

Cdh4 Cas9-CKO Strategy

Designer:

Yang Zeng

Reviewer:

Huimin Su

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Project Overview

Project Name

Cdh4

Project type

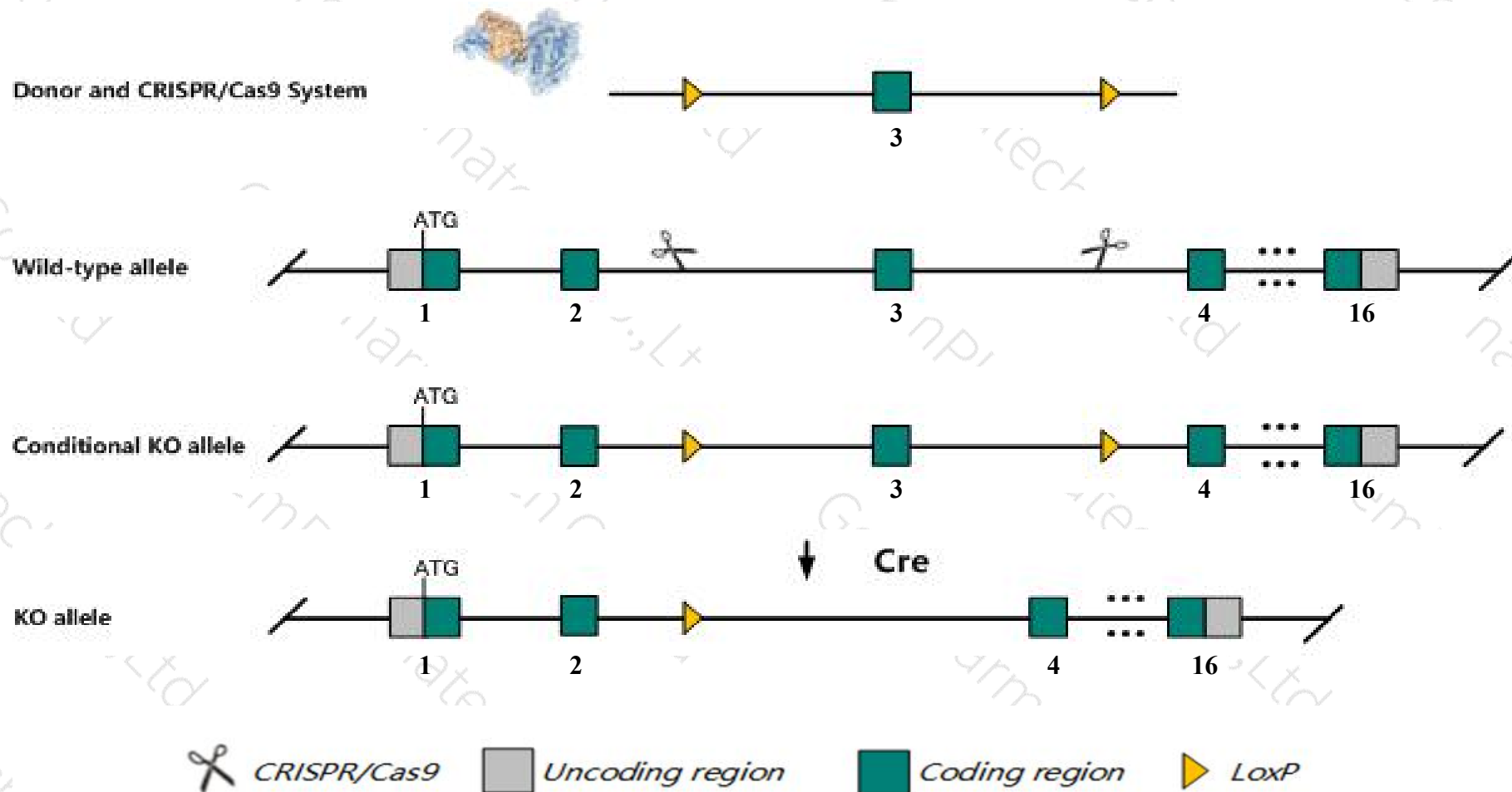
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdh4* gene. The schematic diagram is as follows:



Technical routes

- The *Cdh4* gene has 6 transcripts. According to the structure of *Cdh4* gene, exon3 of *Cdh4-201* (ENSMUST00000000314.12) transcript is recommended as the knockout region. The region contains 227bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cdh4* 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 dilation of the proximal renal tubules and extensive vacuolization of tubule epithelium. Uretic bud epithelium appear disorganized and exhibit increased apoptosis at E15.5.
- Transcript *Cdh4*-202 may be unaffected.
- The *Cdh4* gene is located on the Chr2. 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.

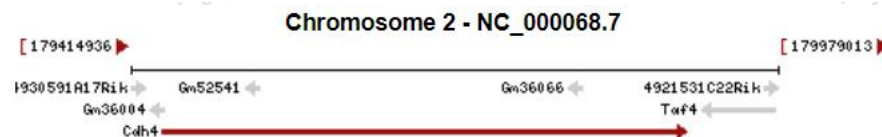
Gene information (NCBI)

Cdh4 cadherin 4 [*Mus musculus* (house mouse)]

Gene ID: 12561, updated on 12-Aug-2019

Summary

Official Symbol	Cdh4 provided by MGI
Official Full Name	cadherin 4 provided by MGI
Primary source	MGI:MGI:99218
See related	Ensembl:ENSMUSG000000000305
Gene type	protein coding
RefSeq status	REVIEWED
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Rcad; R-CAD; R-Cadh; AW120700
Summary	This gene encodes a member of the cadherin family of calcium-dependent glycoproteins that mediate cell adhesion and regulate many morphogenetic events during development. The encoded preproprotein is further processed to generate a mature protein. The encoded protein is involved in retinal angiogenesis during development where it plays a crucial role in the endothelial-astrocyte interactions. Alternative splicing results in multiple transcript variants encoding different isoforms. [provided by RefSeq, Oct 2015]
Expression	Biased expression in whole brain E14.5 (RPKM 10.8), CNS E18 (RPKM 10.1) and 12 other tissues See more
Orthologs	human all

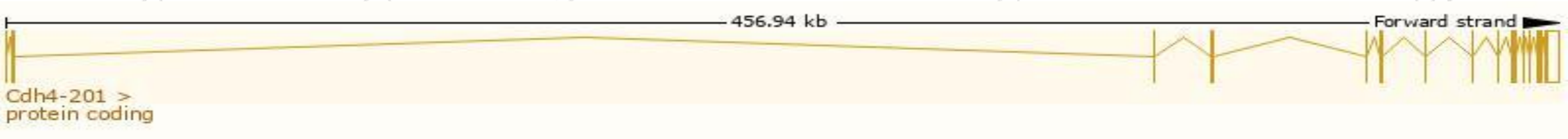


Transcript information (Ensembl)

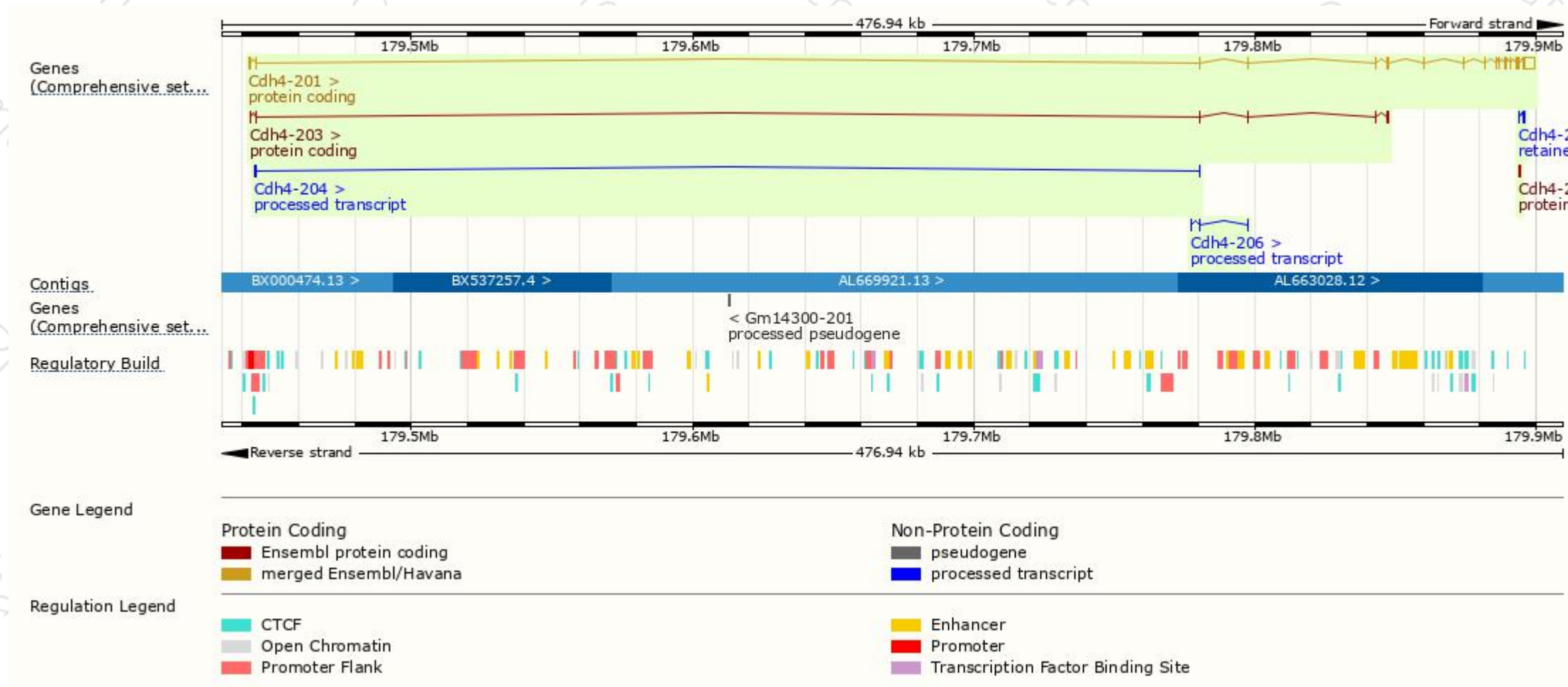
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Cdh4-201	ENSMUST00000000314.12	6388	913aa	ENSMUSP00000000314.6	Protein coding	CCDS17164	P39038	TSL:1 GENCODE basic APPRIS P1
Cdh4-203	ENSMUST00000108911.1	1208	334aa	ENSMUSP00000104539.1	Protein coding	CCDS84598	Q80ZV4	TSL:1 GENCODE basic
Cdh4-202	ENSMUST00000098996.1	69	23aa	ENSMUSP00000096594.1	Protein coding	-	F6QV10	TSL:5 GENCODE basic
Cdh4-205	ENSMUST00000129659.1	747	No protein	-	Retained intron	-	-	TSL:2
Cdh4-204	ENSMUST00000124708.1	427	No protein	-	lncRNA	-	-	TSL:3
Cdh4-206	ENSMUST00000136411.1	379	No protein	-	lncRNA	-	-	TSL:3

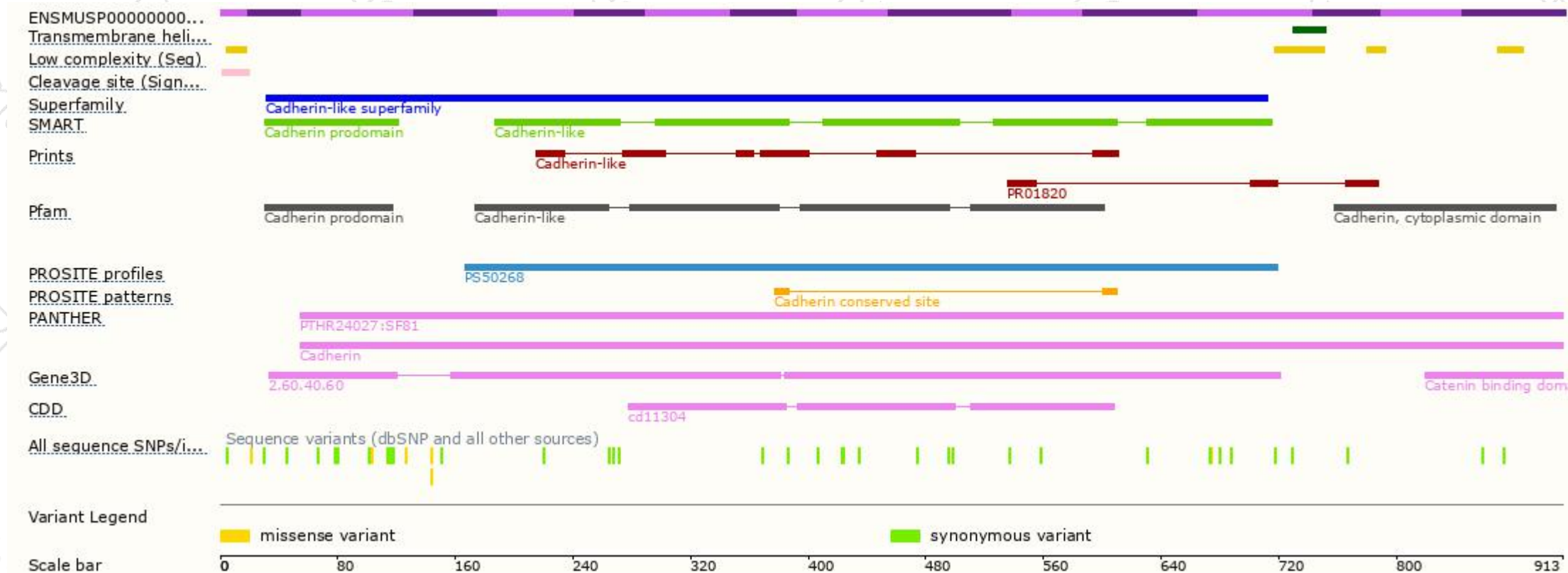
The strategy is based on the design of *Cdh4-201* transcript,The transcription is shown below



Genomic location distribution

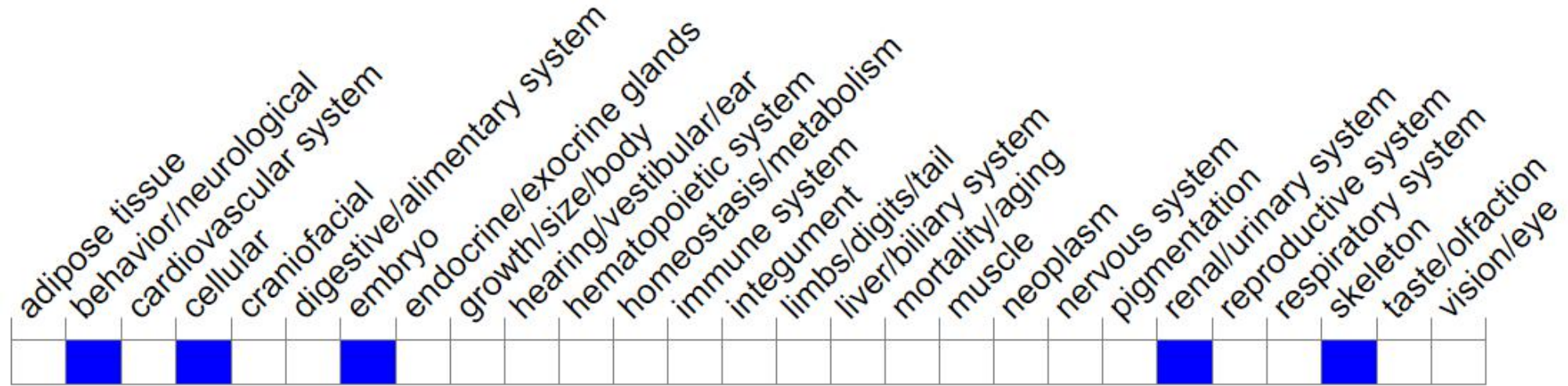


Protein domain



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.

Tel: 400-9660890

