792.11) transcript is recommended as the knockout region. The region contains 109bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Il16* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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.

- According to the existing MGI data, Mice homozygous for a knock-out allele display a transient but consistent increase of thymidine incorporation in anti-CD3-stimulated CD4<sup>+</sup> T cells, but fail to show a hyperproliferative T cell phenotype using BrdU labeling.
- Transcript *Il16*-202/203/204/206 may not be affected.
- The *Il16* 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)

## Il16 interleukin 16 [ *Mus musculus* (house mouse) ]

Gene ID: 16170, updated on 12-Aug-2019

### Summary

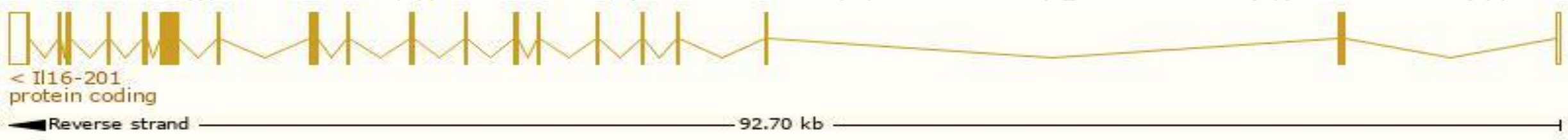
Official Symbol	Il16 provided by <a href="#">MGI</a>
Official Full Name	interleukin 16 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1270855</a>
See related	<a href="#">Ensembl:ENSMUSG000000001741</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	mKIAA4048
Expression	Biased expression in thymus adult (RPKM 26.8), spleen adult (RPKM 17.2) and 11 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

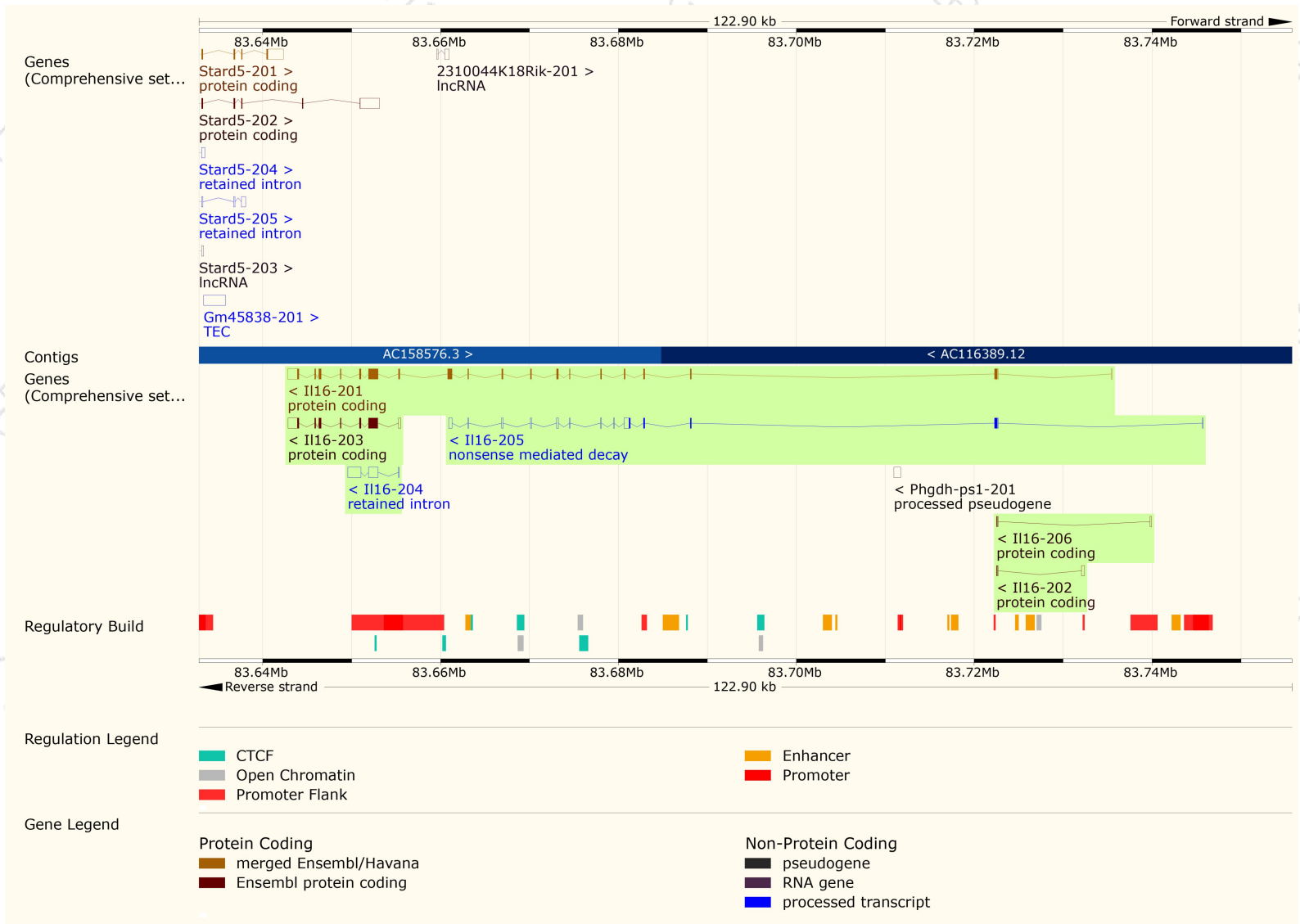
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
II16-201	<a href="#">ENSMUST00000001792.11</a>	5260	<a href="#">1322aa</a>	Protein coding	<a href="#">CCDS21412</a>	<a href="#">Q54824</a>	TSL:1 GENCODE basic APPRIS P1
II16-203	<a href="#">ENSMUST00000145610.7</a>	3183	<a href="#">624aa</a>	Protein coding	-	<a href="#">Q54824</a>	TSL:1 GENCODE basic
II16-202	<a href="#">ENSMUST00000131916.1</a>	532	<a href="#">29aa</a>	Protein coding	-	<a href="#">D3Z3C7</a>	CDS 3' incomplete TSL:2
II16-206	<a href="#">ENSMUST00000156553.7</a>	348	<a href="#">29aa</a>	Protein coding	-	<a href="#">D3Z3C7</a>	CDS 3' incomplete TSL:2
II16-205	<a href="#">ENSMUST00000153560.1</a>	2625	<a href="#">238aa</a>	Nonsense mediated decay	-	<a href="#">D6RI15</a>	TSL:1
II16-204	<a href="#">ENSMUST00000151047.1</a>	2605	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Il16-201* transcript,The transcription is shown below

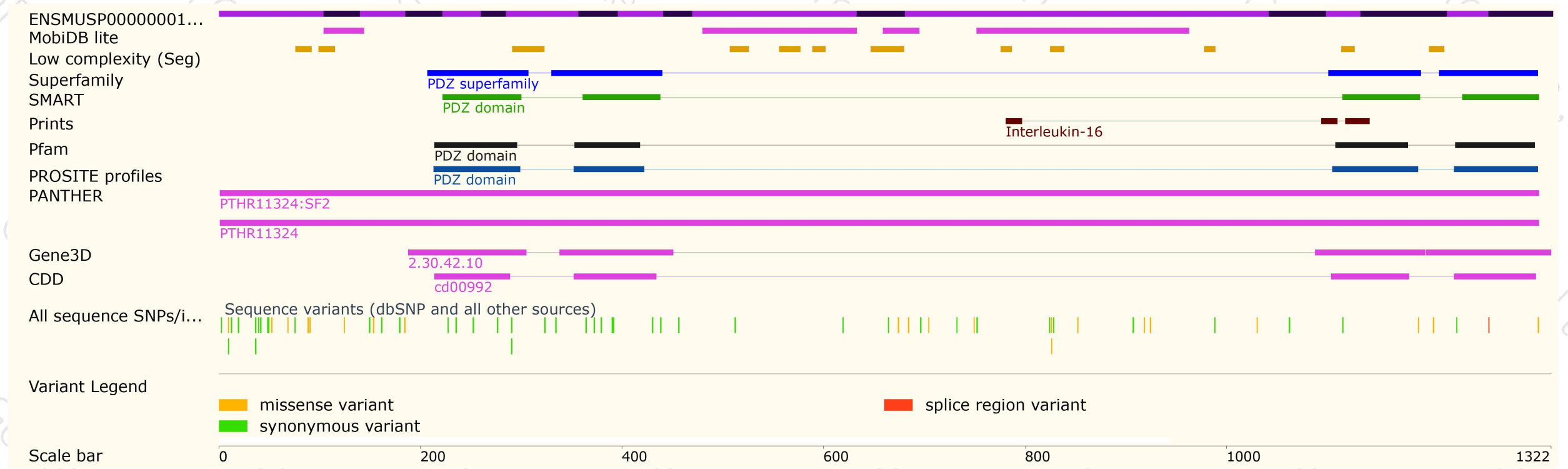


# Genomic location distribution



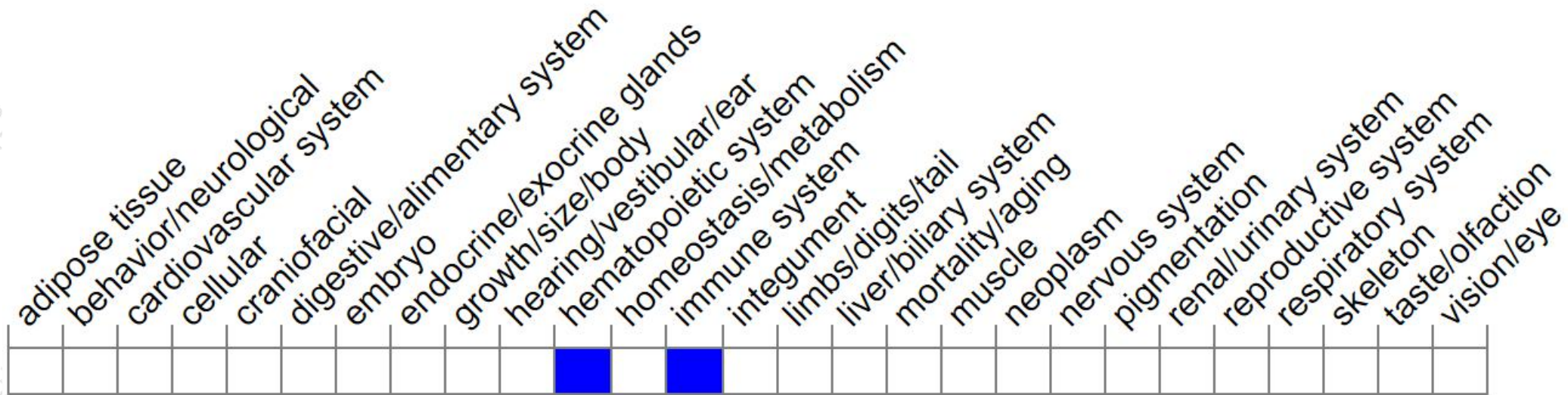


# Protein domain



# Mouse phenotype description(MGI)

## Phenotype Overview ?



*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 a transient but consistent increase of thymidine incorporation in anti-CD3-stimulated CD4<sup>+</sup> T cells, but fail to show a hyperproliferative T cell phenotype using BrdU labeling.

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

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