

# ***Nucb2 Cas9-KO Strategy***

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**Reviewer:**

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# Project Overview

**Project Name**

*Nucb2*

**Project type**

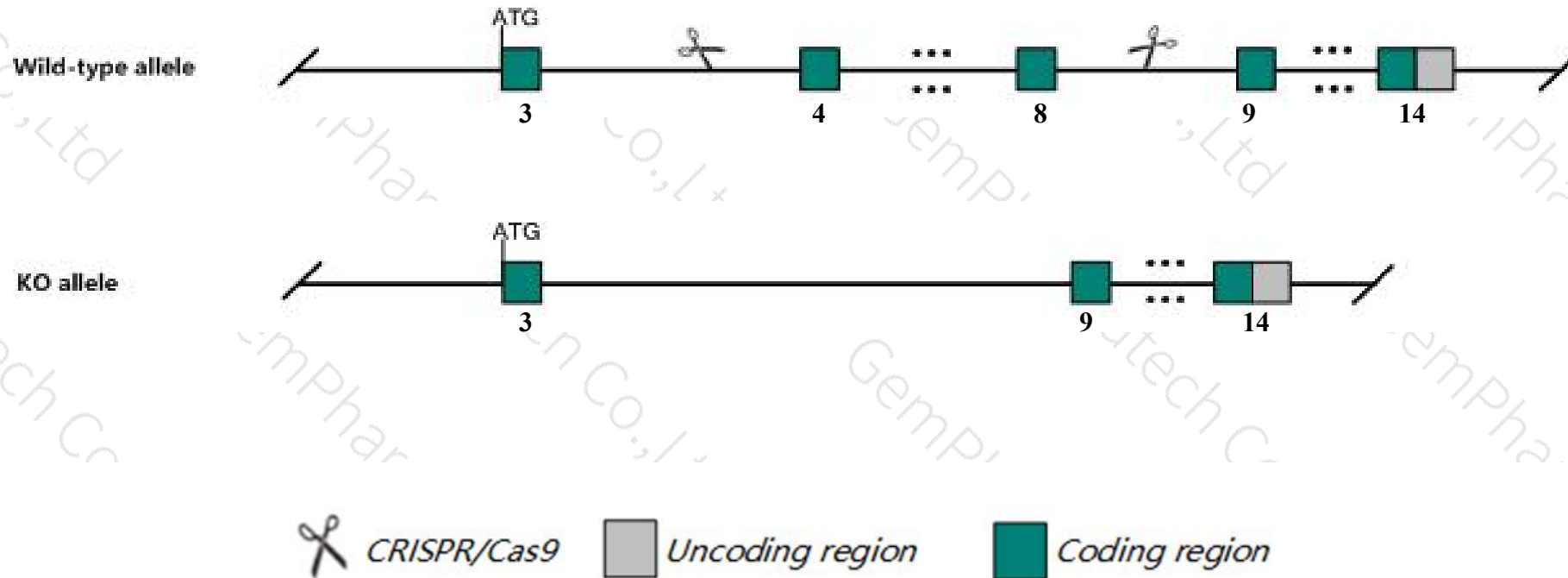
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nucb2* gene. The schematic diagram is as follows:



- The *Nucb2* gene has 4 transcripts. According to the structure of *Nucb2* gene, exon4-exon8 of *Nucb2-201* (ENSMUST00000032895.14) transcript is recommended as the knockout region. The region contains 616bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nucb2* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Homozygous mutation of this gene results in decreased heart rate and increased serum alkaline phosphatase levels.
- The *Nucb2* 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)

## Nucb2 nucleobindin 2 [ *Mus musculus* (house mouse) ]

Gene ID: 53322, updated on 24-Oct-2019

### Summary

**Official Symbol** Nucb2 provided by MGI

**Official Full Name** nucleobindin 2 provided by MGI

**Primary source** [MGI:MGI:1858179](#)

**See related** [Ensembl:ENSMUSG00000030659](#)

**Gene type** protein coding

**RefSeq status** VALIDATED

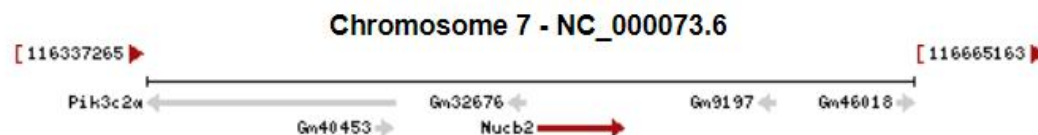
**Organism** [Mus musculus](#)

**Lineage** Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

**Also known as** Nefa; Calnuc; Al607786; Nesfatin-1

**Expression** Broad expression in genital fat pad adult (RPKM 8.5), bladder adult (RPKM 5.1) and 20 other tissues [See more](#)

**Orthologs** [human](#) [all](#)

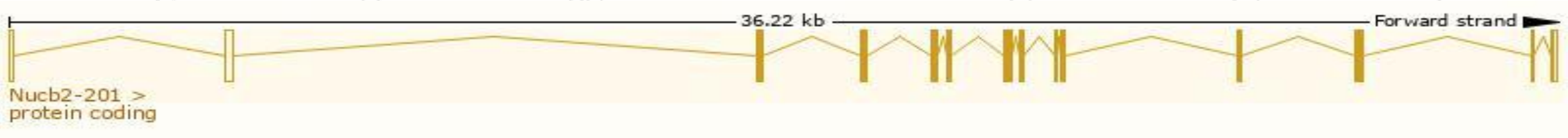


# Transcript information (Ensembl)

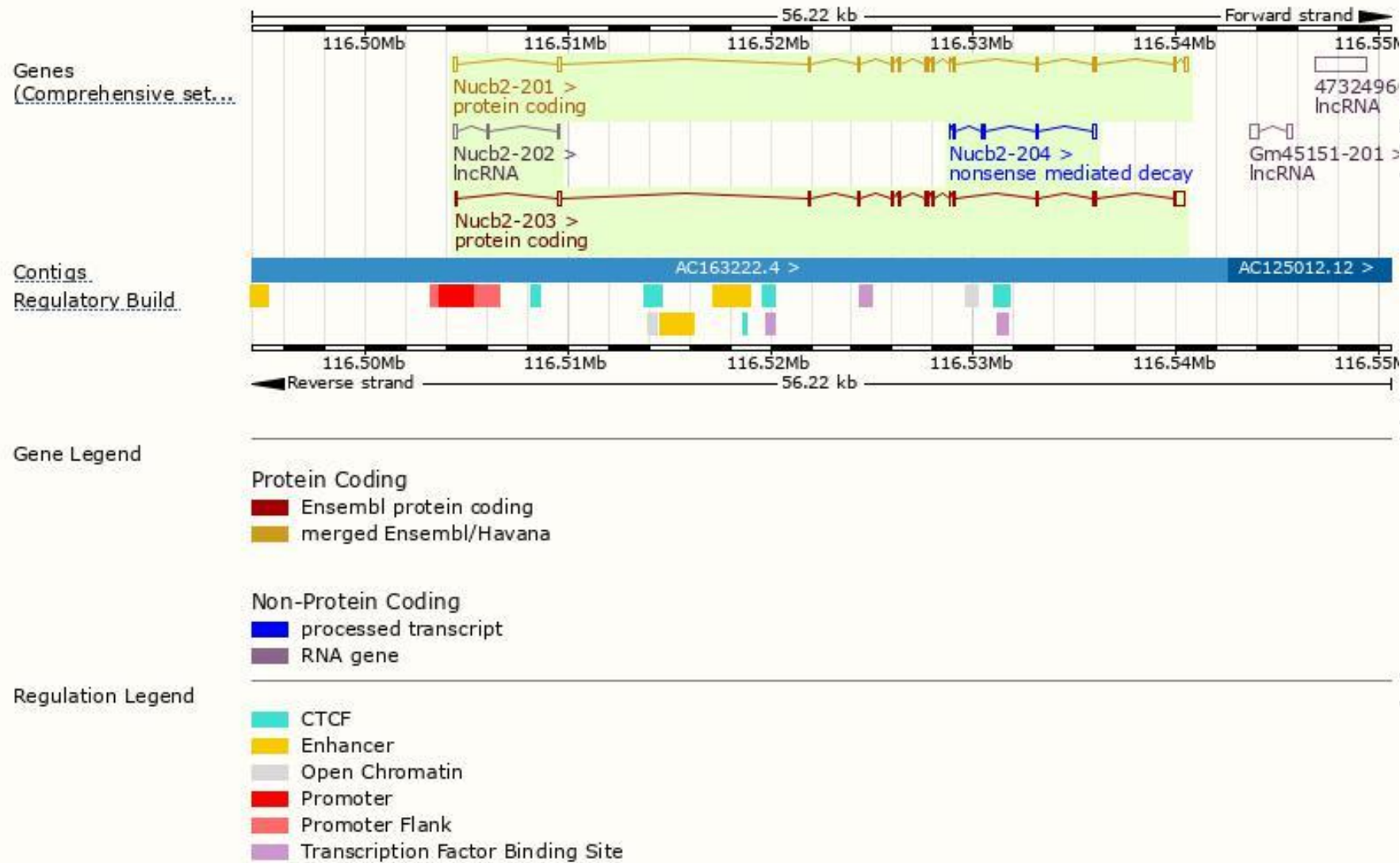
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nucb2-201	<a href="#">ENSMUST00000032895.14</a>	1685	<a href="#">420aa</a>	Protein coding	<a href="#">CCDS52372</a>	<a href="#">P81117</a>	TSL:1 GENCODE basic APPRIS P2
Nucb2-203	<a href="#">ENSMUST00000183175.7</a>	1913	<a href="#">420aa</a>	Protein coding	-	<a href="#">Q3UKN6</a>	TSL:1 GENCODE basic APPRIS ALT 1
Nucb2-204	<a href="#">ENSMUST00000183335.1</a>	563	<a href="#">57aa</a>	Nonsense mediated decay	-	<a href="#">S4R2R9</a>	CDS 5' incomplete TSL:3
Nucb2-202	<a href="#">ENSMUST00000182767.1</a>	329	No protein	lncRNA	-	-	TSL:2

The strategy is based on the design of *Nucb2-201* transcript,The transcription is shown below

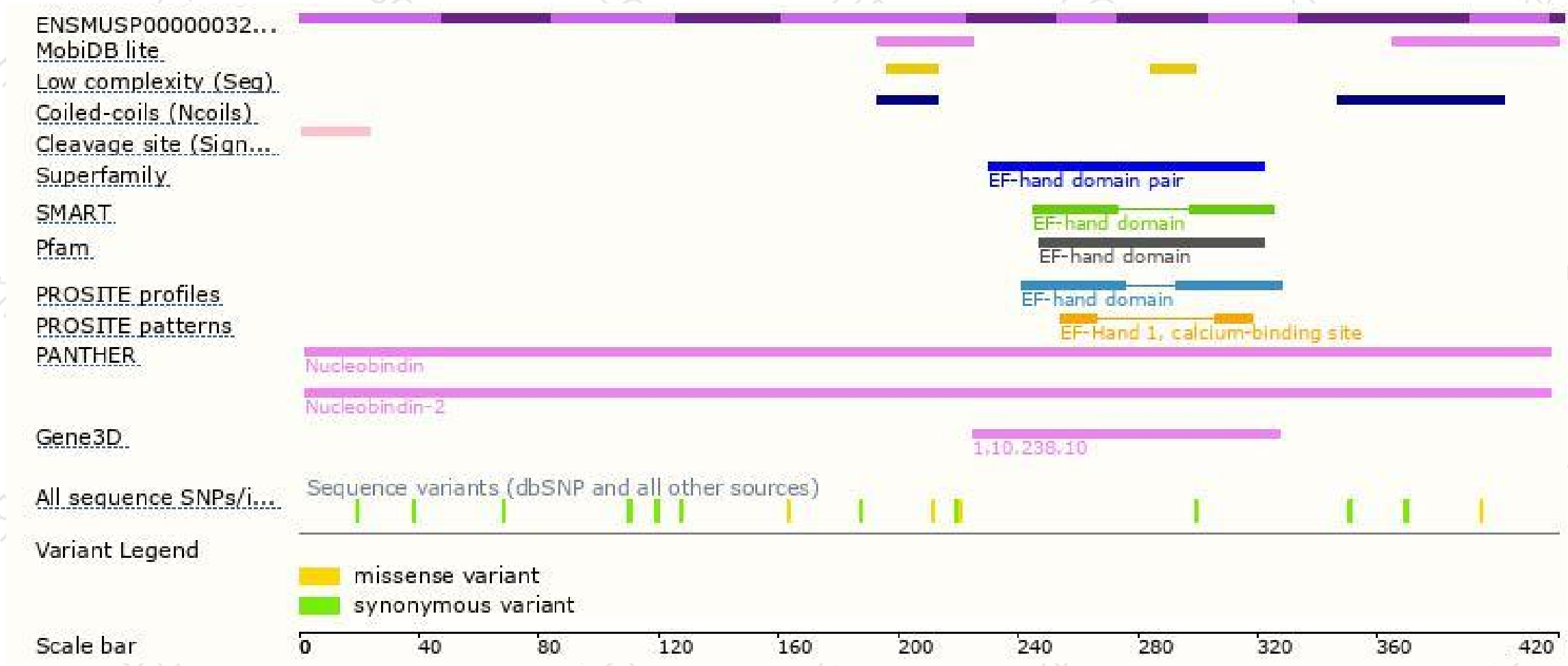


# Genomic location distribution



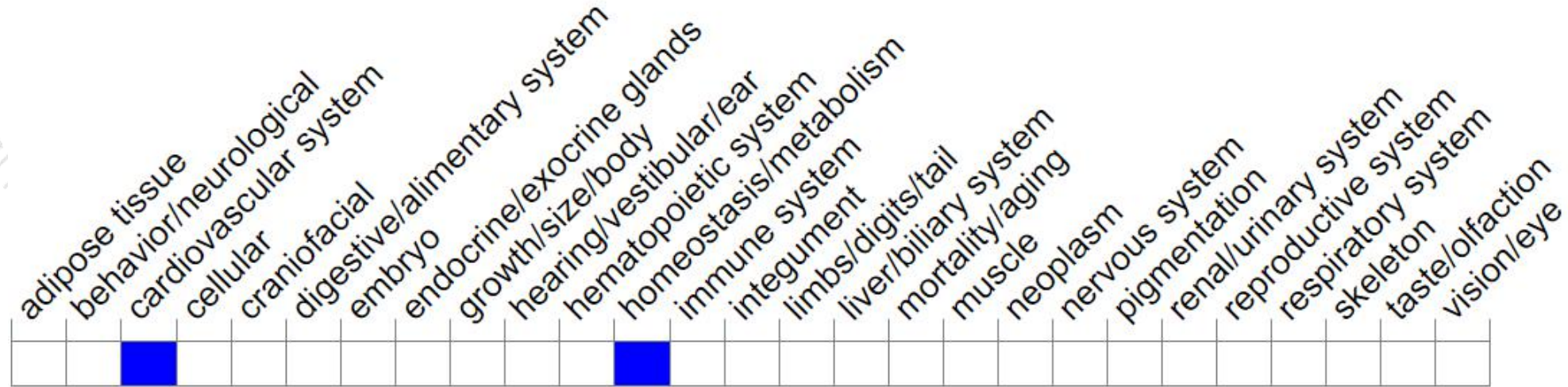


# Protein domain



# 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, Homozygous mutation of this gene results in decreased heart rate and increased serum alkaline phosphatase levels.

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

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