

***Dact1* Cas9-CKO Strategy**

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Reviewer:

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Design Date:

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Project Overview

Project Name

Dact1

Project type

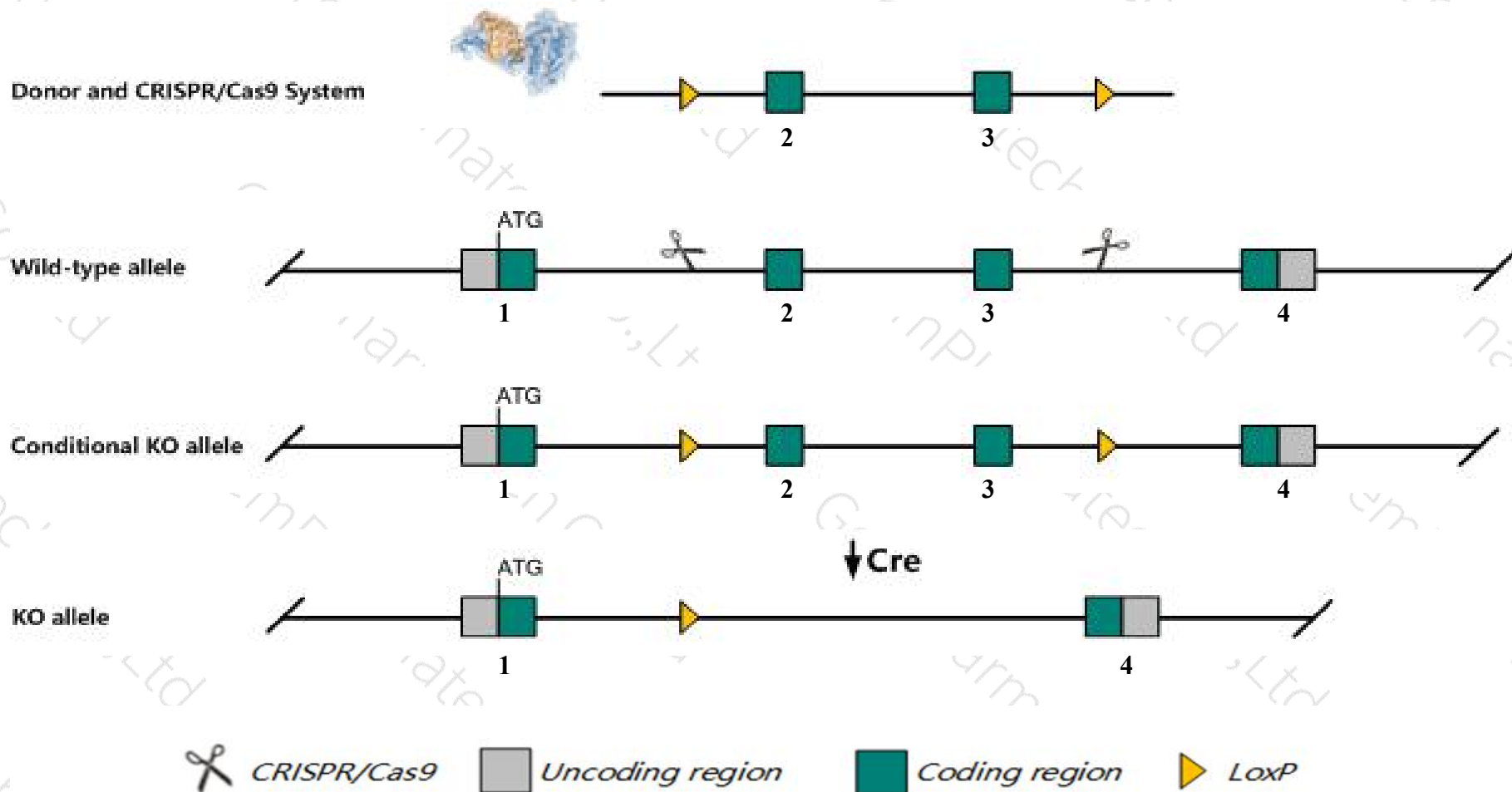
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dact1* gene. The schematic diagram is as follows:



- The *Dact1* gene has 2 transcripts. According to the structure of *Dact1* gene, exon2-exon3 of *Dact1-201* (ENSMUST00000061273.11) transcript is recommended as the knockout region. The region contains 289bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dact1* 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.

Notice

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit neonatal lethality, abnormal embryogenesis, blind-ended colons, and abnormal renal/urinary system.
- The *Dact1* gene is located on the Chr12. 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)

Dact1 dishevelled-binding antagonist of beta-catenin 1 [Mus musculus (house mouse)]

Gene ID: 59036, updated on 31-Jan-2019

Summary



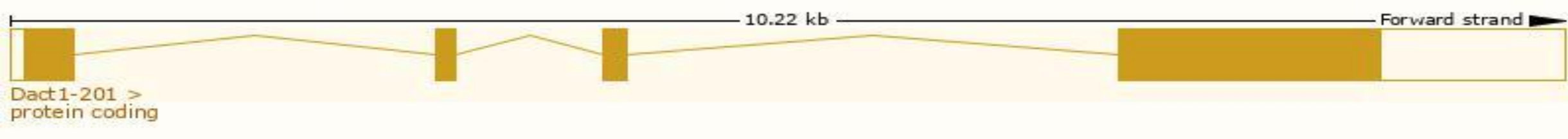
Official Symbol	Dact1 provided by MGI
Official Full Name	dishevelled-binding antagonist of beta-catenin 1 provided by MGI
Primary source	MGI:MGI:1891740
See related	Ensembl:ENSMUSG00000044548
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4921528D17Rik, AI115603, DAPPER, DAPPER1, FRODO, Frd1, Frodo1, MDpr1, MTNG3, THYEX3
Expression	Broad expression in CNS E14 (RPKM 15.4), whole brain E14.5 (RPKM 14.9) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

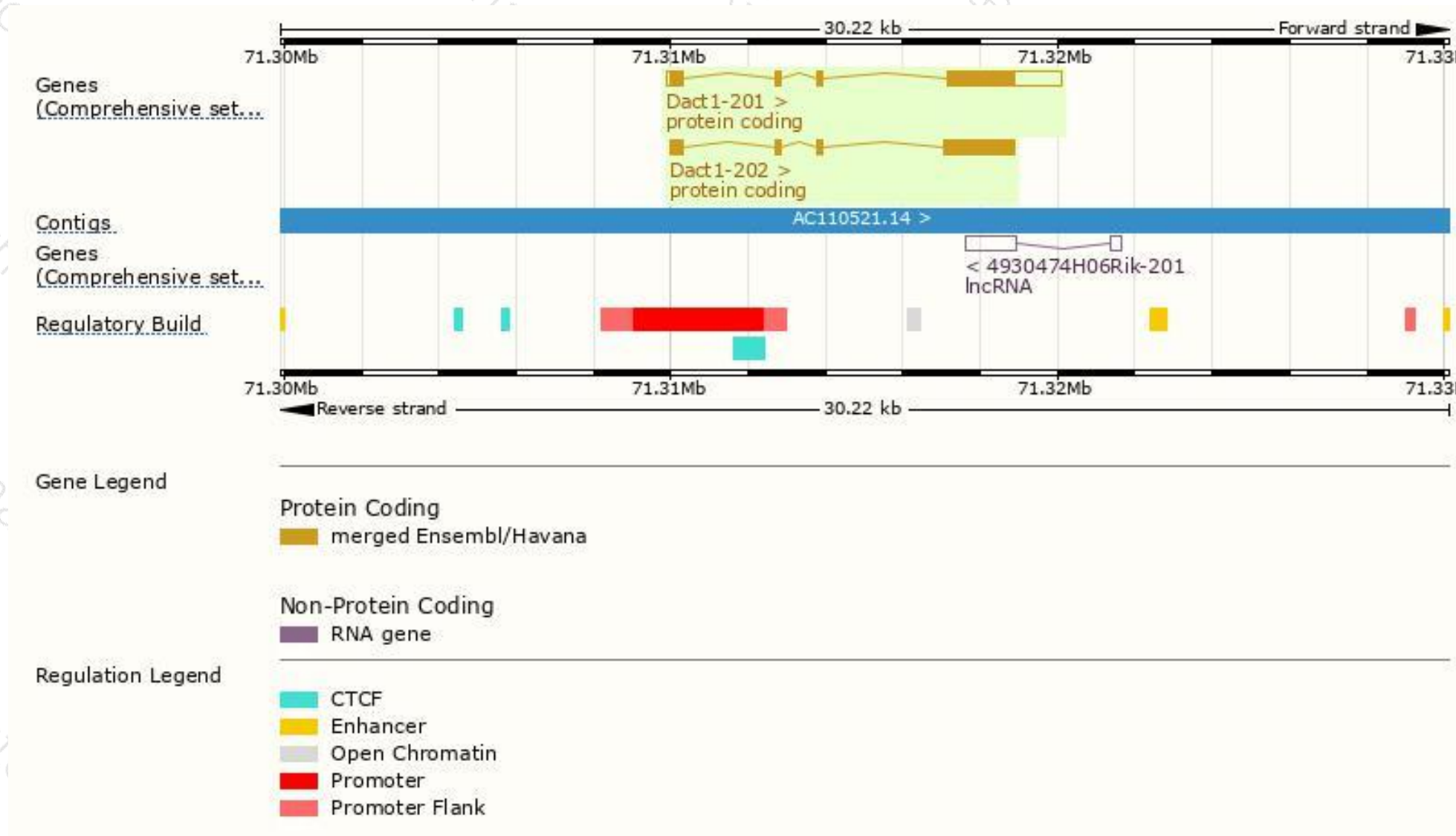
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dact1-201	ENSMUST00000061273.11	3650	778aa	Protein coding	CCDS25963	Q8R4A3	TSL:1 GENCODE basic
Dact1-202	ENSMUST00000150639.1	2448	815aa	Protein coding	CCDS49083	D3Z5V0	TSL:3 GENCODE basic APPRIS P1

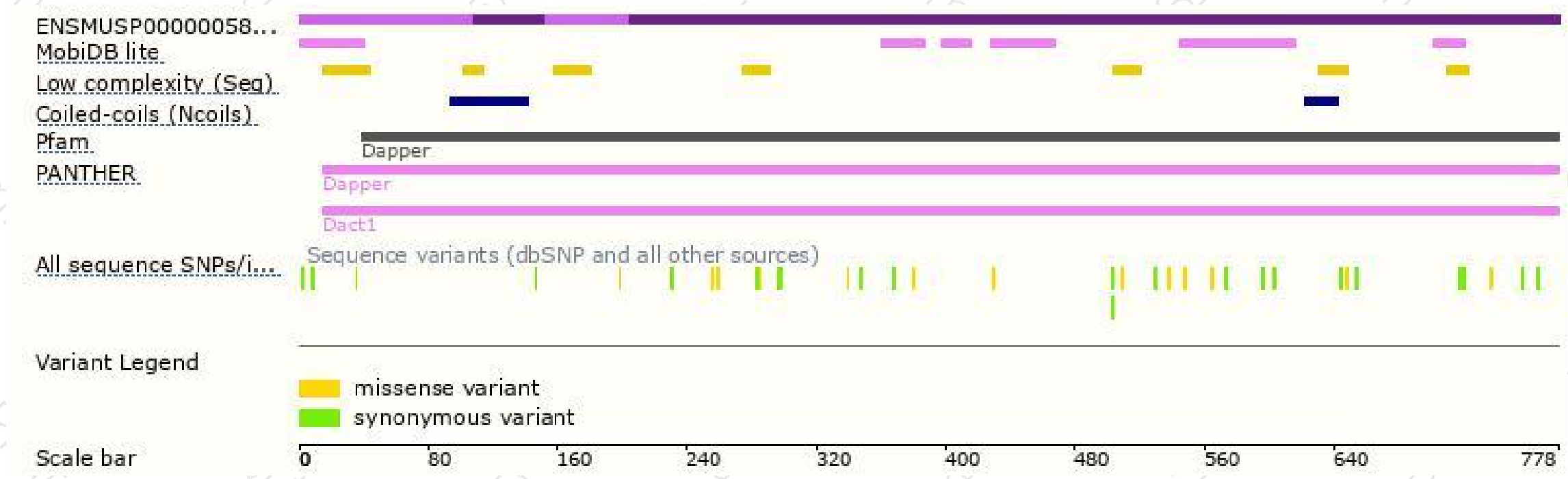
The strategy is based on the design of *Dact1-201* transcript,The transcription is shown below



Genomic location distribution

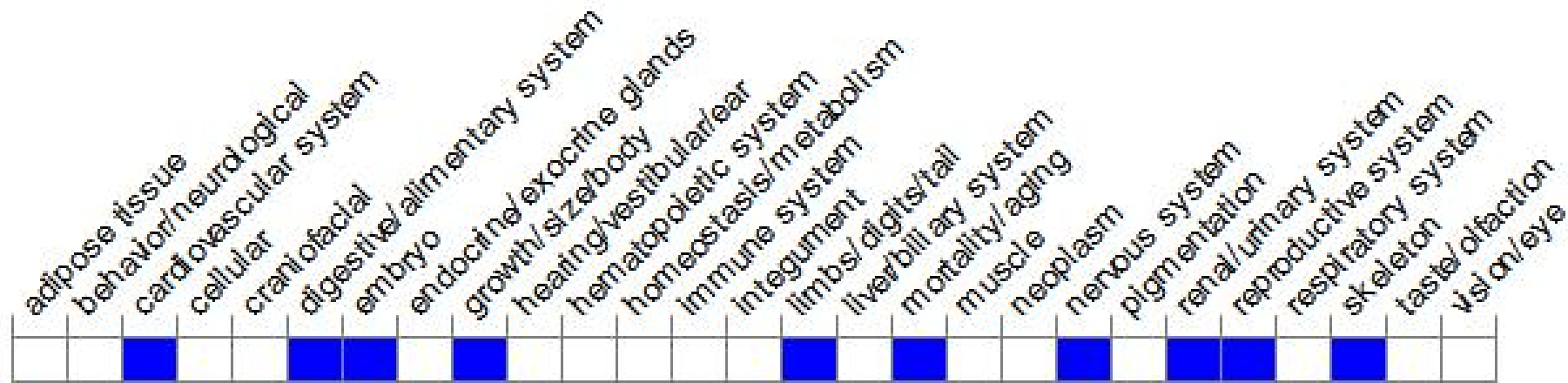


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



Click cells to view annotations.

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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