

Nucb2 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Nucb2

Project type

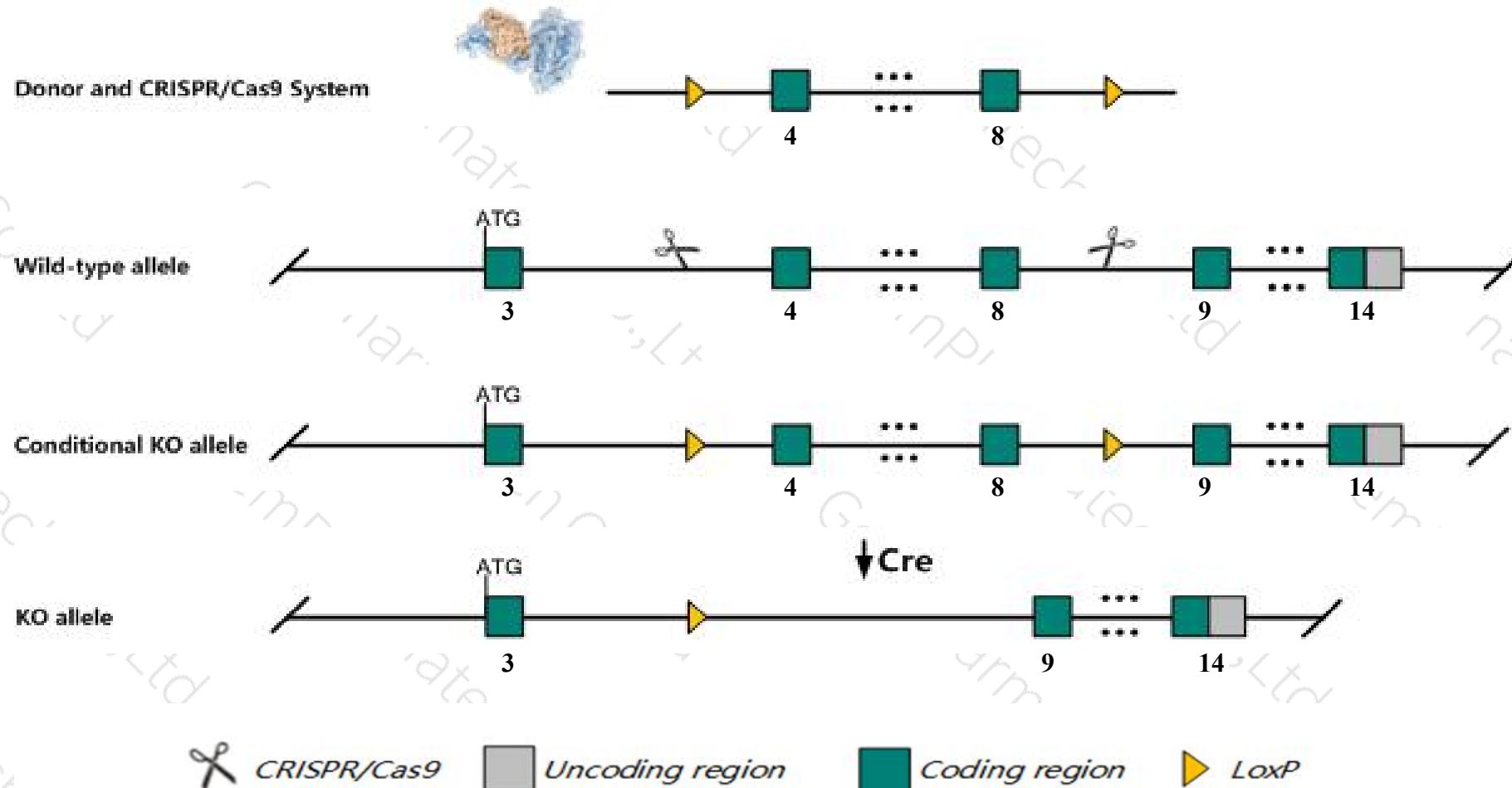
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- 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 and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological 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

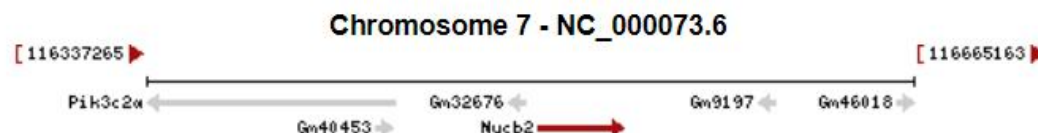
Organism [Mus musculus](#)

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](#)

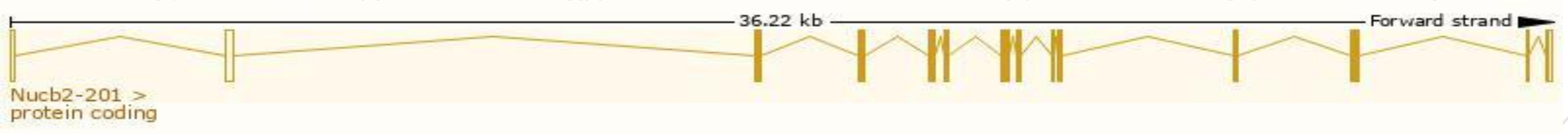


Transcript information (Ensembl)

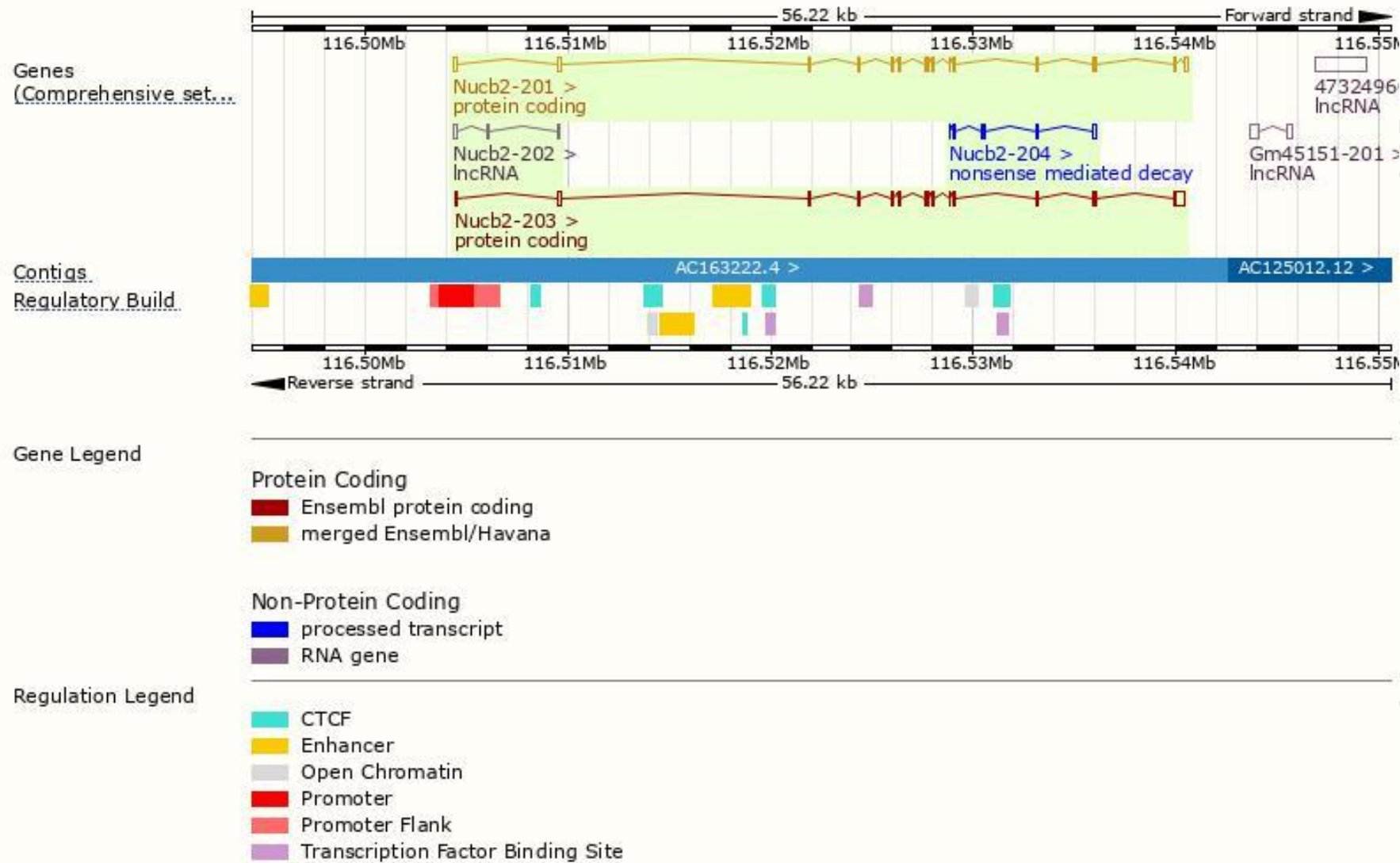
The gene has 4 transcripts,all transcripts are shown below:

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

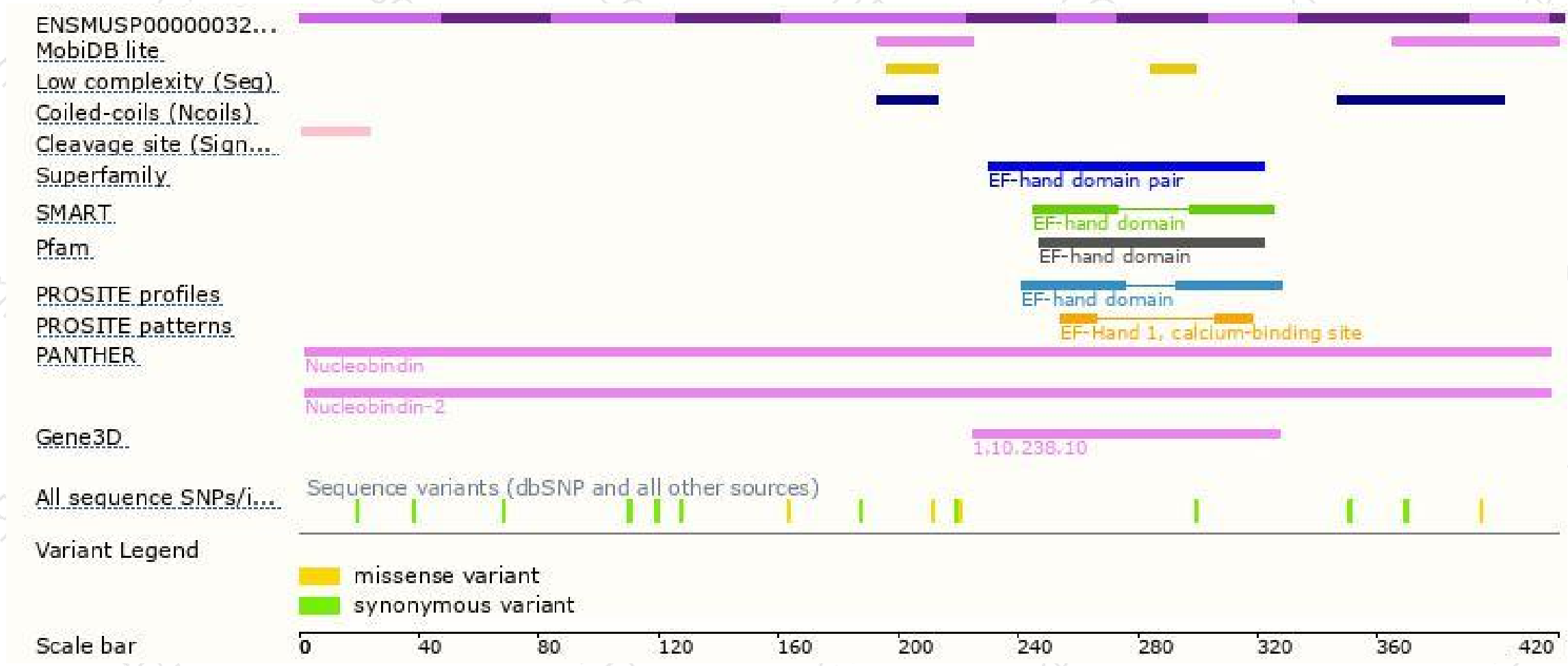
The strategy is based on the design of *Nucb2-201* transcript,The transcription is shown below



Genomic location distribution

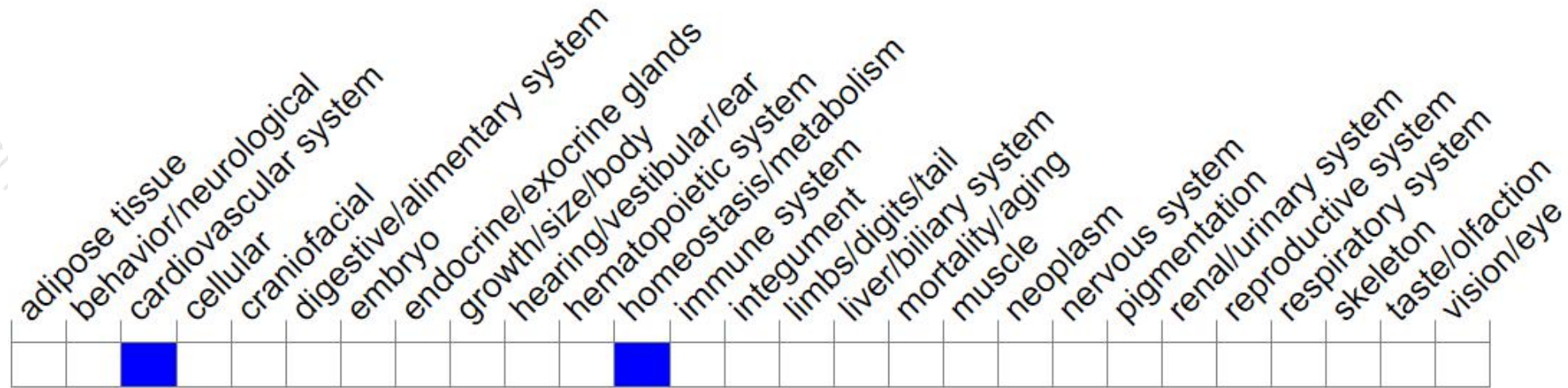


Protein domain



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/>).

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

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