

Nkd2 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Nkd2

Project type

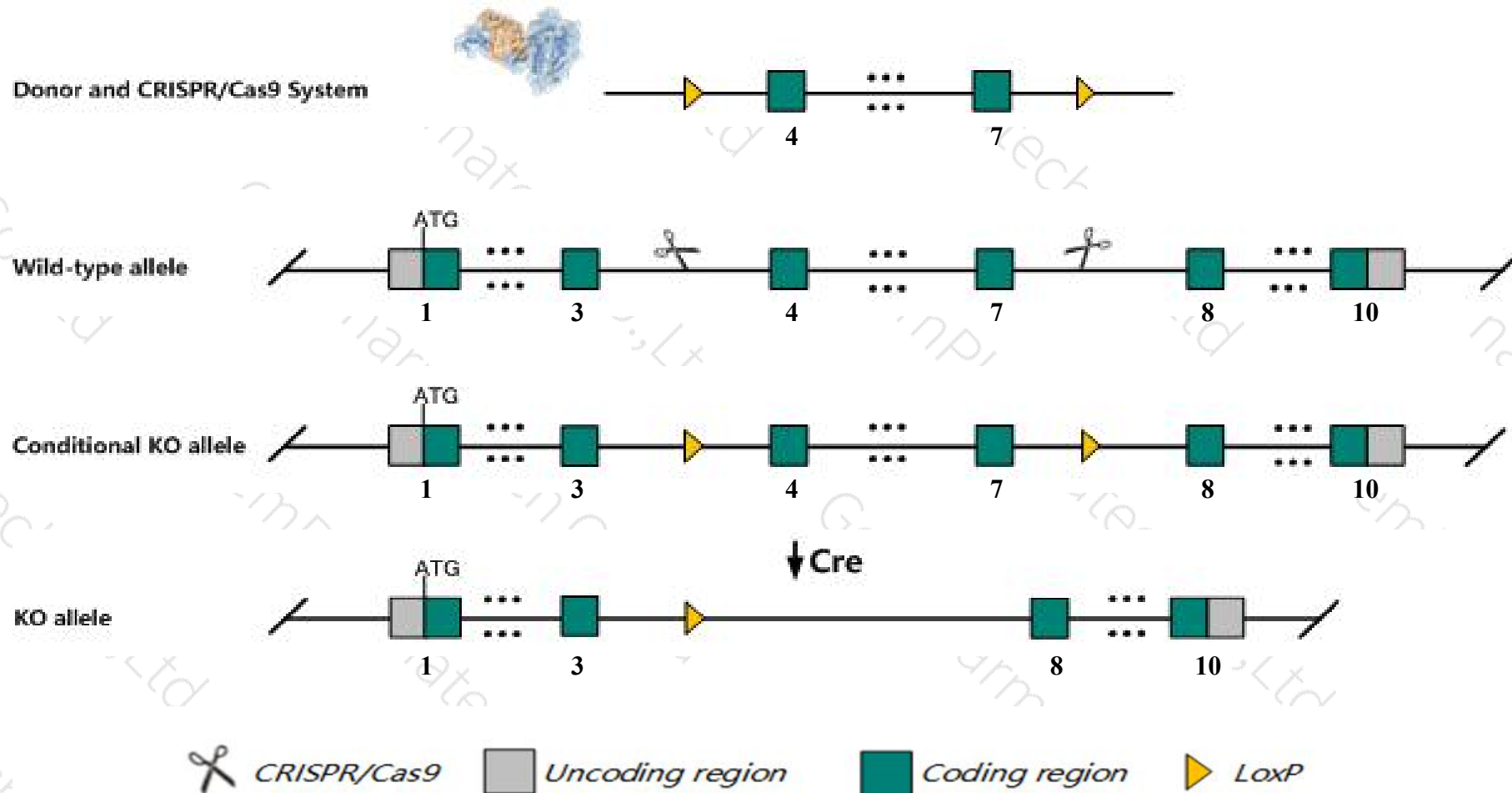
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nkd2* gene. The schematic diagram is as follows:



- The *Nkd2* gene has 5 transcripts. According to the structure of *Nkd2* gene, exon4-exon7 of *Nkd2-201* (ENSMUST00000022051.13) transcript is recommended as the knockout region. The region contains 430bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nkd2* 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, mice homozygous for a reporter allele are viable and fertile but show a slight and background-sensitive reduction in average litter size relative to control mice.
- The *Nkd2* gene is located on the Chr13. 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)

Nkd2 naked cuticle 2 [*Mus musculus* (house mouse)]

Gene ID: 72293, updated on 12-Aug-2019

Summary

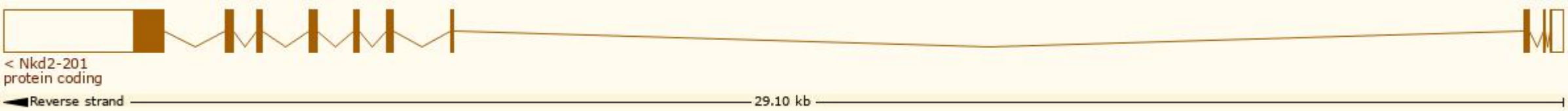
Official Symbol	Nkd2 provided by MGI
Official Full Name	naked cuticle 2 provided by MGI
Primary source	MGI:MGI:1919543
See related	Ensembl:ENSMUSG000000021567
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	mNkd2; AW212591; 2210403L10Rik
Expression	Broad expression in bladder adult (RPKM 24.2), limb E14.5 (RPKM 15.3) and 16 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

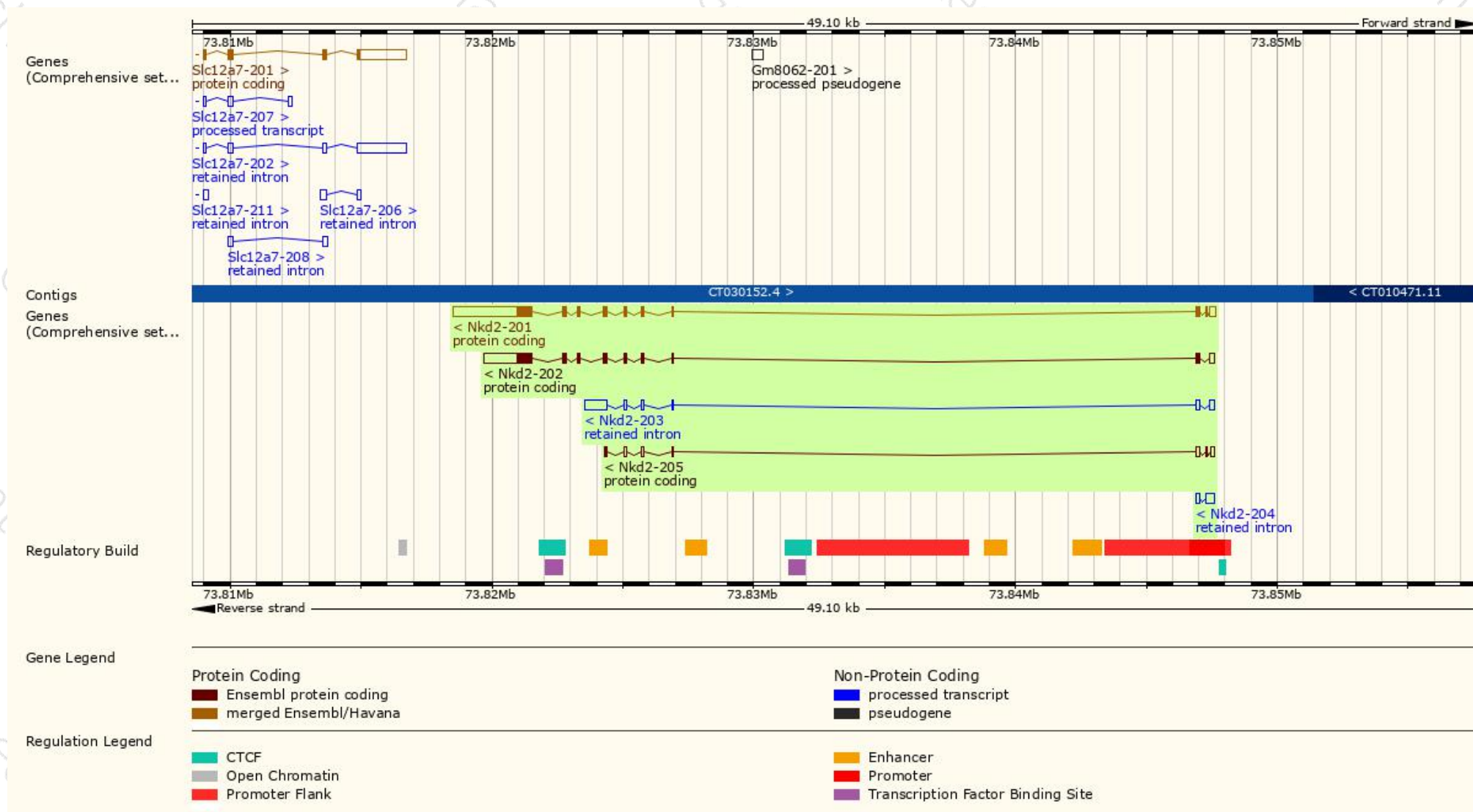
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nkd2-201	ENSMUST00000022051.13	4016	461aa	Protein coding	CCDS26636	Q8VE28	TSL:1 GENCODE basic APPRIS P3
Nkd2-202	ENSMUST00000118096.1	2801	449aa	Protein coding	CCDS84036	Q8VE28	TSL:1 GENCODE basic APPRIS ALT2
Nkd2-205	ENSMUST00000222004.1	705	38aa	Protein coding	-	A0A1Y7VJ02	CDS 3' incomplete TSL:3
Nkd2-203	ENSMUST00000138899.1	1456	No protein	Retained intron	-	-	TSL:1
Nkd2-204	ENSMUST00000221679.1	447	No protein	Retained intron	-	-	TSL:3

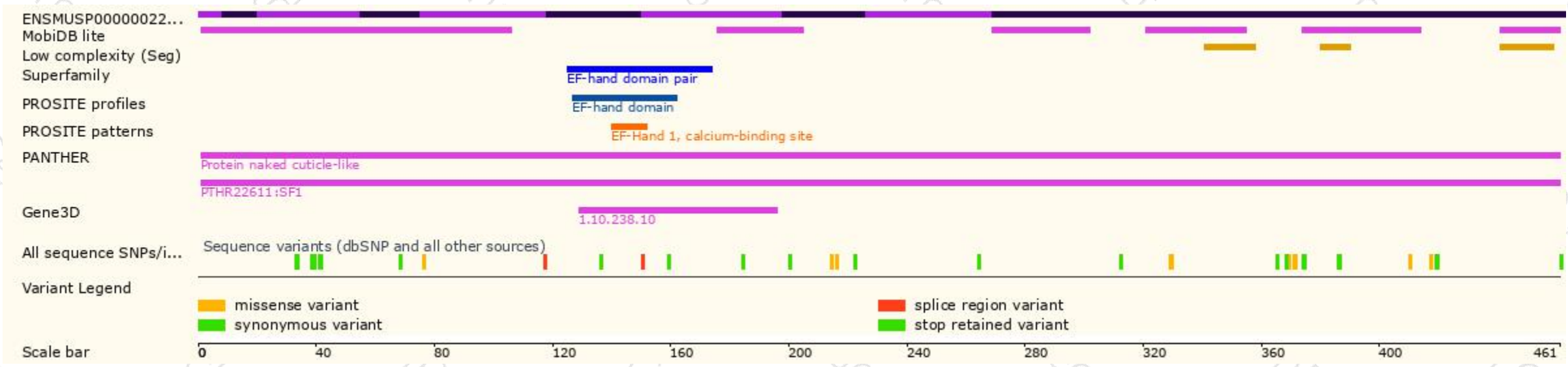
The strategy is based on the design of *Nkd2-201* transcript, the transcription is shown below:



Genomic location distribution

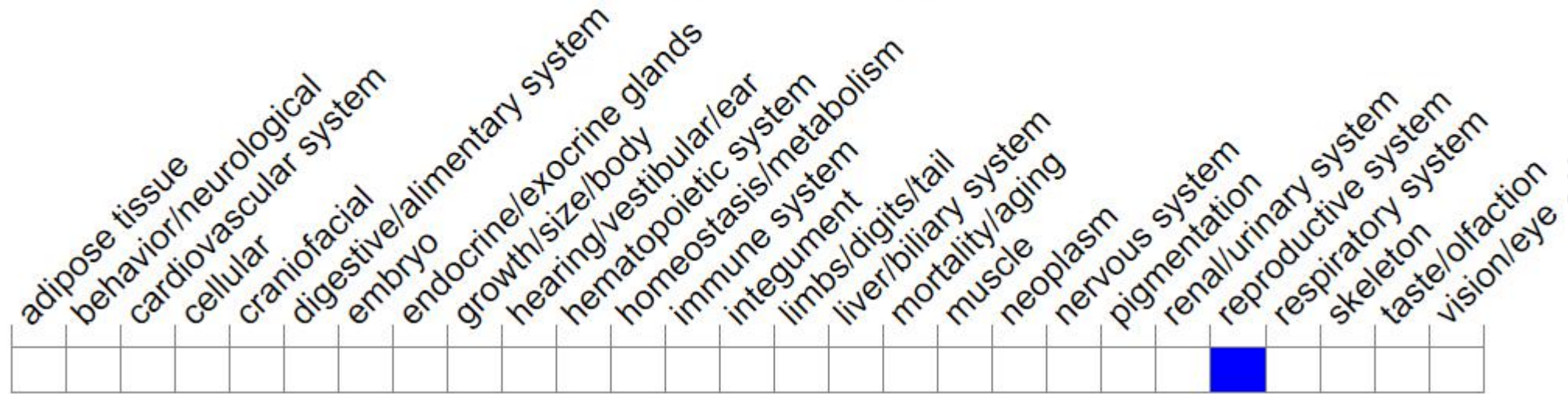


Protein domain



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, mice homozygous for a reporter allele are viable and fertile but show a slight and background-sensitive reduction in average litter size relative to control mice.

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

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