

***Fgr* Cas9-CKO Strategy**

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Project Overview

Project Name

Fgr

Project type

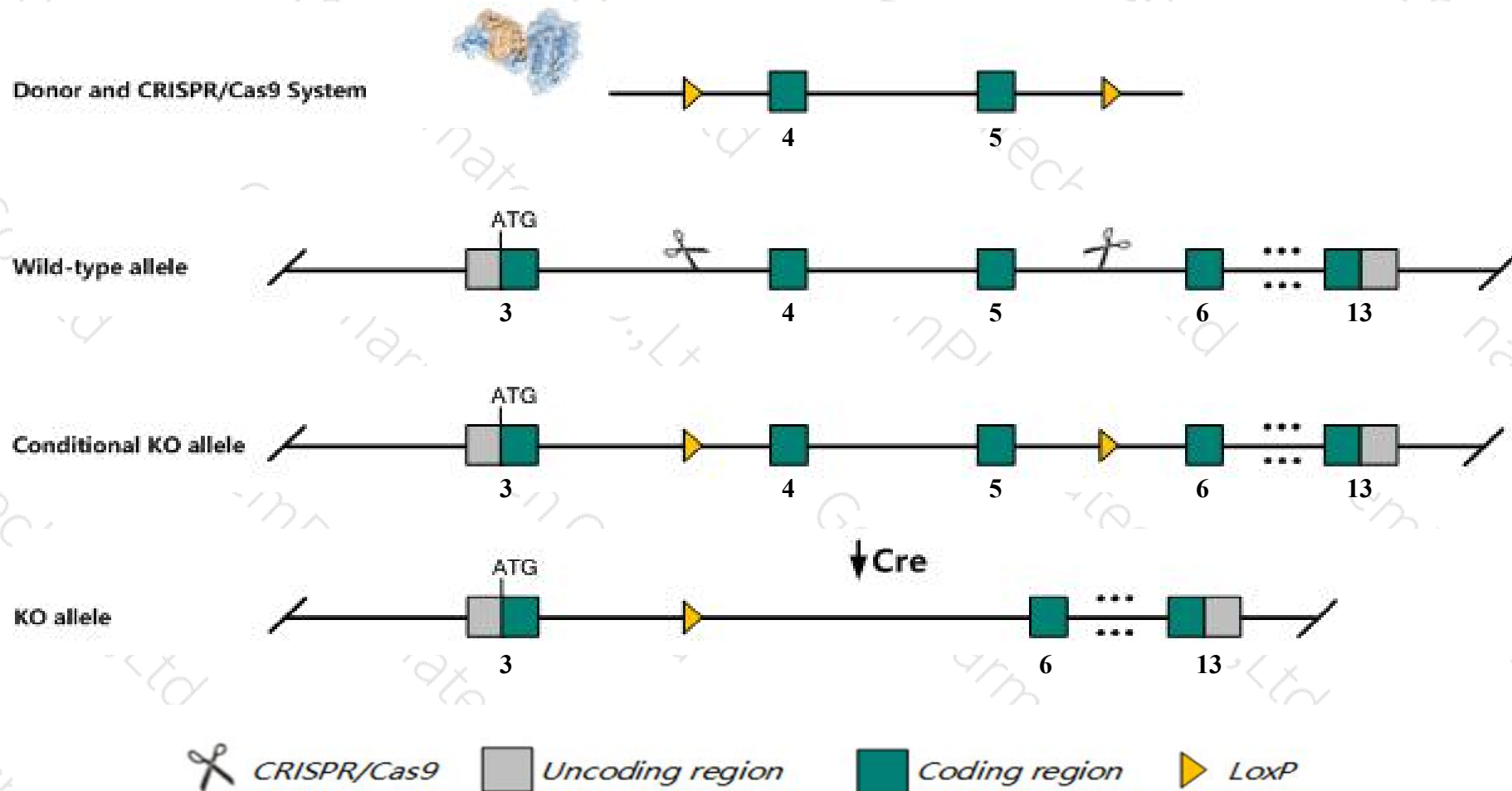
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Fgr* gene has 4 transcripts. According to the structure of *Fgr* gene, exon4-exon5 of *Fgr-201* (ENSMUST00000030693.12) transcript is recommended as the knockout region. The region contains 202bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fgr* 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 knock-out allele exhibit a partial reduction in hemorrhage following induction of a local Shwartzman reaction, and show enhanced NK-cell receptor-induced IFN-gamma production in natural killer (NK) cells.
- Transcript *Fgr*-202 may not be affected.
- The *Fgr* gene is located on the Chr4. 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)

Fgr FGR proto-oncogene, Src family tyrosine kinase [*Mus musculus* (house mouse)]

Gene ID: 14191, updated on 10-Oct-2019

Summary

Official Symbol	Fgr provided by MGI
Official Full Name	FGR proto-oncogene, Src family tyrosine kinase provided by MGI
Primary source	MGI:MG1:95527
See related	Ensembl:ENSMUSG00000028874
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	Ali18; Mhdaali18
Expression	Biased expression in spleen adult (RPKM 12.8), lung adult (RPKM 4.7) and 9 other tissues See more
Orthologs	human all

Genomic context

Location: 4 D2.3; 4 66.11 cM

See Fgr in [Genome Data Viewer](#)

Exon count: 15

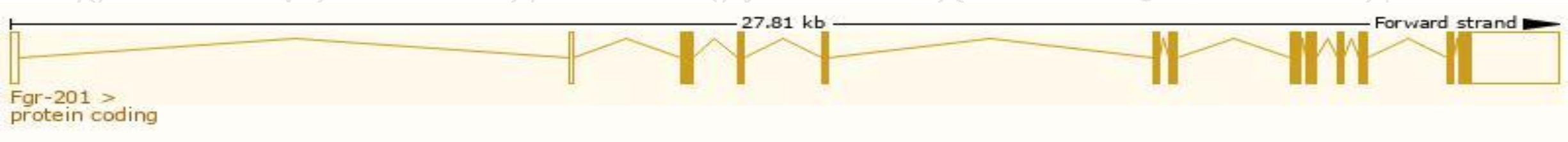
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	4	NC_000070.6 (132974095..133001893)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	4	NC_000070.5 (132530010..132557808)

Transcript information (Ensembl)

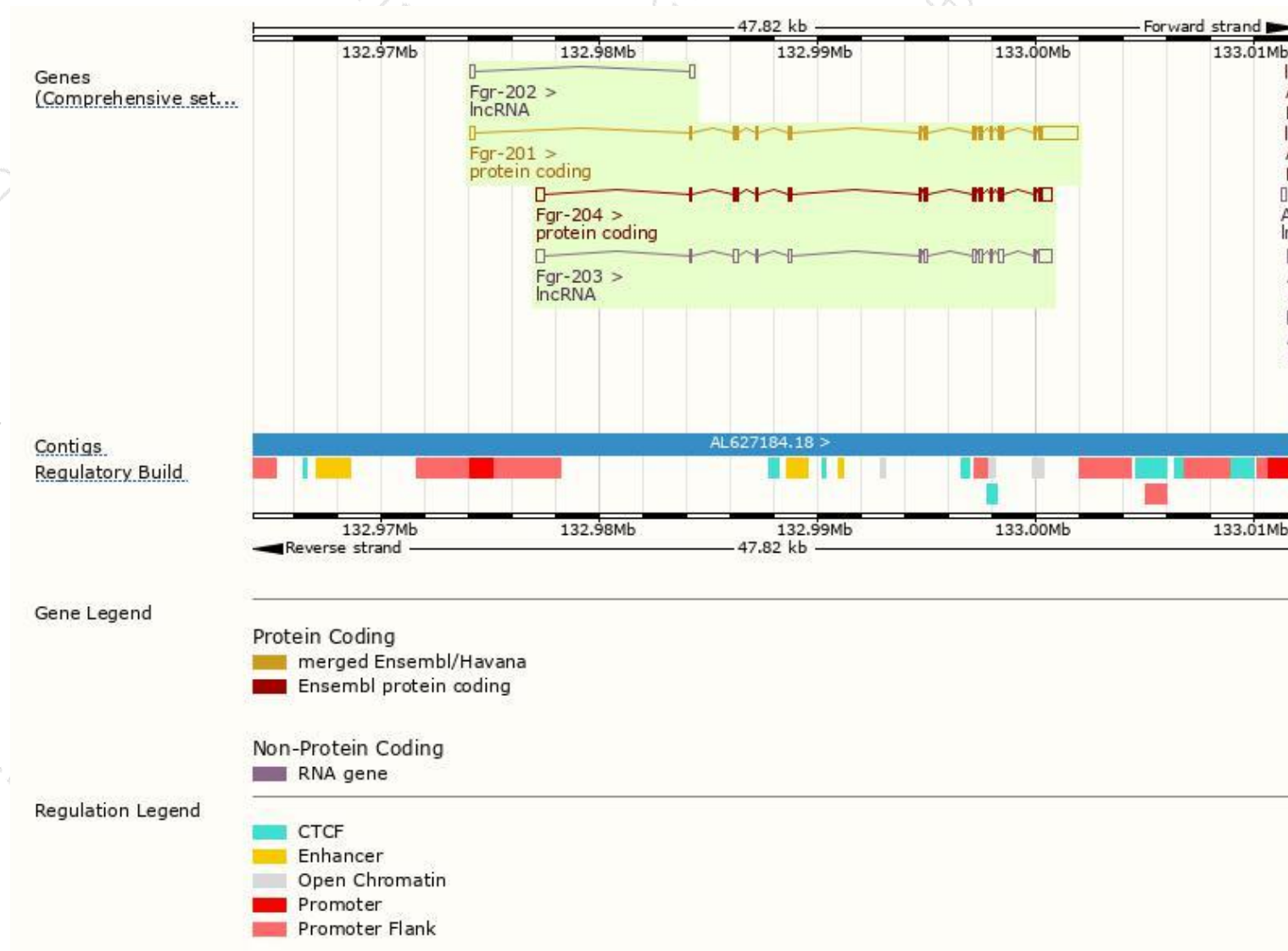
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fgr-201	ENSMUST00000030693.12	3363	517aa	Protein coding	CCDS18739	P14234	TSL:1 GENCODE basic APPRIS P1
Fgr-204	ENSMUST00000171223.1	2398	517aa	Protein coding	CCDS18739	P14234	TSL:1 GENCODE basic APPRIS P1
Fgr-203	ENSMUST00000138179.7	2398	No protein	lncRNA	-	-	TSL:1
Fgr-202	ENSMUST00000124451.1	385	No protein	lncRNA	-	-	TSL:2

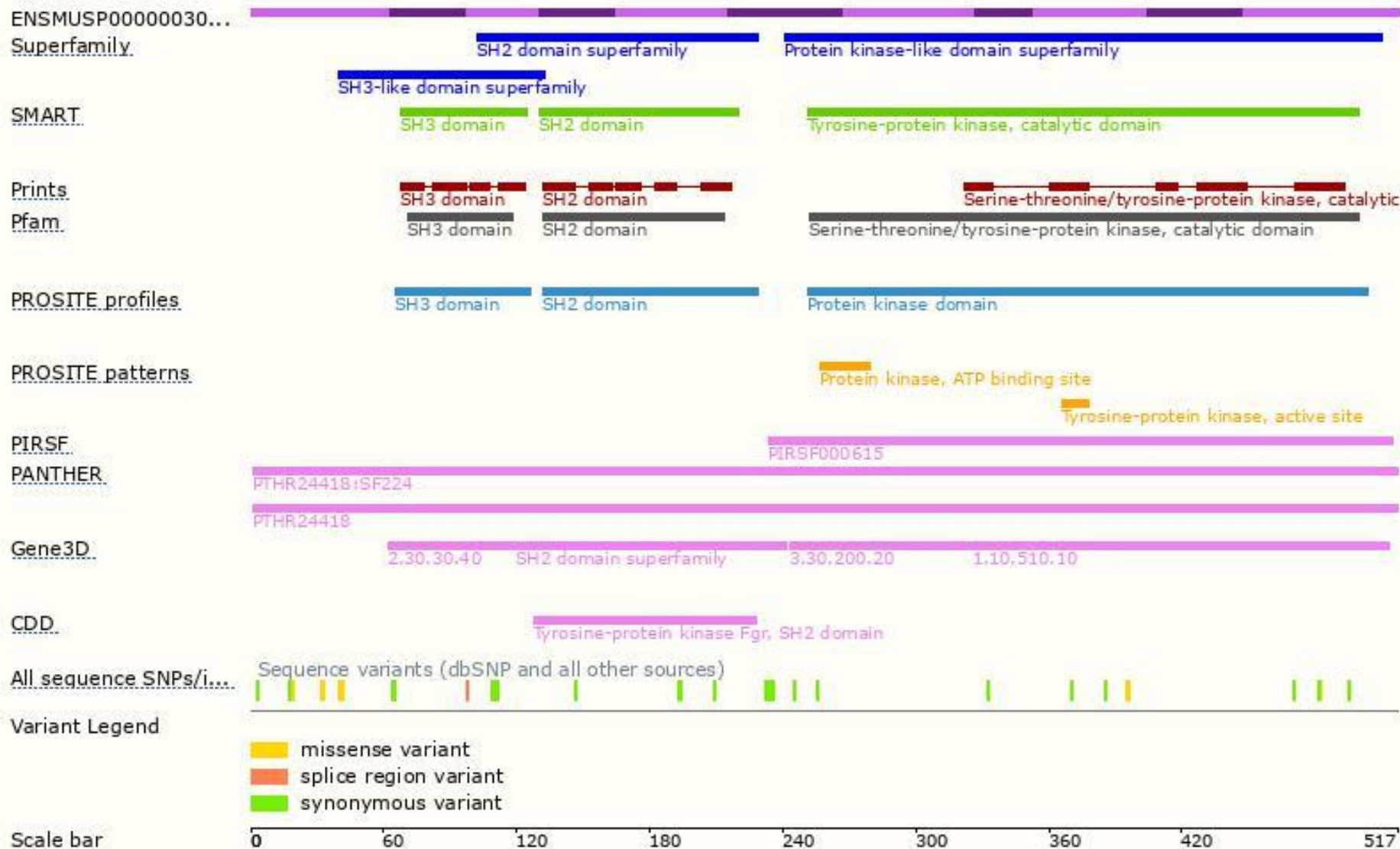
The strategy is based on the design of *Fgr-201* transcript,The transcription is shown below



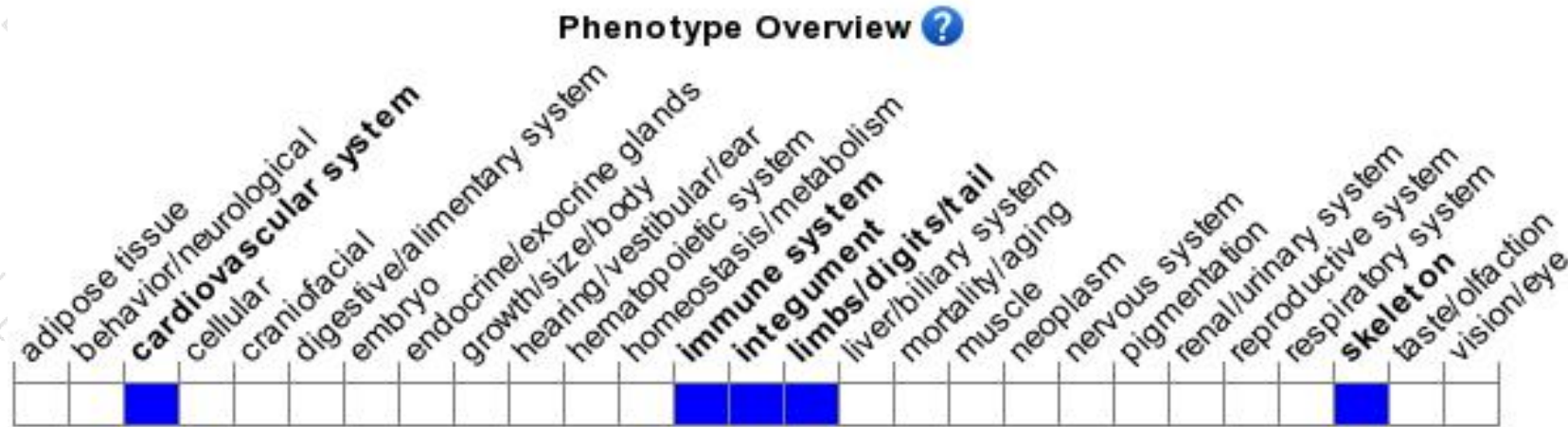
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit a partial reduction in hemorrhage following induction of a local Schwartzman reaction, and show enhanced NK-cell receptor-induced IFN-gamma production in natural killer (NK) cells.

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

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