

Ddb1 Cas9-KO Strategy

Designer:

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Date:

2019-7-26

Project Overview

Project Name

Ddb1

Project type

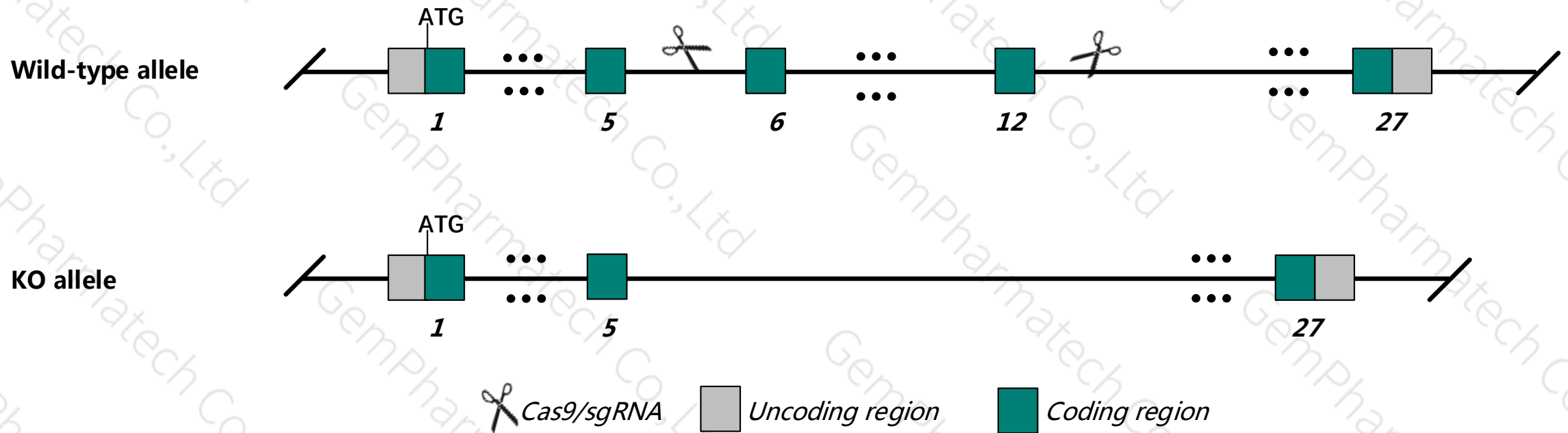
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ddb1* gene. The schematic diagram is as follows:



Technical routes

- The *Ddb1* gene has 11 transcripts. According to the structure of *Ddb1* gene, exon6-12 of *Ddb1*-201 (ENSMUST00000025649.9) transcript is recommended as the knockout region. The region contains 746bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ddb1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- According to the existing MGI data , complete deletion of this gene results in embryonic lethality; conditional mutation causes increased apoptosis in the developing brain, and defects in lens formation.
- Transcript *Ddb1-210* may not be affected.
- The *Ddb1* gene is located on the Chr19. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Ddb1 damage specific DNA binding protein 1 [*Mus musculus* (house mouse)]












Gene ID: 13194, updated on 12-May-2019

Summary

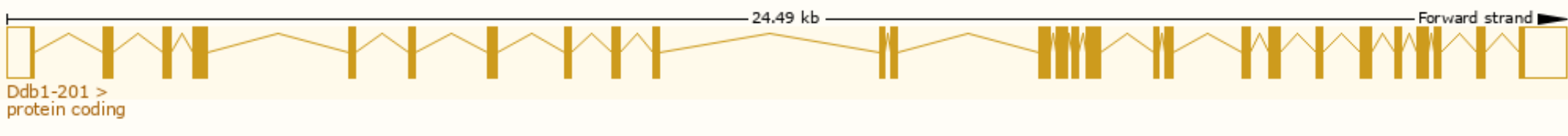
Official Symbol	Ddb1 provided by MGI
Official Full Name	damage specific DNA binding protein 1 provided by MGI
Primary source	MGI:MGI:1202384
See related	Ensembl:ENSMUSG00000024740
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	127kDa; AA408517; p127-Ddb1
Expression	Ubiquitous expression in placenta adult (RPKM 176.5), limb E14.5 (RPKM 97.4) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

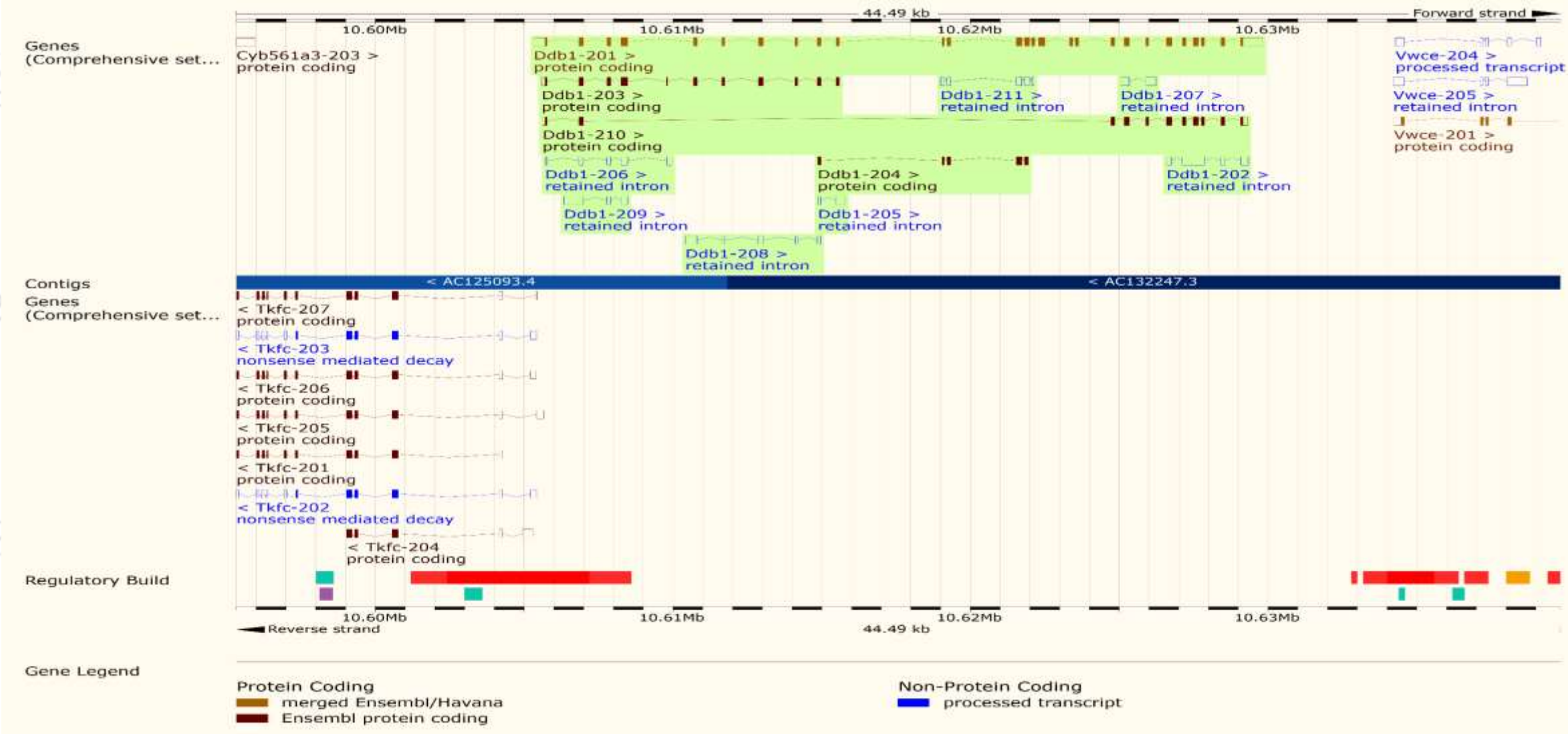
The gene has 6 transcripts, and all transcripts are shown below: :

Show/hide columns (1 hidden)							Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags	
Ddb1-201	ENSMUST00000025649.9	4459	1140aa	 Protein coding	CCDS37915	Q3U1J4	TSL:1	GENCODE basic APPRIS P1
Ddb1-210	ENSMUST00000237337.1	1589	451aa	 Protein coding	-	-	GENCODE basic	
Ddb1-203	ENSMUST00000236280.1	1380	420aa	 Protein coding	-	-	CDS 3' incomplete	
Ddb1-204	ENSMUST00000236328.1	587	196aa	 Protein coding	-	-	CDS 5' and 3' incomplete	
Ddb1-202	ENSMUST00000236279.1	1279	No protein	 Retained intron	-	-	-	
Ddb1-209	ENSMUST00000237318.1	988	No protein	 Retained intron	-	-	-	
Ddb1-208	ENSMUST00000237138.1	854	No protein	 Retained intron	-	-	-	
Ddb1-206	ENSMUST00000236722.1	714	No protein	 Retained intron	-	-	-	
Ddb1-211	ENSMUST00000237804.1	667	No protein	 Retained intron	-	-	-	
Ddb1-207	ENSMUST00000236937.1	628	No protein	 Retained intron	-	-	-	
Ddb1-205	ENSMUST00000236596.1	416	No protein	 Retained intron	-	-	-	

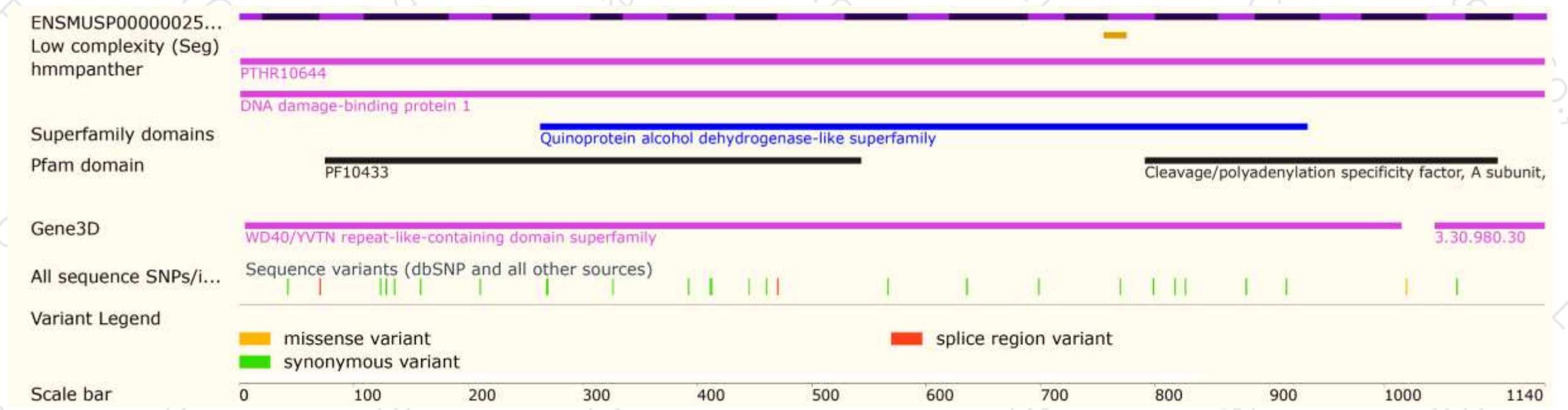
The strategy is based on the design of *Ddb1-201* transcript,The transcription is shown below



Genomic location (Ensembl)

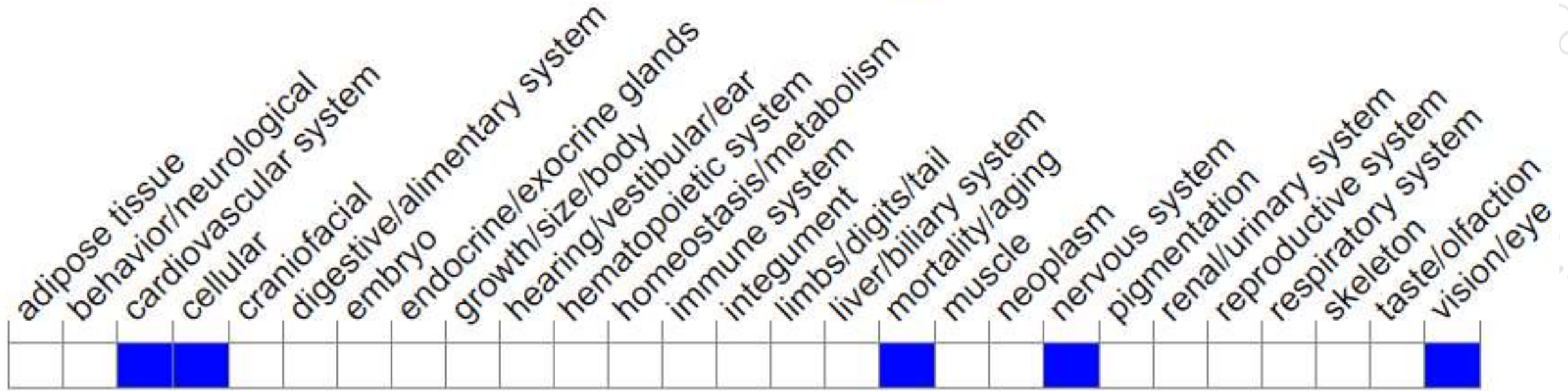


Protein domain (Ensembl)



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, Complete deletion of this gene results in embryonic lethality; conditional mutation causes increased apoptosis in the developing brain, and defects in lens formation.

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