

# *Klf4* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Klf4*

**Project type**

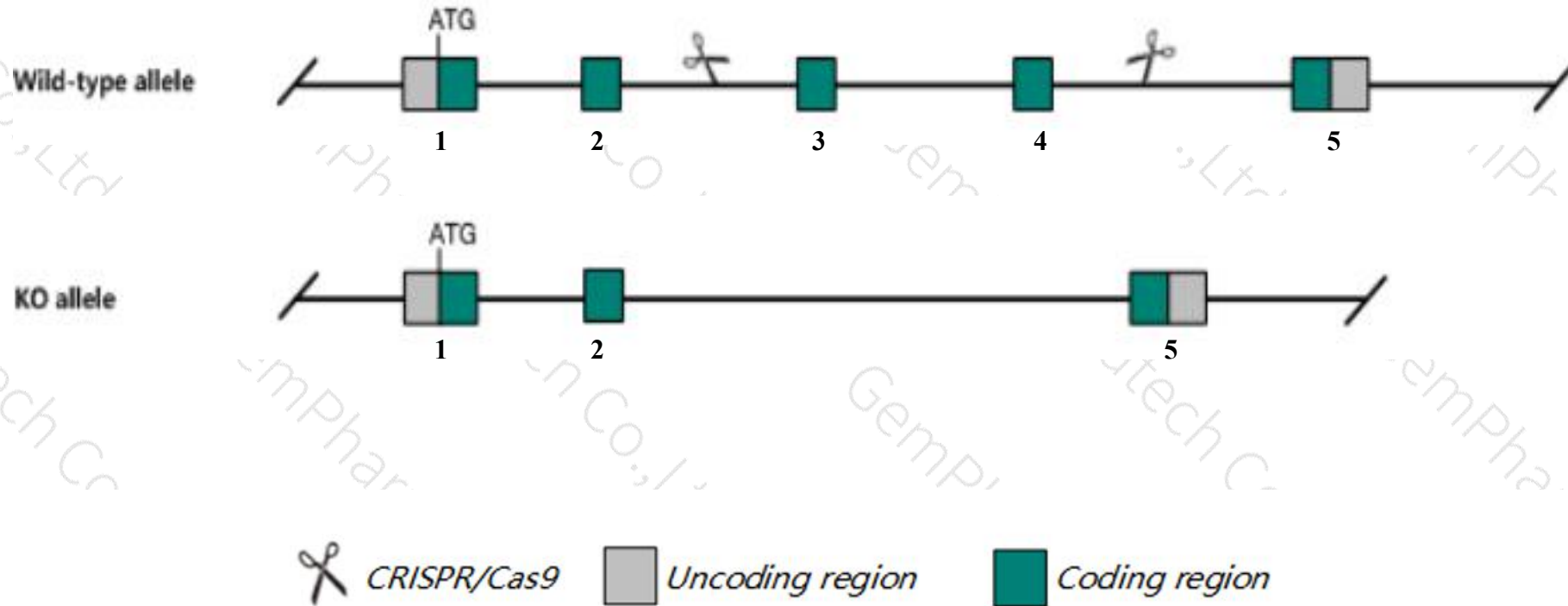
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Klf4* gene. The schematic diagram is as follows:



- The *Klf4* gene has 3 transcripts. According to the structure of *Klf4* gene, exon3-exon4 of *Klf4-201* (ENSMUST00000107619.2) transcript is recommended as the knockout region. The region contains 1150bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Klf4* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Homozygotes for targeted null mutations die shortly after birth due to a skin defect that results in loss of fluids. Mutants also show a dramatic decrease in the number of goblet cells of the colon.
- The *Klf4* 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)

## Klf4 Kruppel-like factor 4 (gut) [Mus musculus (house mouse)]

Gene ID: 16600, updated on 26-Mar-2019

### Summary



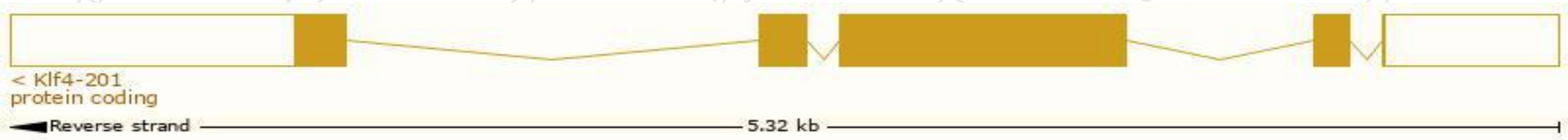
<b>Official Symbol</b>	Klf4 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	Kruppel-like factor 4 (gut) provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1342287</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000003032</a>
<b>Gene type</b>	protein coding
<b>RefSeq 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>	EZF, Gklf, Zie
<b>Expression</b>	Biased expression in colon adult (RPKM 221.0), stomach adult (RPKM 155.0) and 9 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

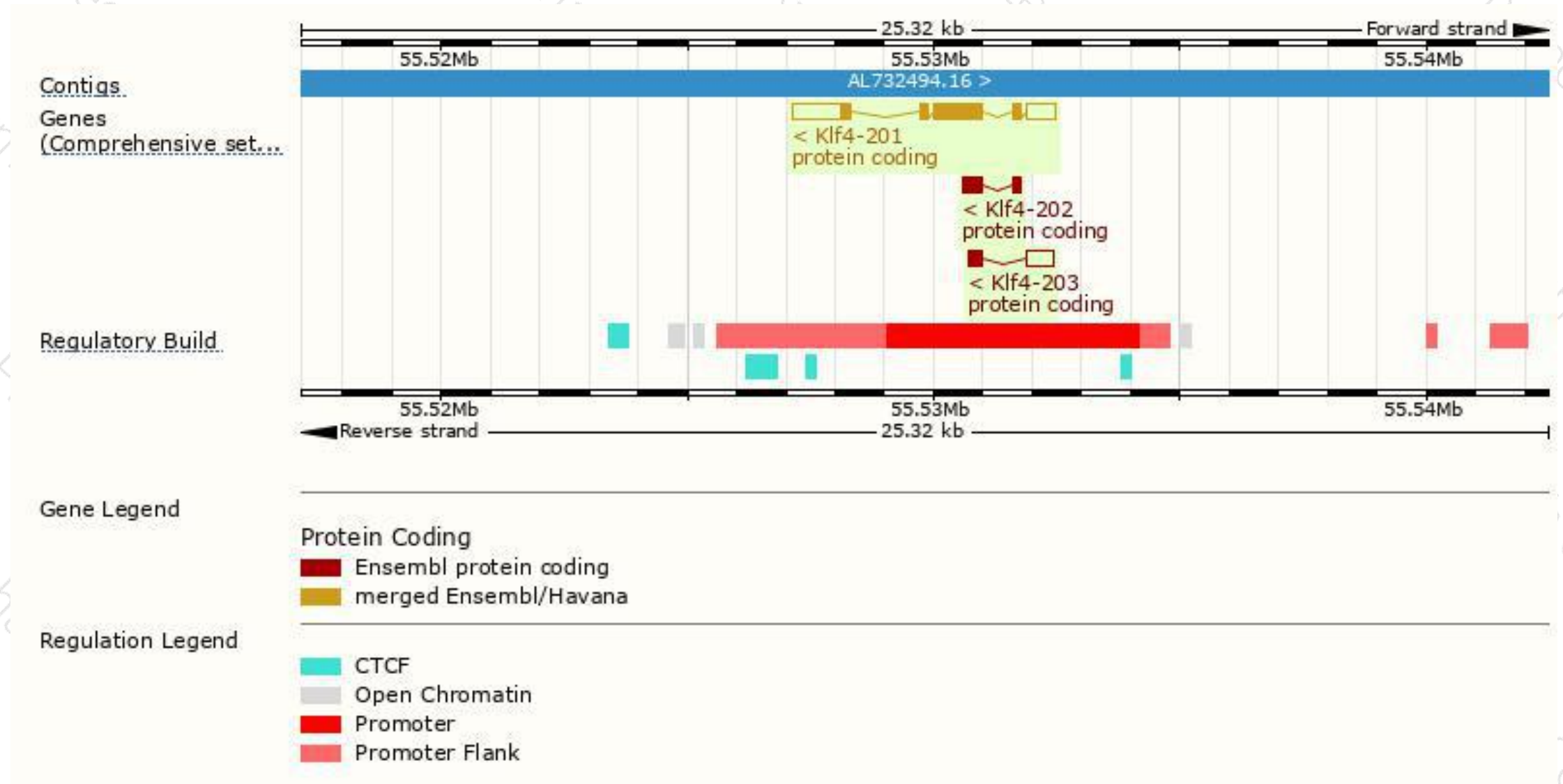
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Klf4-201	<a href="#">ENSMUST00000107619.2</a>	3029	<a href="#">483aa</a>	Protein coding	<a href="#">CCDS18195</a>	<a href="#">F2YID5 Q60793</a>	TSL:1 GENCODE basic APPRIS P1
Klf4-203	<a href="#">ENSMUST00000132746.1</a>	859	<a href="#">82aa</a>	Protein coding	-	<a href="#">B7ZCH1</a>	CDS 3' incomplete TSL:3
Klf4-202	<a href="#">ENSMUST00000129250.1</a>	522	<a href="#">160aa</a>	Protein coding	-	<a href="#">B7ZCH2</a>	CDS 3' incomplete TSL:2

The strategy is based on the design of *Klf4-201* transcript,The transcription is shown below

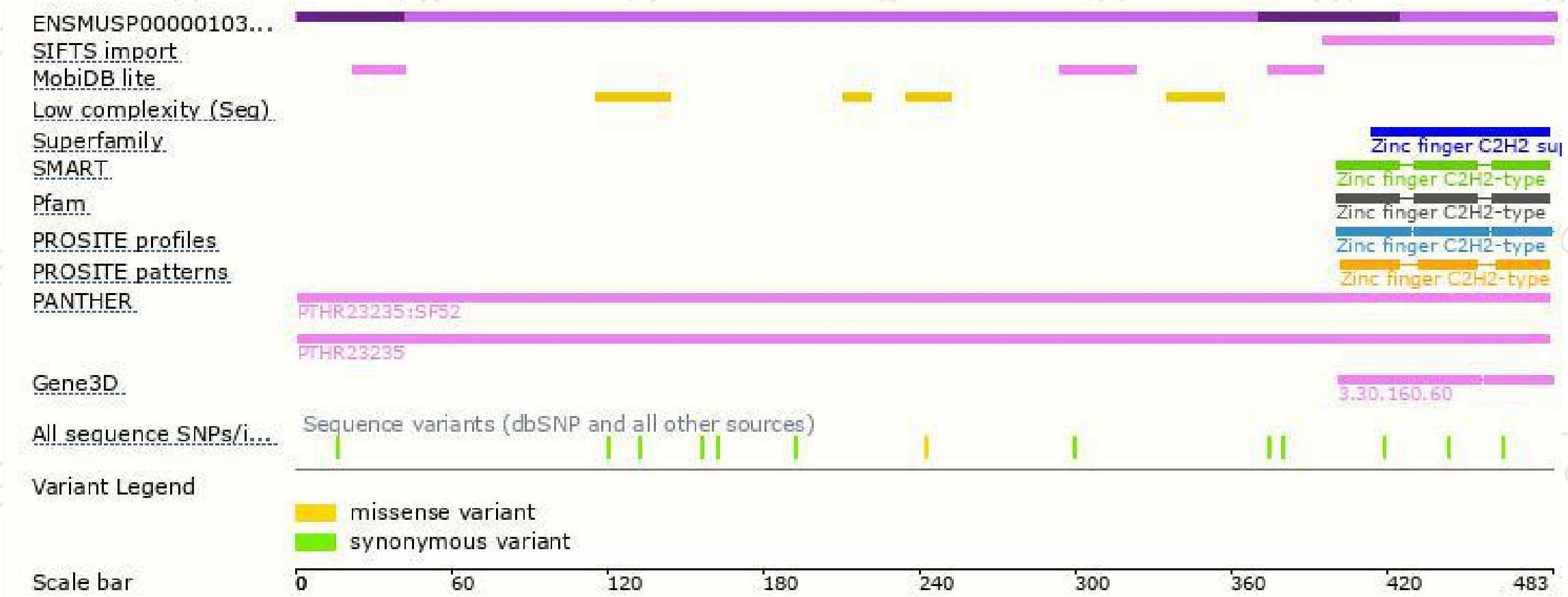


# Genomic location distribution

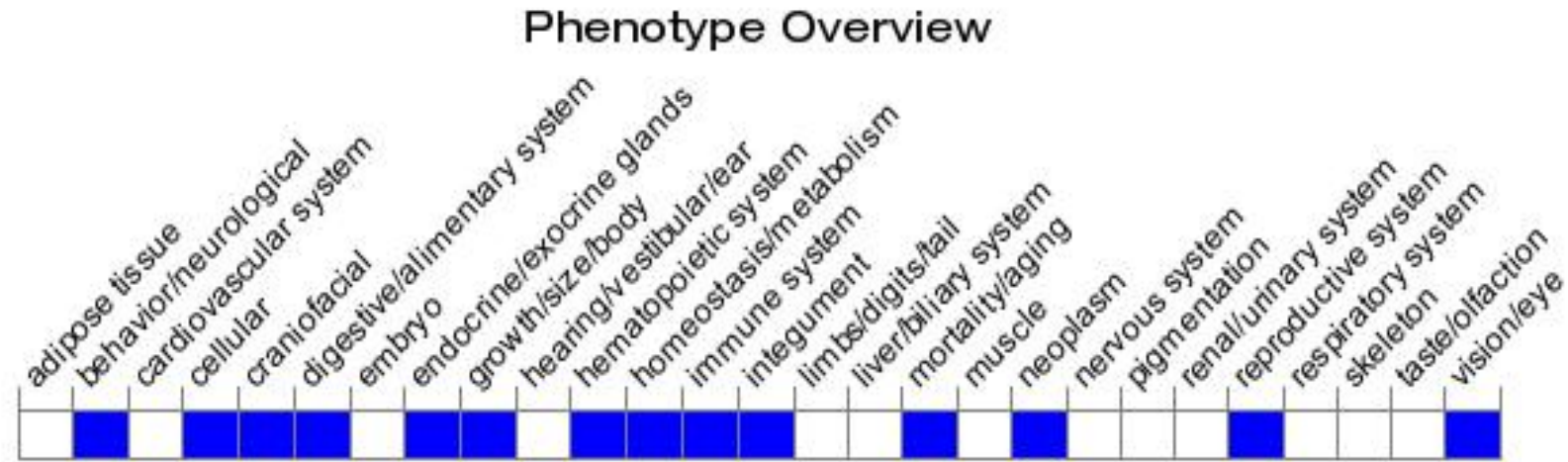




# Protein domain



# 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, Homozygotes for targeted null mutations die shortly after birth due to a skin defect that results in loss of fluids. Mutants also show a dramatic decrease in the number of goblet cells of the colon.

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

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