

# *E2f2* Cas9-KO Strategy

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# Project Overview

**Project Name**

*E2f2*

**Project type**

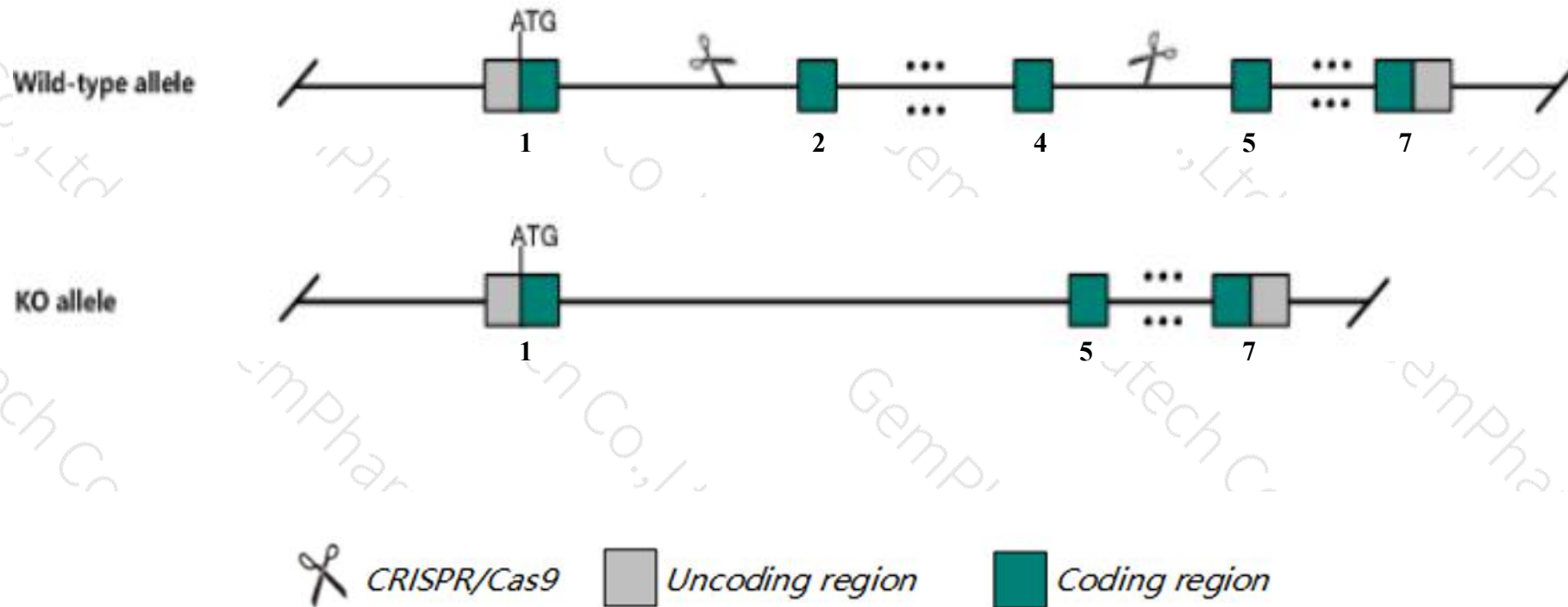
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *E2f2* gene. The schematic diagram is as follows:



- The *E2f2* gene has 2 transcripts. According to the structure of *E2f2* gene, exon2-exon4 of *E2f2-201* (ENSMUST00000061721.5) transcript is recommended as the knockout region. The region contains 485bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *E2f2* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, mice homozygous for a null allele exhibit premature death with signs of inflammatory and autoimmune disorders such as increased memory t cells, enlarged spleen, glomerulonephritis, inflamed liver, inflamed lung, increased double stranded dna antibodies, hair loss, and erythema.
- The *E2f2* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information (NCBI)

## E2f2 E2F transcription factor 2 [Mus musculus (house mouse)]

Gene ID: 242705, updated on 13-Mar-2020

### Summary



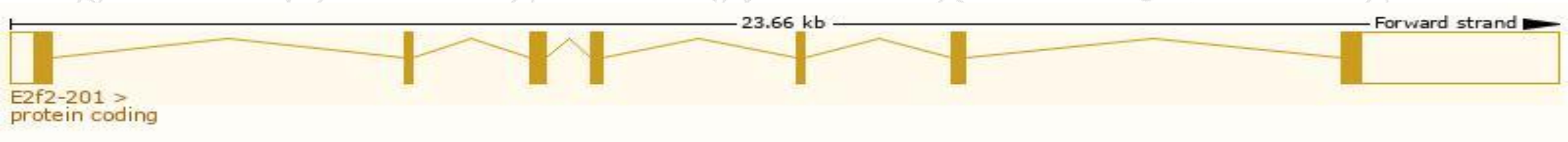
<b>Official Symbol</b>	E2f2 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	E2F transcription factor 2 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1096341</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000018983</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	E2F-2
<b>Expression</b>	Biased expression in thymus adult (RPKM 60.2), liver E14.5 (RPKM 28.6) and 10 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

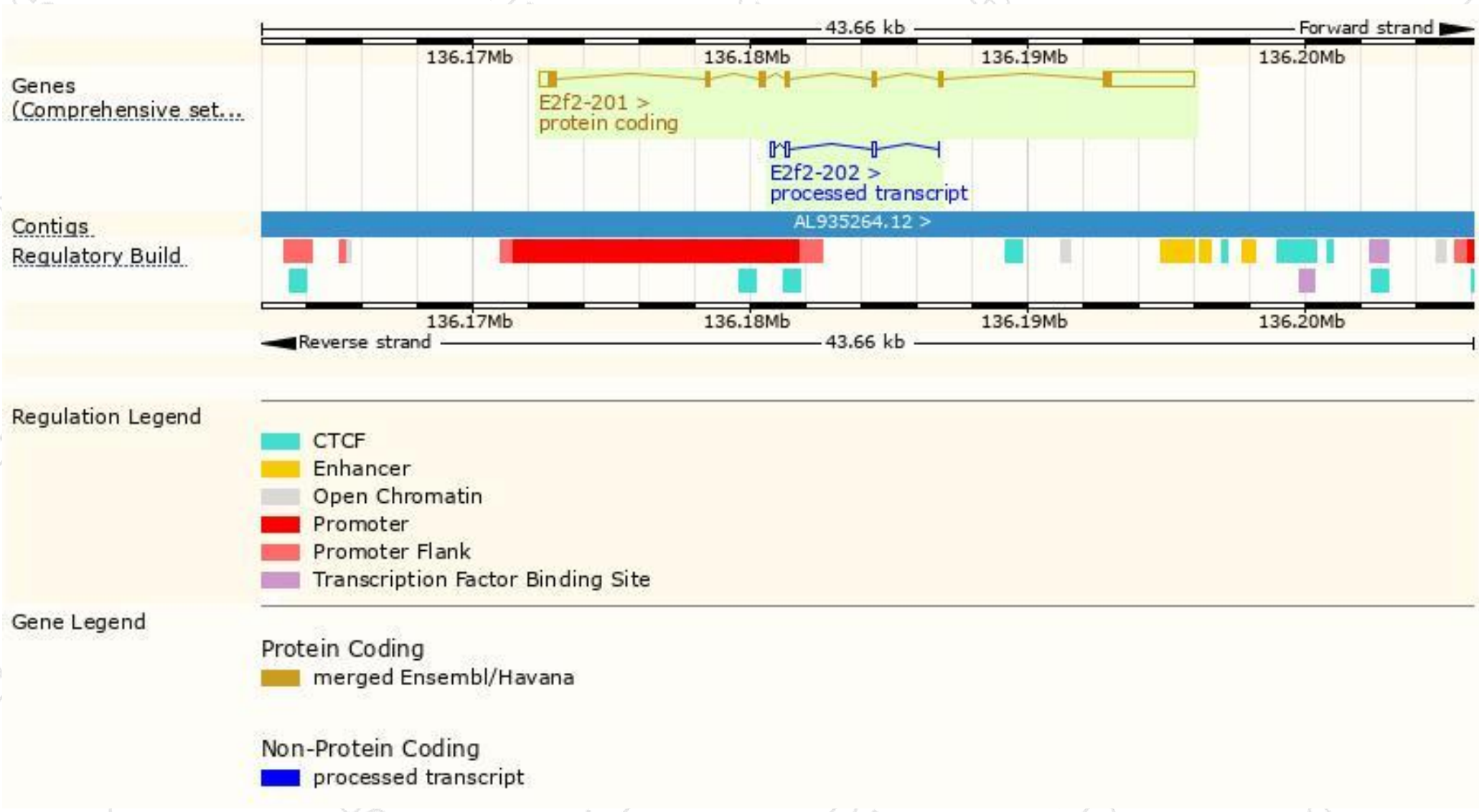
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
E2f2-201	<a href="#">ENSMUST00000061721.5</a>	4739	<a href="#">443aa</a>	Protein coding	<a href="#">CCDS18801</a>	<a href="#">P56931</a>	TSL:1 GENCODE basic APPRIS P1
E2f2-202	<a href="#">ENSMUST00000149750.1</a>	426	No protein	Processed transcript	-	-	TSL:5

The strategy is based on the design of *E2f2-201* transcript,the transcription is shown below:

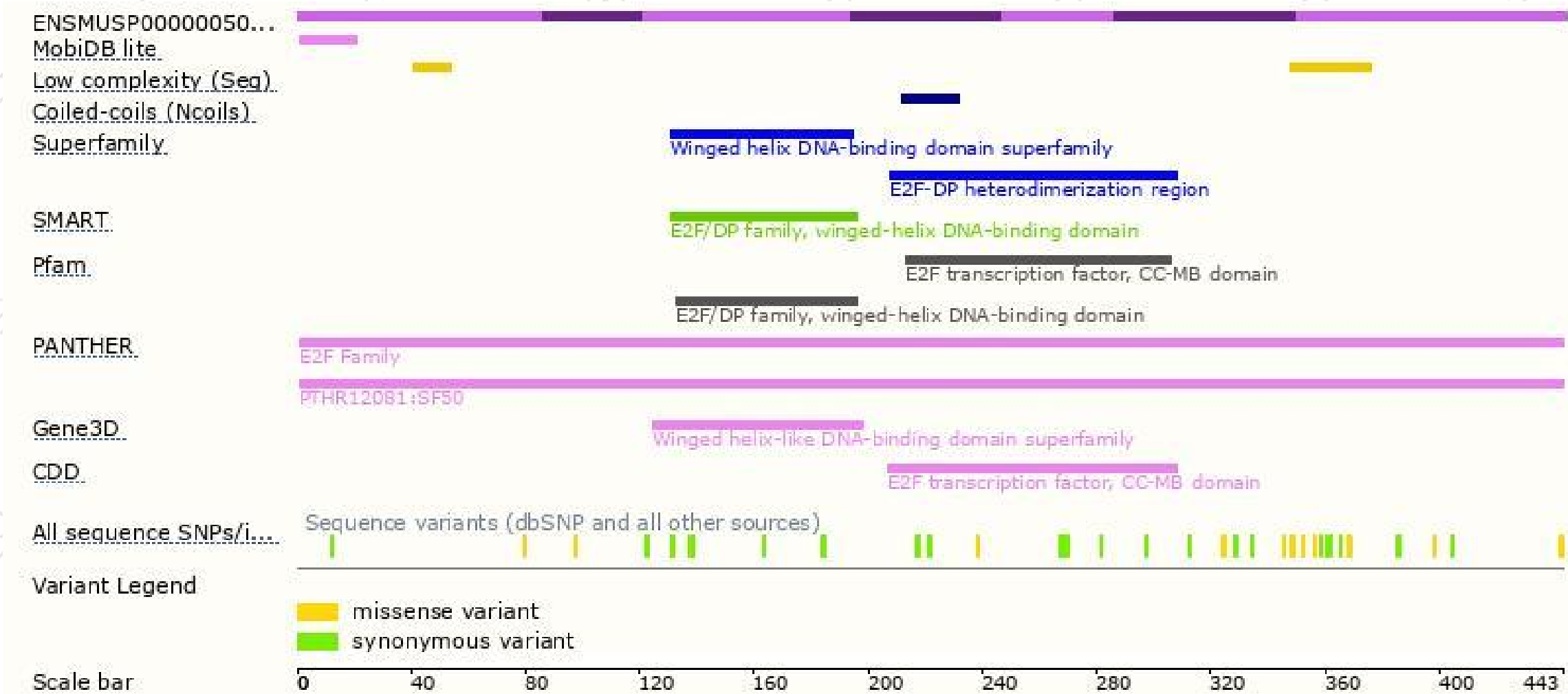


# Genomic location distribution

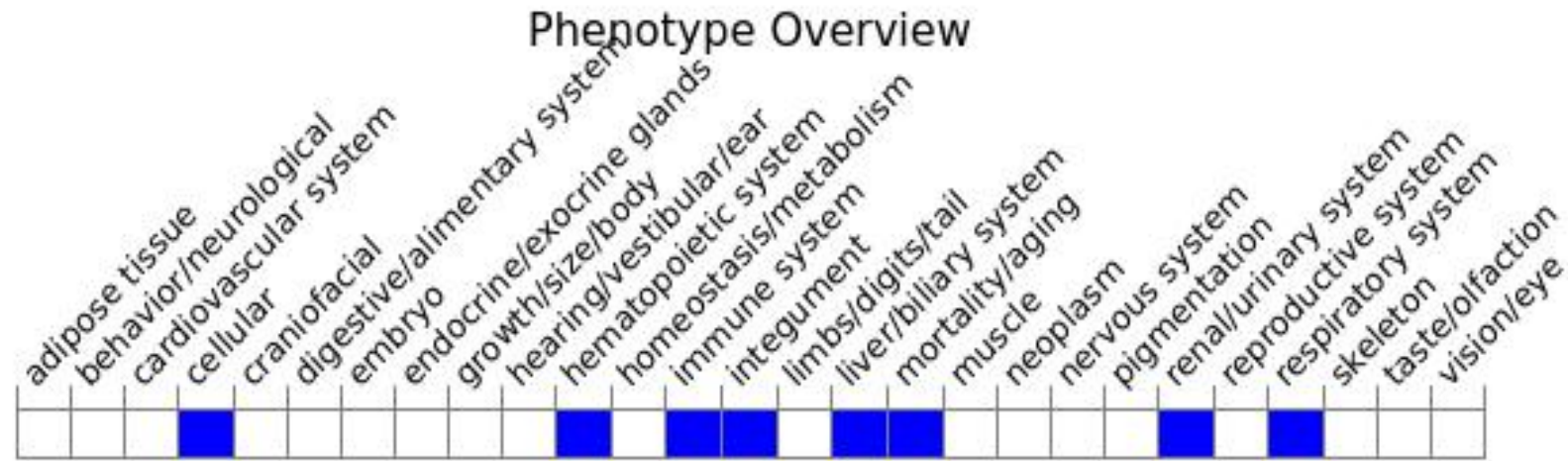




# Protein domain



# 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 null allele exhibit premature death with signs of inflammatory and autoimmune disorders such as increased memory T cells, enlarged spleen, glomerulonephritis, inflamed liver, inflamed lung, increased double stranded DNA antibodies, hair loss, and erythema.

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

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