

Vcam1 Cas9-KO Strategy

Designer:

Huan Fan

Reviewer:

Huan Wang

Design Date:

2019-12-11

Project Overview

Project Name

Vcam1

Project type

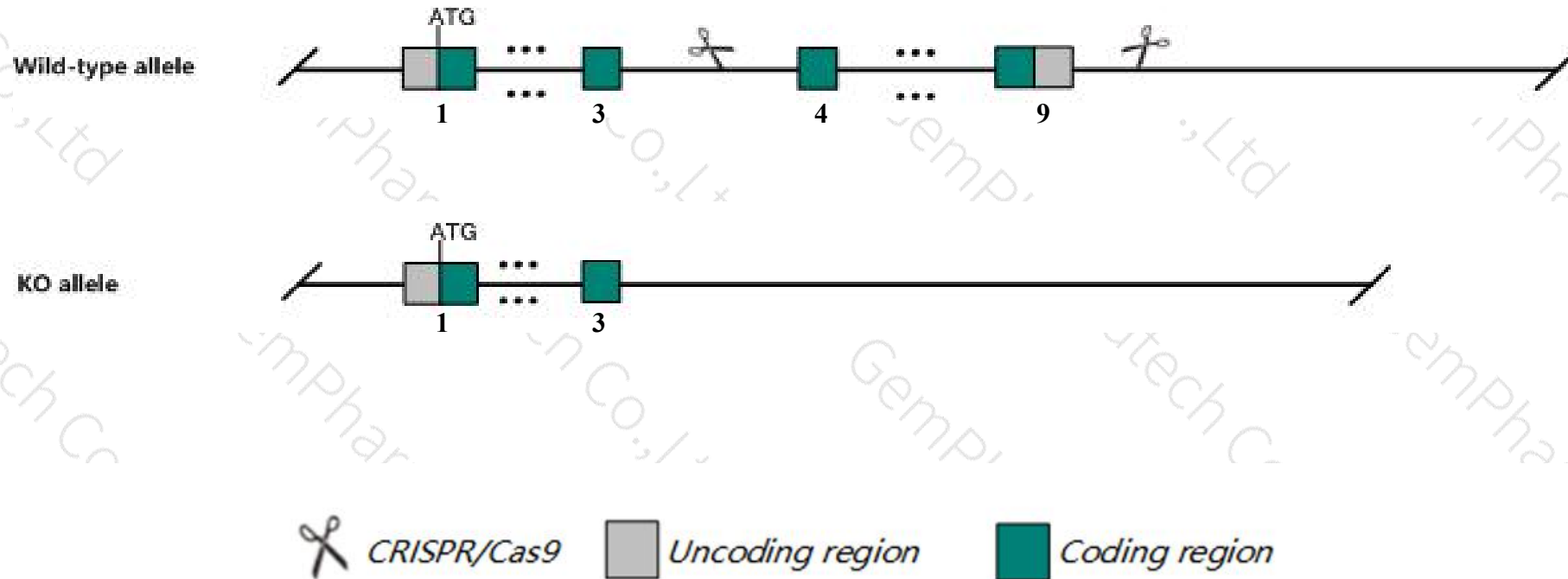
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vcam1* gene. The schematic diagram is as follows:



- The *Vcam1* gene has 4 transcripts. According to the structure of *Vcam1* gene, exon4-exon9 of *Vcam1-201* (ENSMUST00000029574.12) transcript is recommended as the knockout region. The region contains 1559bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Vcam1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Most homozygous null mutants die by embryonic day 12.5 due to defective placenta and failure of chorion/allantois fusion, and heart developmental anomalies. Survivors are generally normal, but have high numbers of circulating blood mononuclear leukocytes.
- The *Vcam1* gene is located on the Chr3. 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)

Vcam1 vascular cell adhesion molecule 1 [Mus musculus (house mouse)]

Gene ID: 22329, updated on 2-Apr-2019

Summary



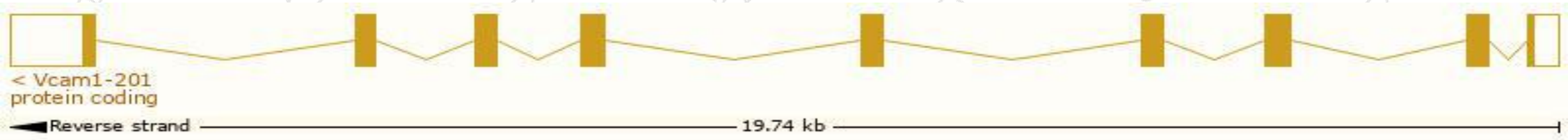
Official Symbol	Vcam1 provided by MGI
Official Full Name	vascular cell adhesion molecule 1 provided by MGI
Primary source	MGI:MGI:98926
See related	Ensembl:ENSMUSG000000027962
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CD106, Vcam-1
Expression	Broad expression in liver E18 (RPKM 27.1), limb E14.5 (RPKM 20.2) and 18 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

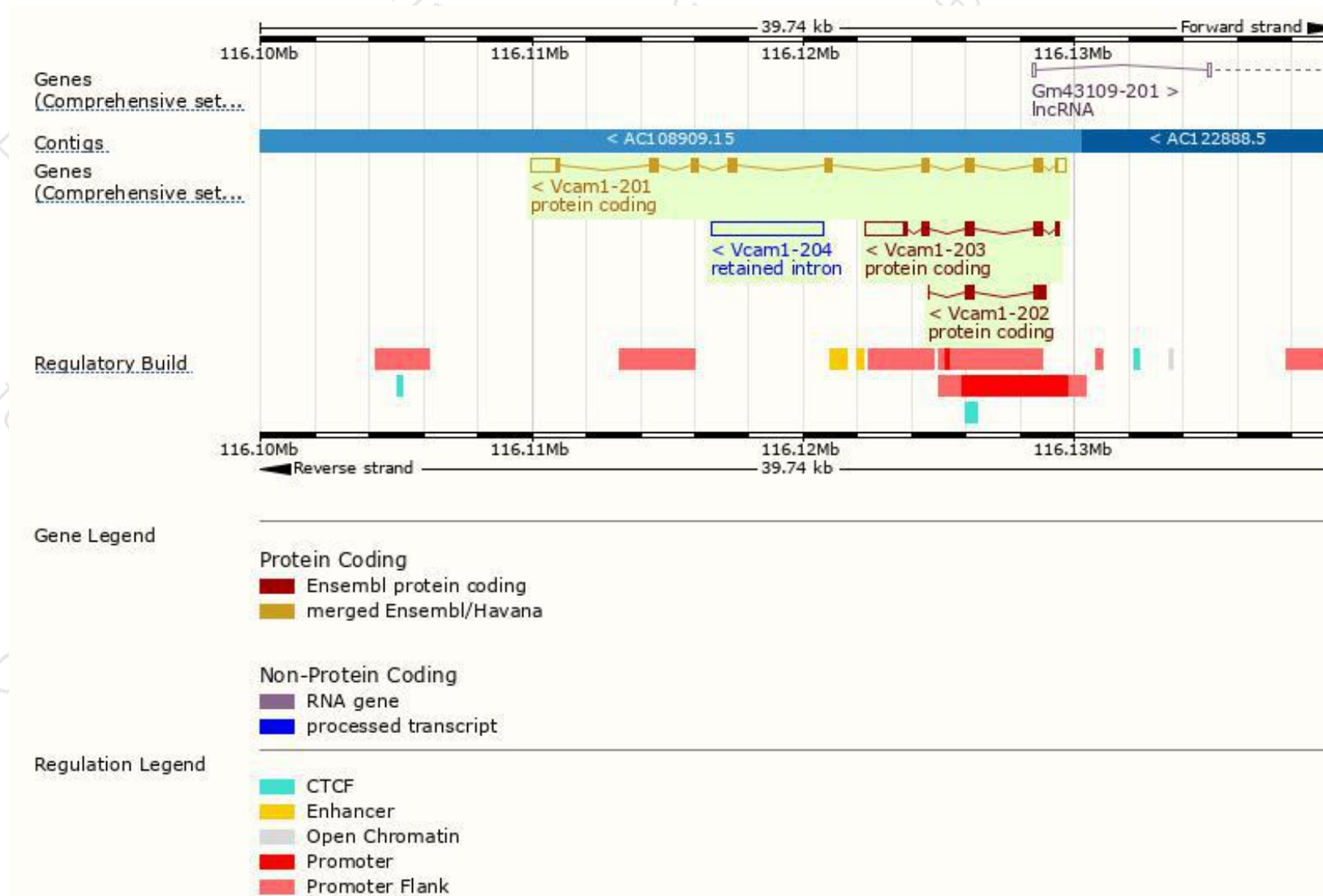
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Vcam1-201	ENSMUST00000029574.12	3469	739aa	Protein coding	CCDS17785	Q3UPN1	TSL:1 GENCODE basic APPRIS P1
Vcam1-203	ENSMUST00000196449.4	2532	345aa	Protein coding	-	P29533 Q544V4	TSL:1 GENCODE basic
Vcam1-202	ENSMUST00000196309.1	749	237aa	Protein coding	-	A0A0G2JFP9	CDS 3' incomplete TSL:3
Vcam1-204	ENSMUST00000197031.1	4088	No protein	Retained intron	-	-	TSL:NA

The strategy is based on the design of *Vcam1-201* transcript,The transcription is shown below



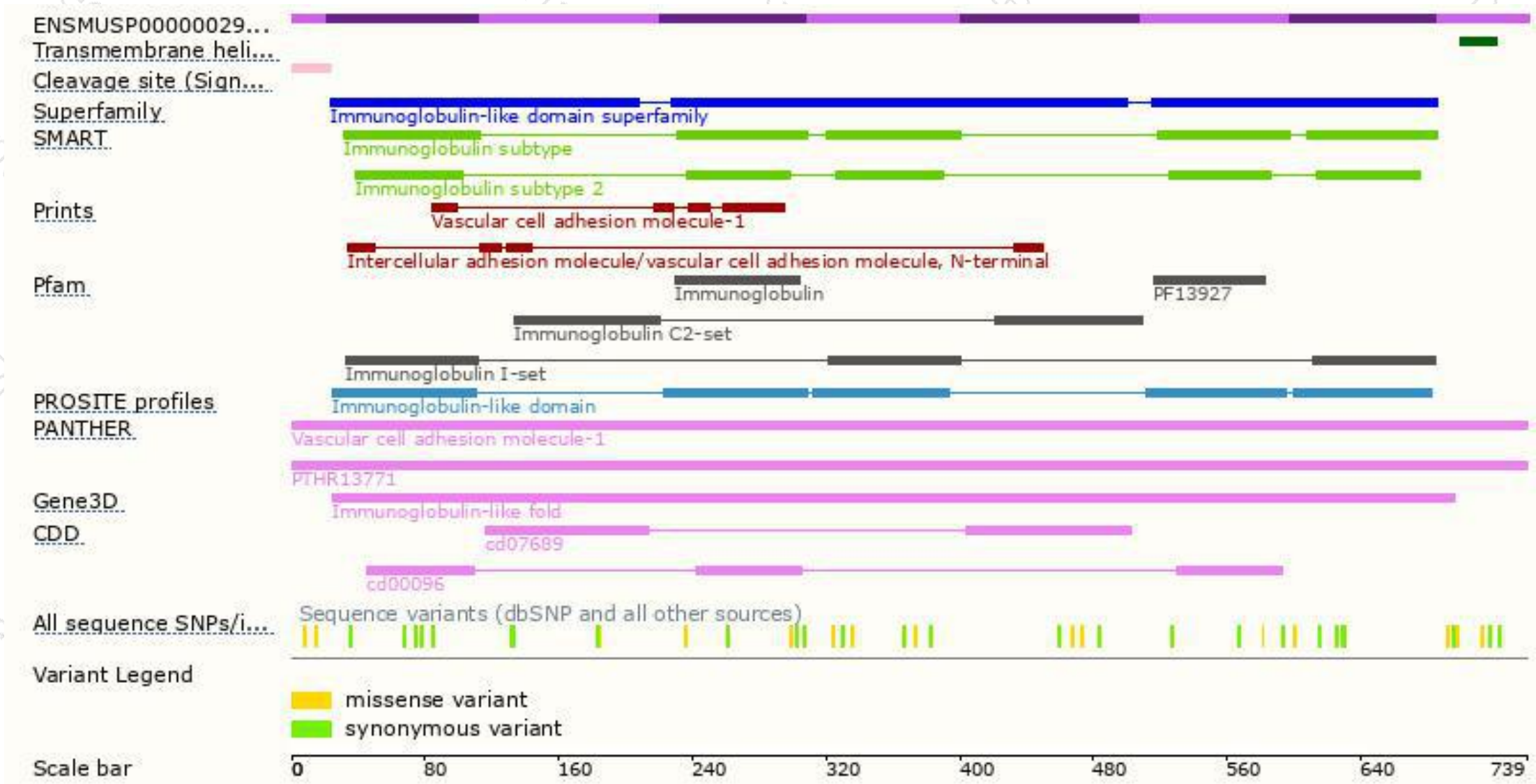
Genomic location distribution



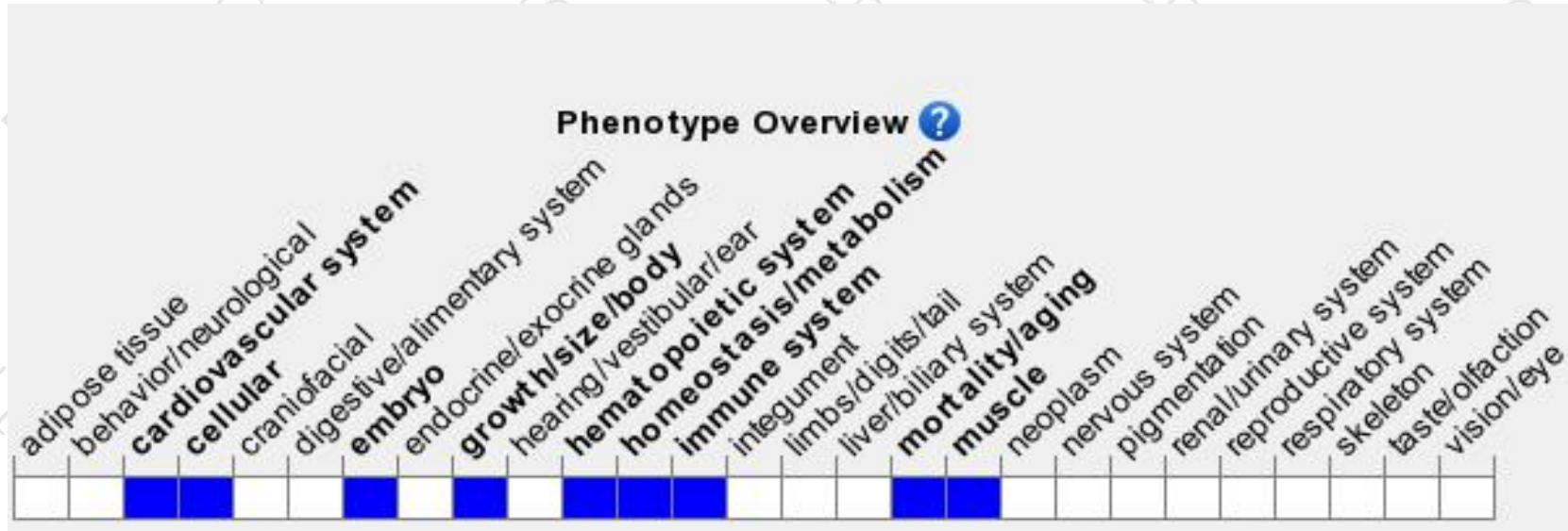
Protein domain



集萃药康
GemPharmatech



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, Most homozygous null mutants die by embryonic day 12.5 due to defective placenta and failure of chorion/allantois fusion, and heart developmental anomalies. Survivors are generally normal, but have high numbers of circulating blood mononuclear leukocytes.

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

Tel: 400-9660890

