

Fzd7 Cas9-CKO Strategy

Designer:

Yang Zeng

Reviewer:

Ruirui Zhang

Design Date:

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Project Overview

Project Name

Fzd7

Project type

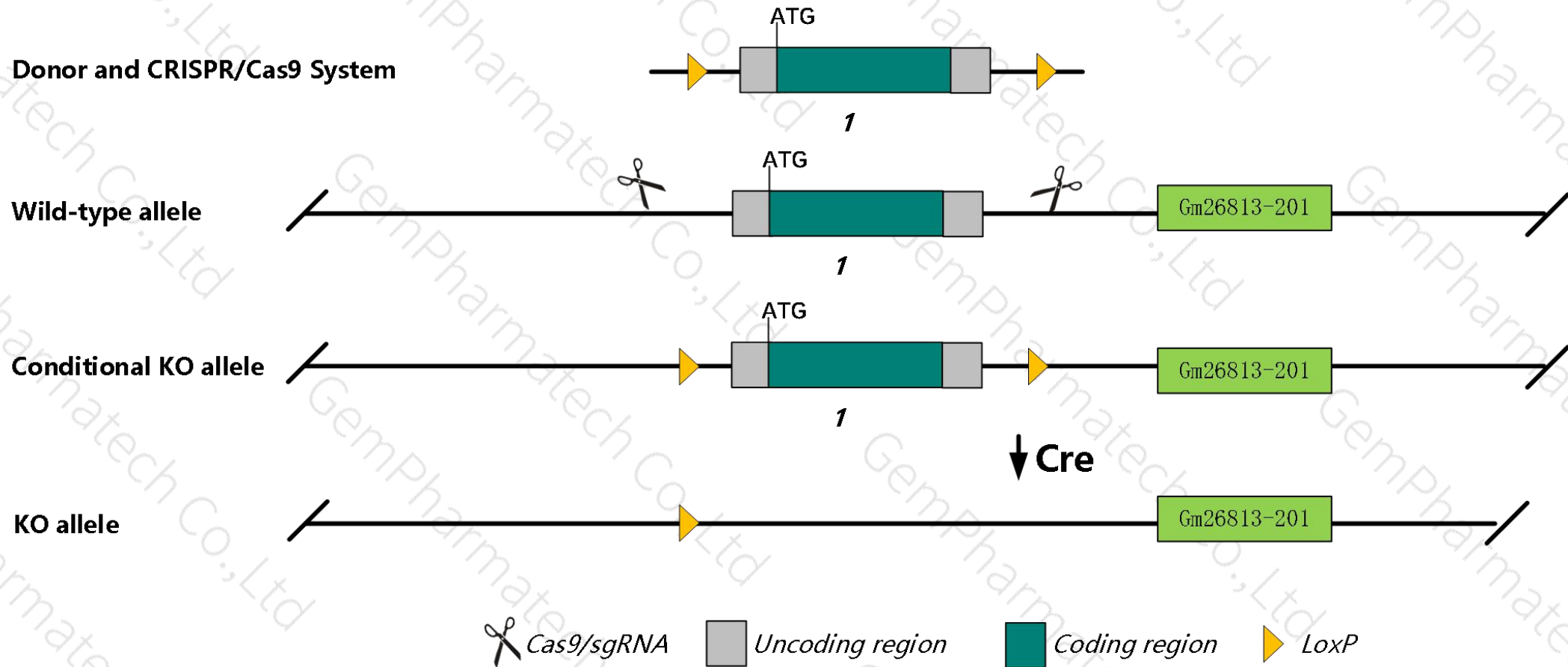
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fzd7* gene. The schematic diagram is as follows:



Technical routes

- The *Fzd7* gene has 1 transcript. According to the structure of *Fzd7* gene, exon1 of *Fzd7*-201 (ENSMUST00000114246.3) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fzd7* 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 null allele exhibit a shorter tail with a distal kink with full penetrance as well as cardiac defects with low penetrance.
- The *Fzd7* gene is located on the Chr1. 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)

Fzd7 frizzled class receptor 7 [*Mus musculus* (house mouse)]

Gene ID: 14369, updated on 26-Nov-2019

Summary

Official Symbol Fzd7 provided by [MGI](#)

Official Full Name frizzled class receptor 7 provided by [MGI](#)

Primary source [MGI:MGI:108570](#)

See related [Ensembl:ENSMUSG000000041075](#)

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 Fz7

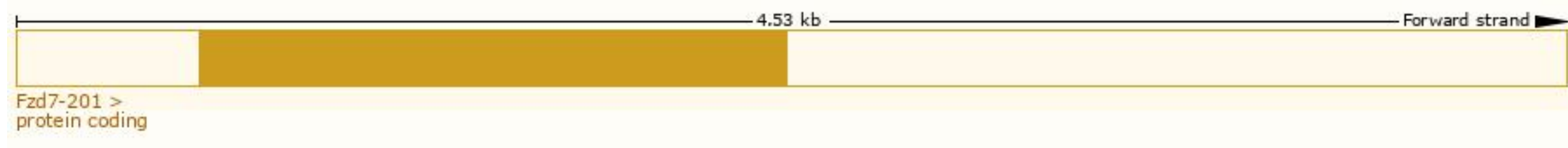
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

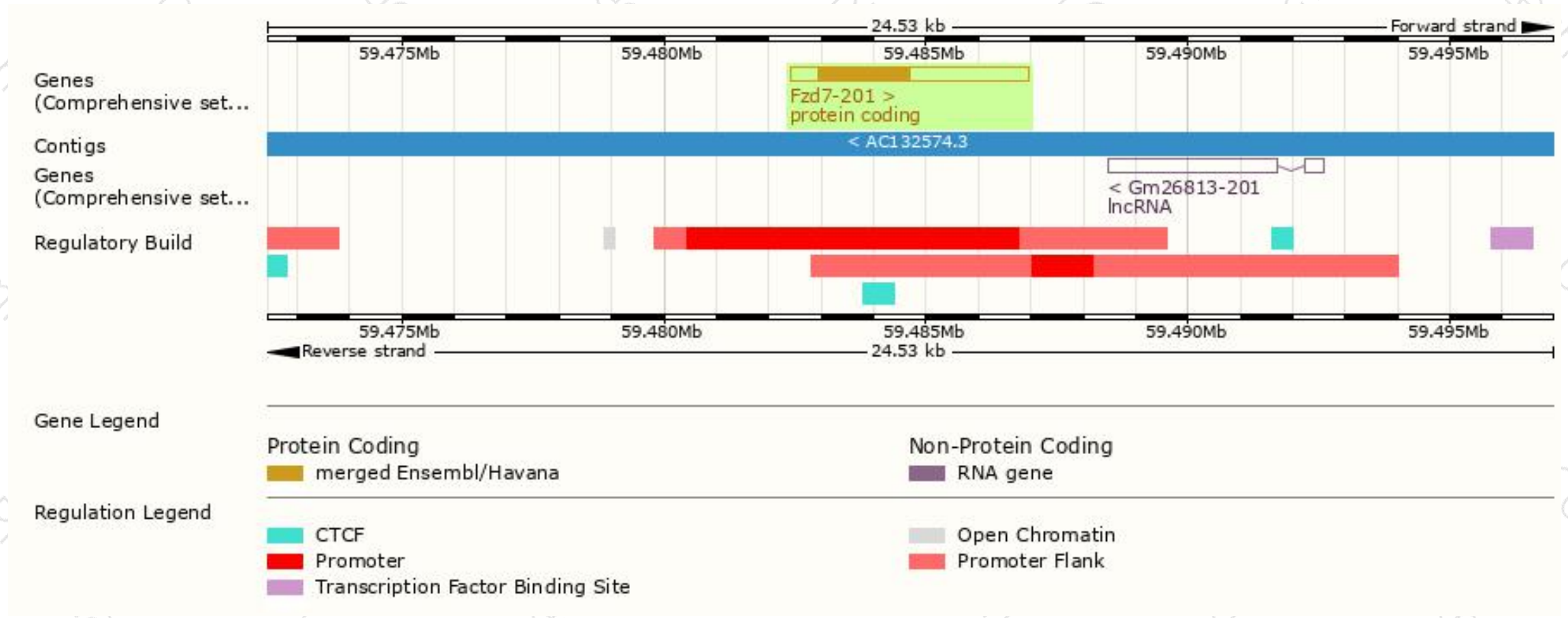
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fzd7-201	ENSMUST00000114246.3	4532	572aa	Protein coding	CCDS14985	Q61090	TSL:NA GENCODE basic APPRIS P1

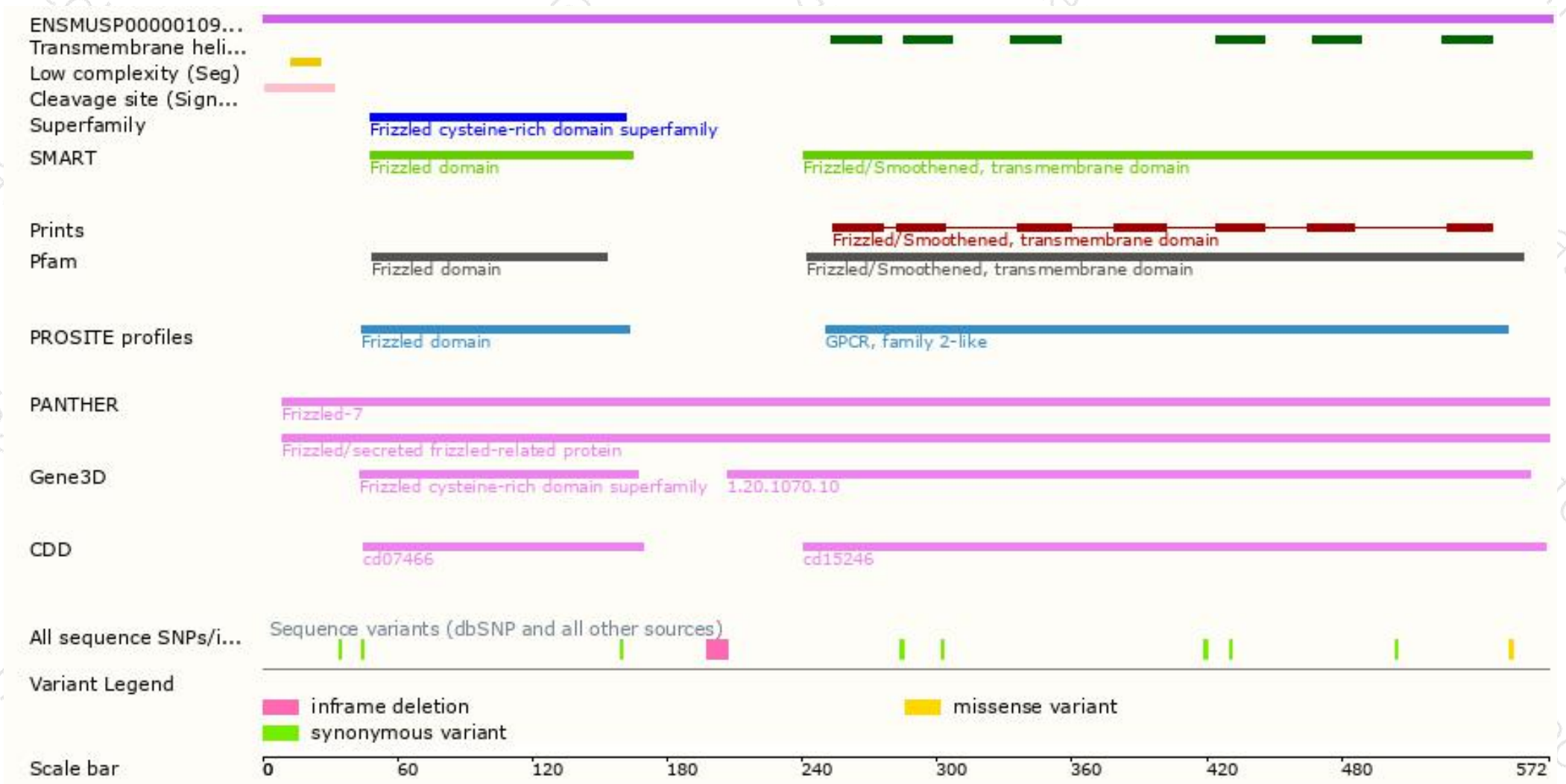
The strategy is based on the design of *Fzd7-201* transcript, The transcription is shown below



Genomic location distribution

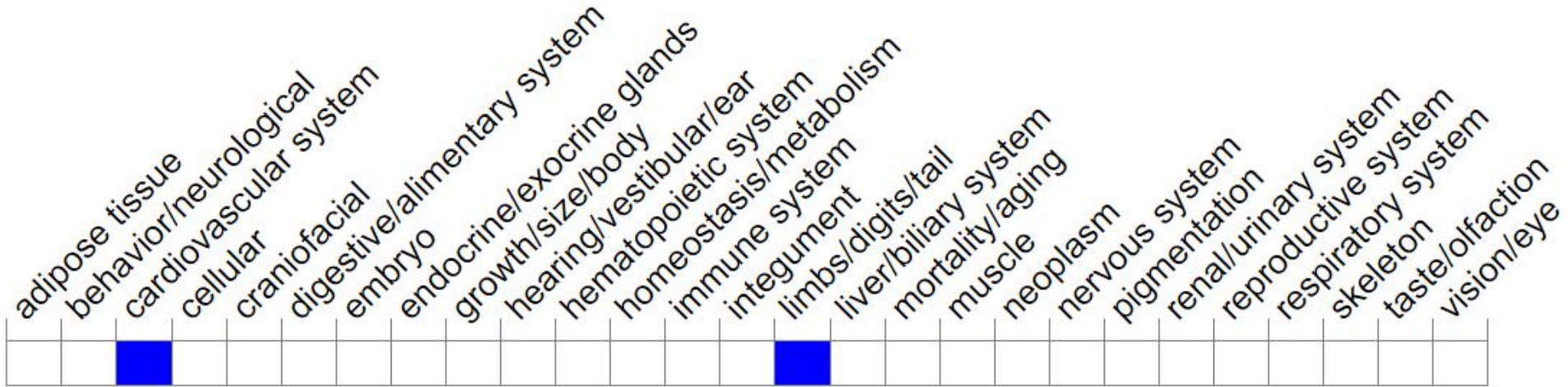


Protein domain



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, Homozygotes for a spontaneous or null mutation display microphthalmia, fusion of the lens and cornea, and other corneal and lens abnormalities. Null mice have reduced smooth muscle cell density in the ascending aorta and show aortic remodeling and rupture of the aorta after TAC.

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

Tel: 400-9660890

