

***Trim27* Cas9-KO Strategy**

Designer:	Jing Jin
Reviewer:	Yang Zeng
Design Date:	2018-6-13

Project Overview

Project Name

Trim27

Project type

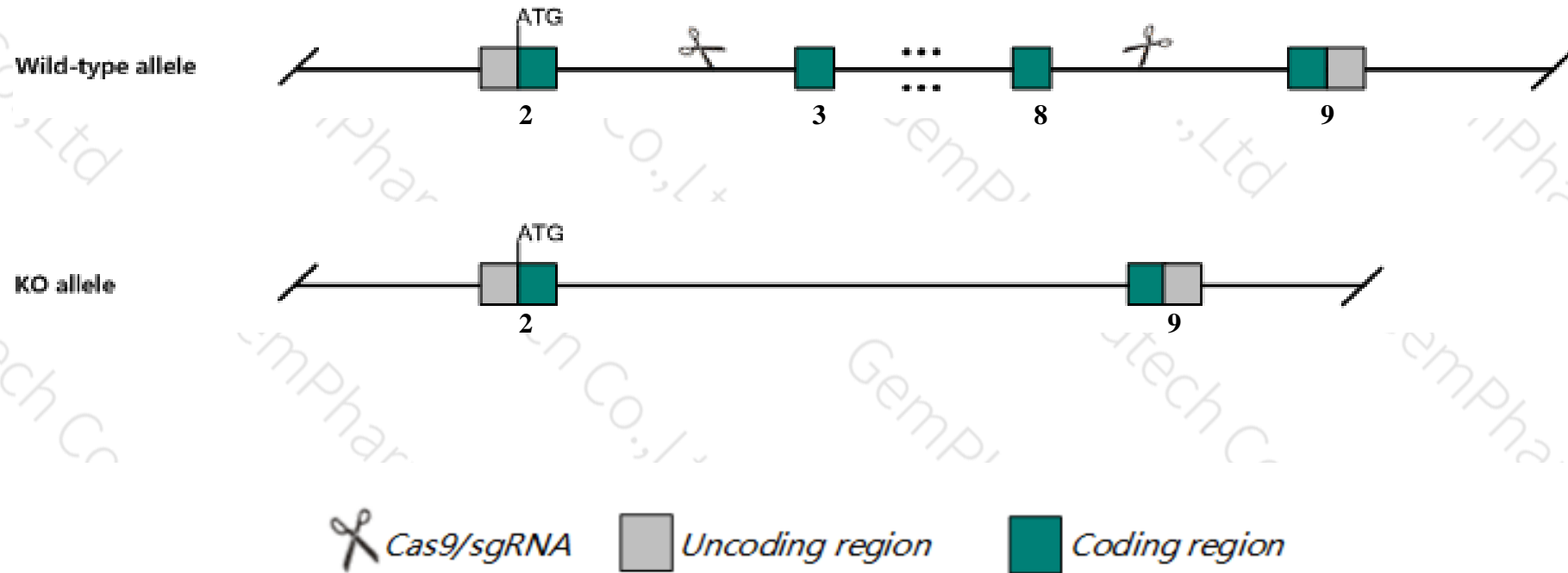
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Trim27* gene. The schematic diagram is as follows:



- The *Trim27* gene has 7 transcripts. According to the structure of *Trim27* gene, exon3-exon8 of *Trim27-206* (ENSMUST00000222544.1) transcript is recommended as the knockout region. The region contains 526bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Trim27* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, Mice homozygous for a gene trap allele exhibit increased potassium/calcium channel activity and TCR-stimulated calcium influx in Th1 and Th2 CD4 T cells. Mice homozygous for another gene trap allele exhibit decreased incidence of chemically-induced tumors.
- The KO region overlaps the *Gm47806* gene. Knockout the region may affect function of *Gm47806* gene.
- The *Trim27* gene is located on the Chr13. 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)

Trim27 tripartite motif-containing 27 [*Mus musculus* (house mouse)]

Gene ID: 19720, updated on 12-Aug-2019

Summary

Official Symbol Trim27 provided by [MGI](#)

Official Full Name tripartite motif-containing 27 provided by [MGI](#)

Primary source [MGI:MGI:97904](#)

See related [Ensembl:ENSMUSG00000021326](#)

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 Rfp; Gm19403; AW538890

Expression Ubiquitous expression in ovary adult (RPKM 33.3), adrenal adult (RPKM 32.0) and 28 other tissues [See more](#)

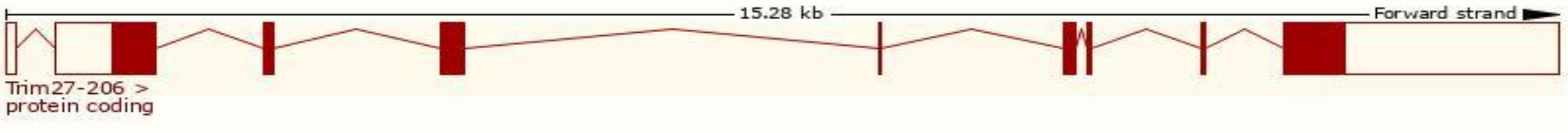
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

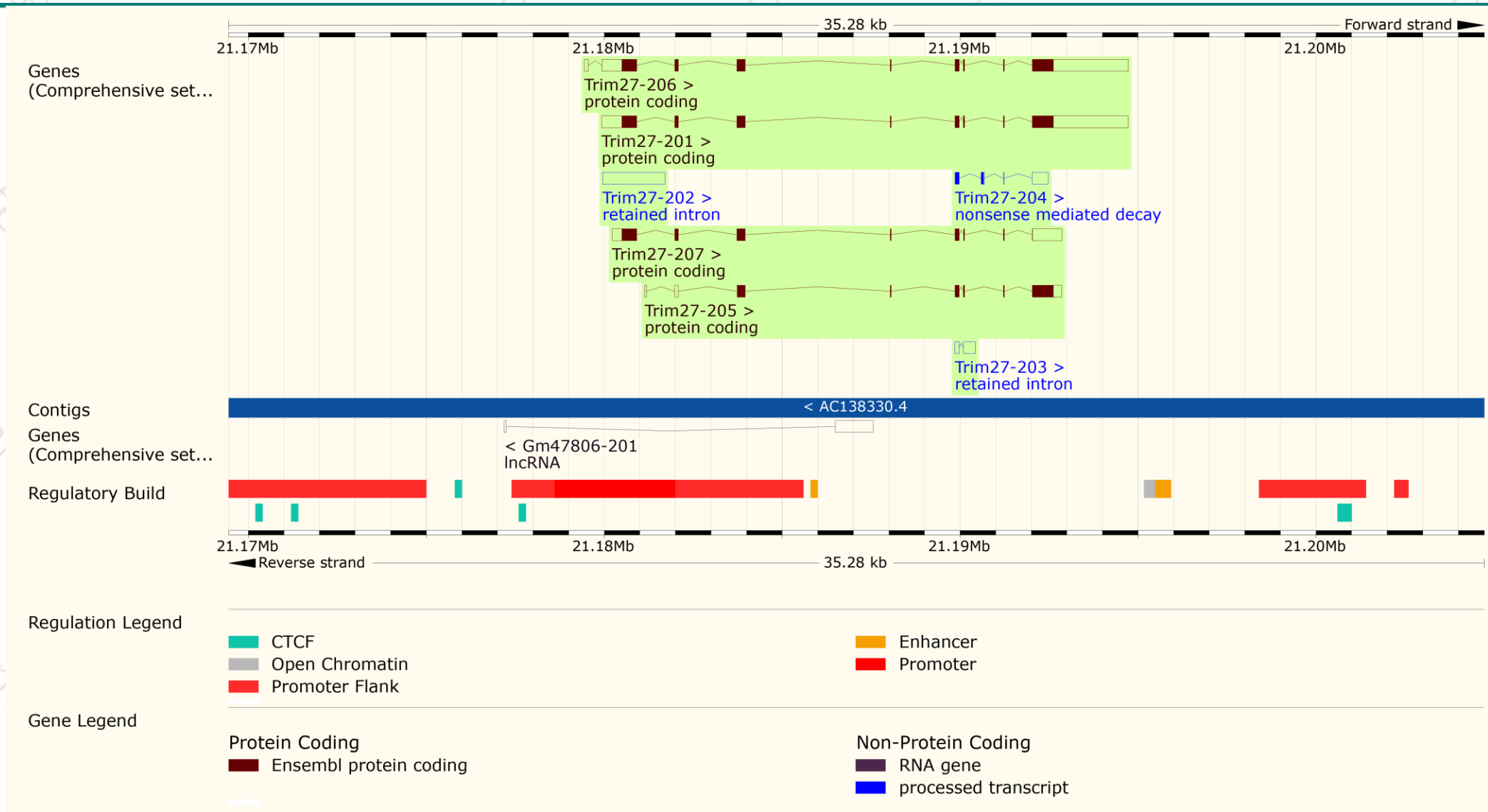
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Trim27-206	ENSMUST00000222544.1	4312	513aa	Protein coding	CCDS36607	Q62158	TSL:5 GENCODE basic APPRIS P1
Trim27-201	ENSMUST00000021761.12	4204	513aa	Protein coding	CCDS36607	Q62158	TSL:1 GENCODE basic APPRIS P1
Trim27-207	ENSMUST00000223065.1	2046	314aa	Protein coding	-	A0A1Y7VKW0	TSL:1 GENCODE basic
Trim27-205	ENSMUST00000221464.1	1400	337aa	Protein coding	-	A0A1Y7VJ13	TSL:5 GENCODE basic
Trim27-204	ENSMUST00000139287.3	683	61aa	Nonsense mediated decay	-	F6U3T5	CDS 5' incomplete TSL:5
Trim27-202	ENSMUST00000124052.2	1750	No protein	Retained intron	-	-	TSL:NA
Trim27-203	ENSMUST00000124794.1	439	No protein	Retained intron	-	-	TSL:3

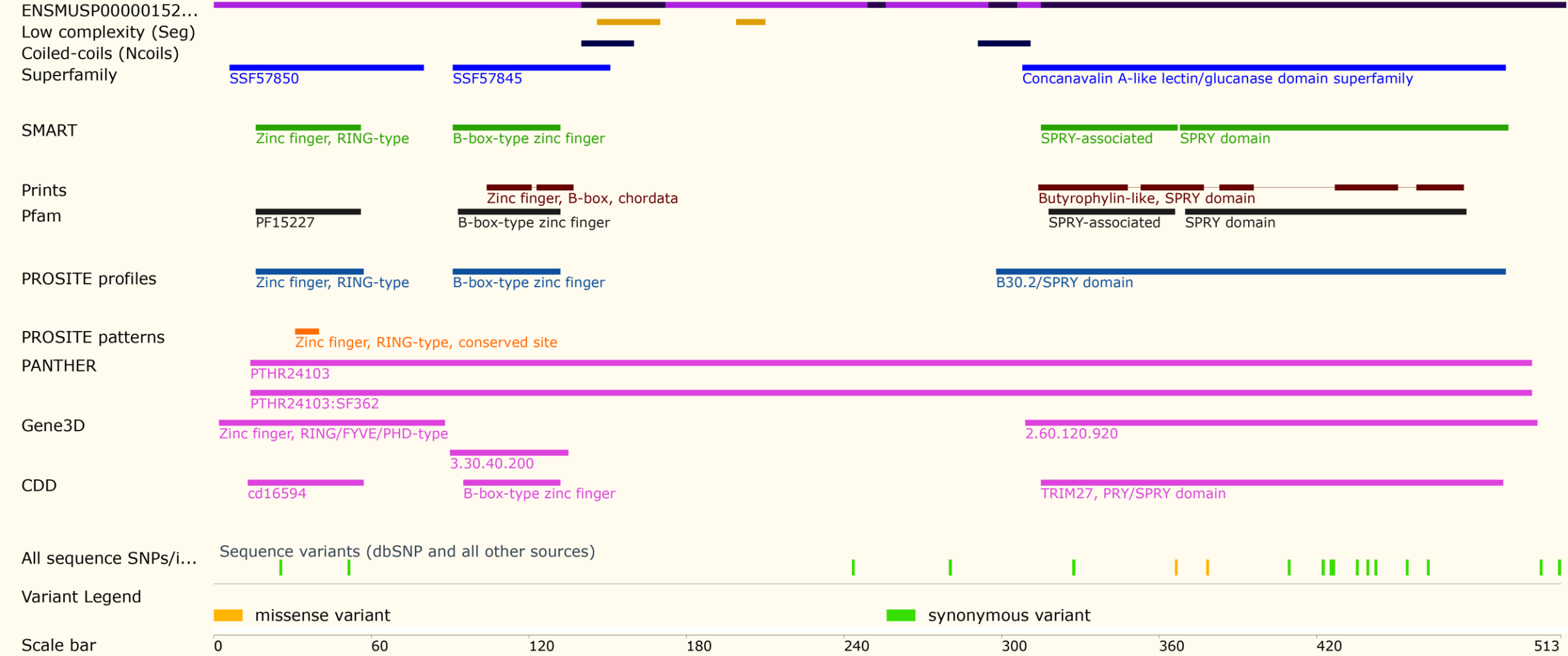
The strategy is based on the design of *Trim27-206* transcript,The transcription is shown below



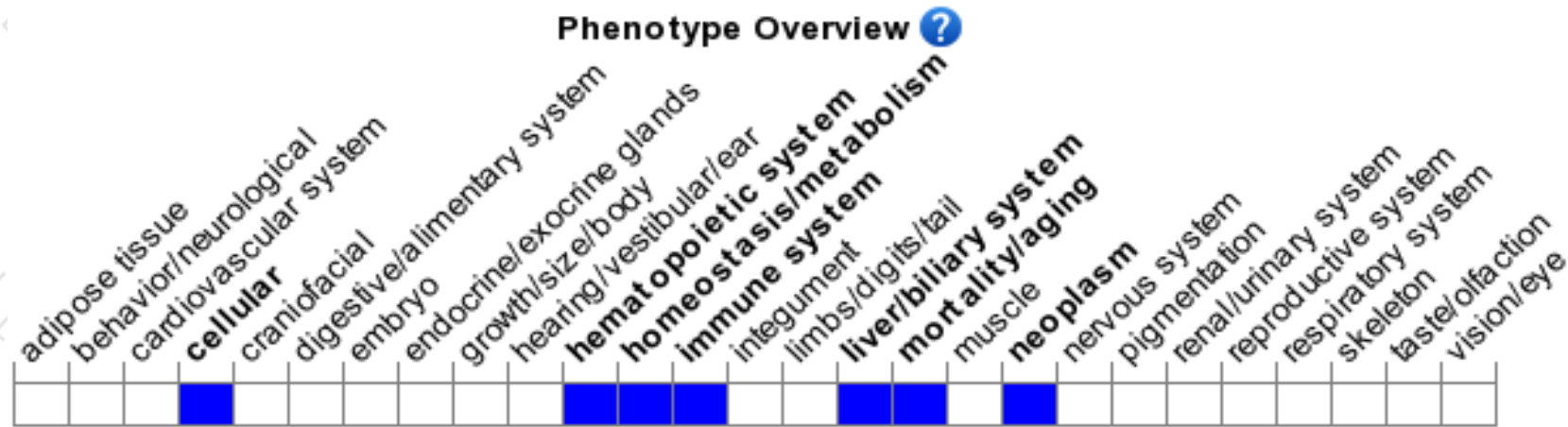
Genomic location distribution



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, Mice homozygous for a gene trap allele exhibit increased potassium/calcium channel activity and TCR-stimulated calcium influx in Th1 and Th2 CD4 T cells. Mice homozygous for another gene trap allele exhibit decreased incidence of chemically-induced tumors.

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

Tel: 025-5864 1534

