

Odc1 Cas9-KO Strategy

Designer: Daohua Xu

Project Overview

Project Name

Odc1

Project type

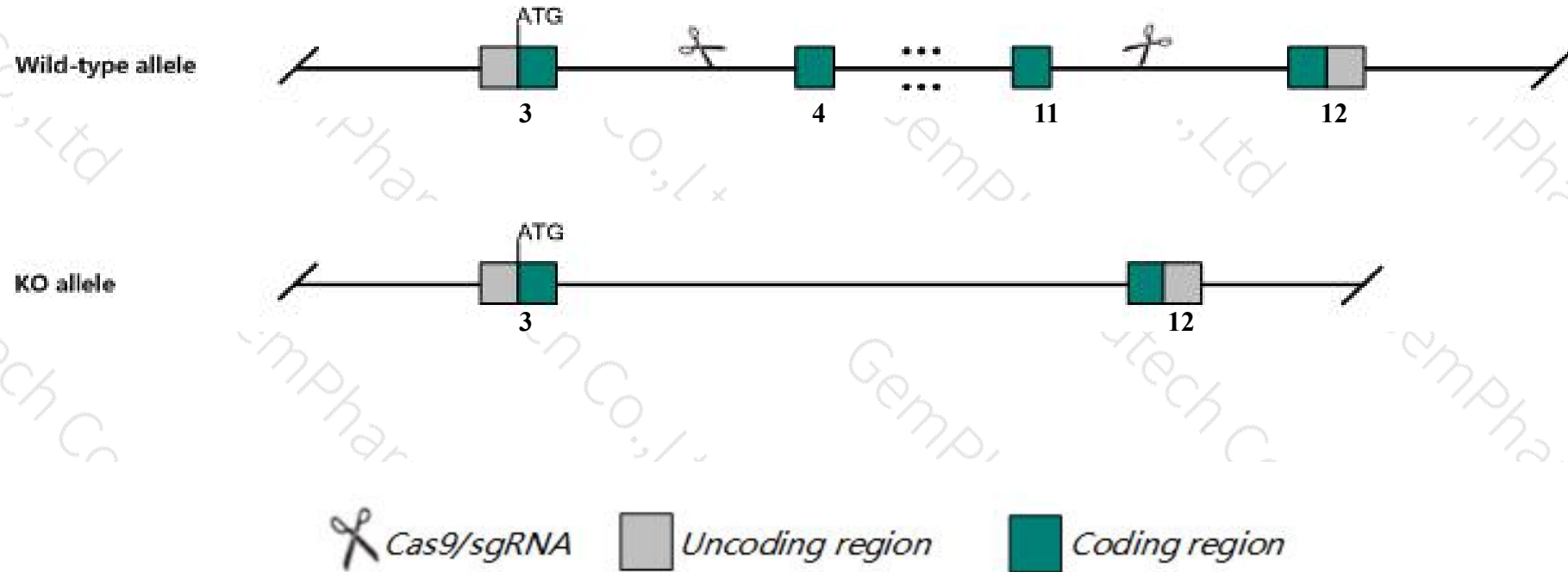
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Odc1* gene. The schematic diagram is as follows:



- The *Odc1* gene has 8 transcripts. According to the structure of *Odc1* gene, exon4-exon11 of *Odc1-201* (ENSMUST00000171737.2) transcript is recommended as the knockout region. The region contains 1139bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Odc1* 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.

- According to the existing MGI data, Homozygous null embryos die prior to gastrulation.
- The *Odc1* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Odc1 ornithine decarboxylase, structural 1 [Mus musculus (house mouse)]

Gene ID: 18263, updated on 2-Apr-2019

Summary



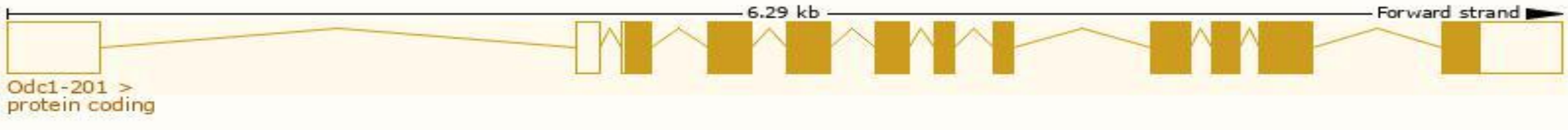
Official Symbol	Odc1 provided by MGI
Official Full Name	ornithine decarboxylase, structural 1 provided by MGI
Primary source	MGI:MGI:97402
See related	Ensembl:ENSMUSG00000011179
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ODC
Expression	Broad expression in liver E14 (RPKM 226.2), liver E14.5 (RPKM 221.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

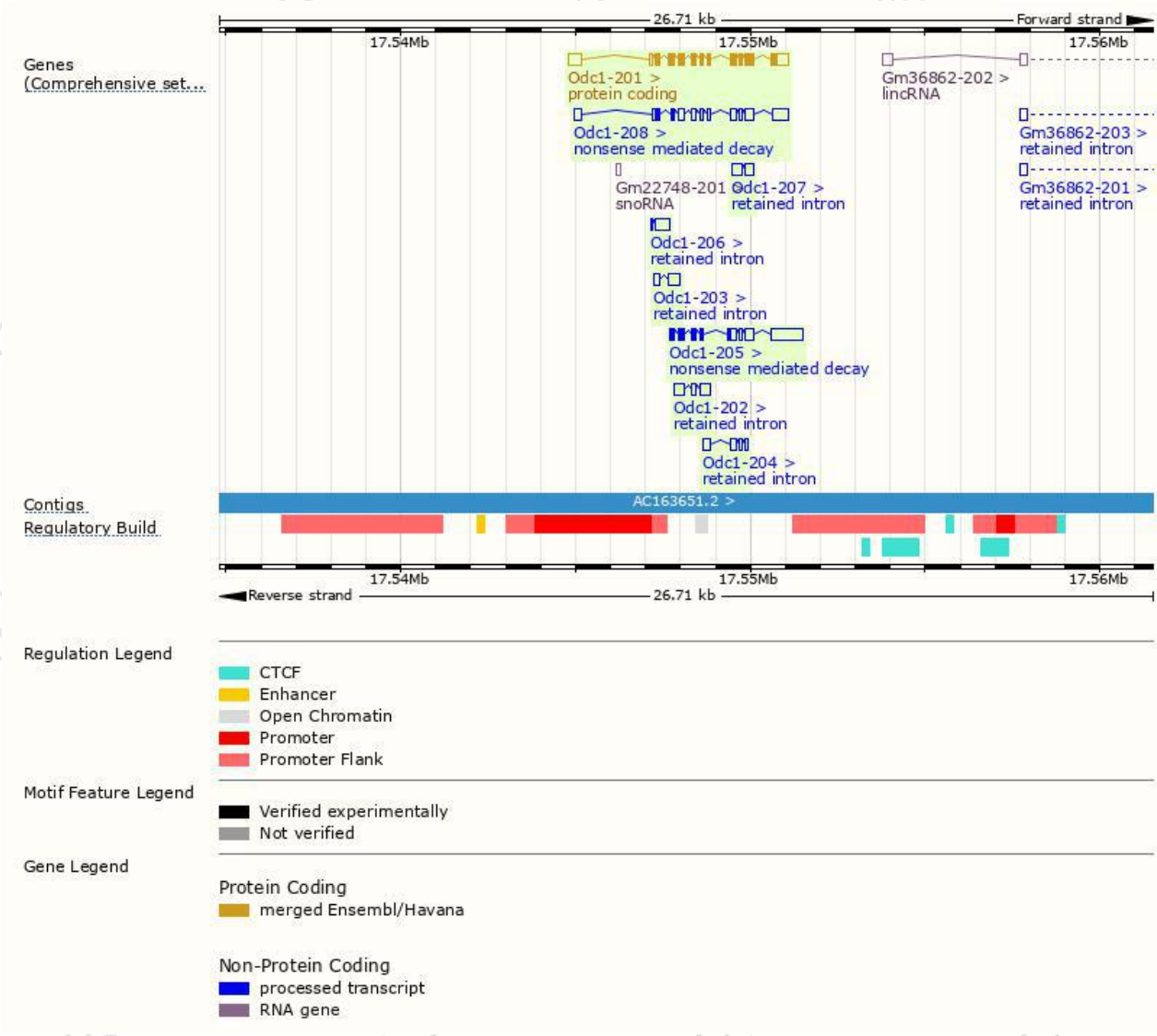
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Odc1-201	ENSMUST00000171737.2	2208	461aa	Protein coding	CCDS25829	P00860	TSL:1 GENCODE basic APPRIS P1
Odc1-205	ENSMUST00000221613.1	1982	197aa	Nonsense mediated decay	-	A0A1Y7VJC5	CDS 5' incomplete TSL:5
Odc1-208	ENSMUST00000222617.1	1884	42aa	Nonsense mediated decay	-	A0A1Y7VMF9	TSL:5
Odc1-202	ENSMUST00000220849.1	764	No protein	Retained intron	-	-	TSL:3
Odc1-204	ENSMUST00000221354.1	561	No protein	Retained intron	-	-	TSL:2
Odc1-207	ENSMUST00000222250.1	538	No protein	Retained intron	-	-	TSL:2
Odc1-203	ENSMUST00000220947.1	504	No protein	Retained intron	-	-	TSL:2
Odc1-206	ENSMUST00000221701.1	472	No protein	Retained intron	-	-	TSL:2

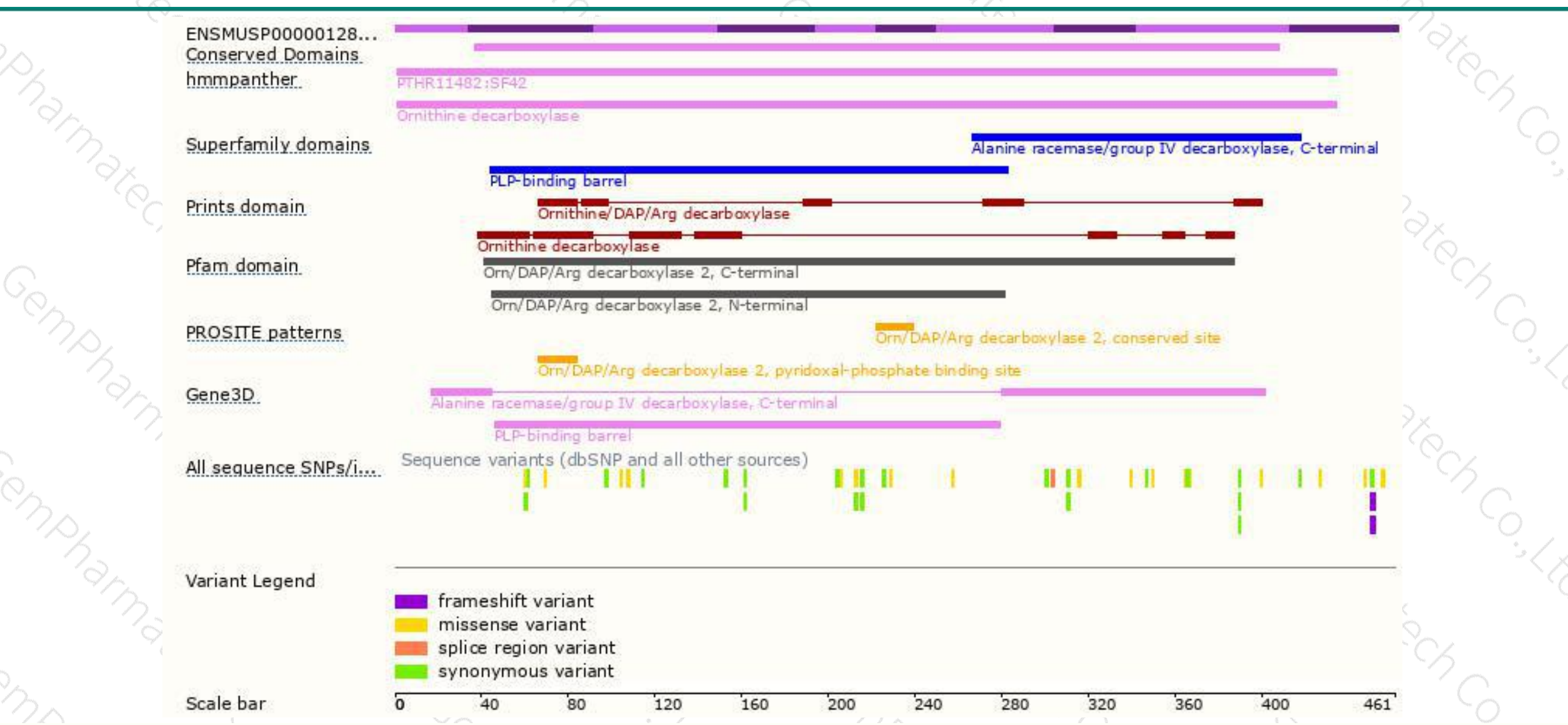
The strategy is based on the design of *Odc1-201* transcript,The transcription is shown below



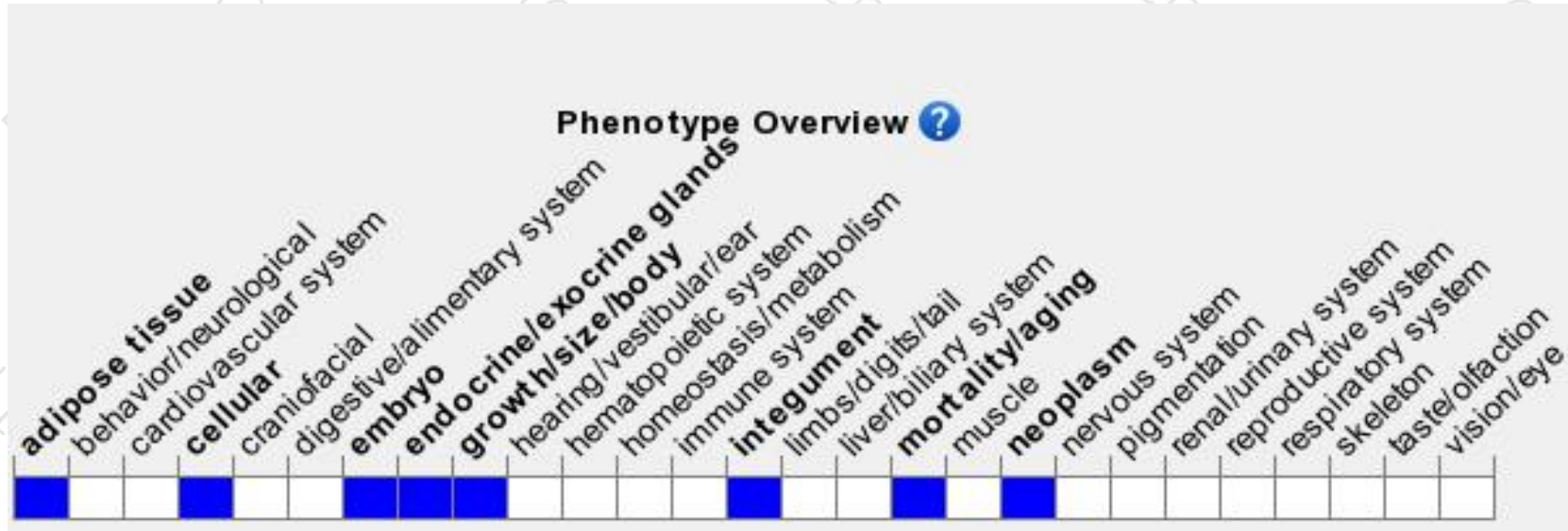
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



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, Homozygous null embryos die prior to gastrulation.

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

Tel: 025-5864 1534

