

Capn1 Cas9-CKO Strategy

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Project Overview

Project Name

Capn1

Project type

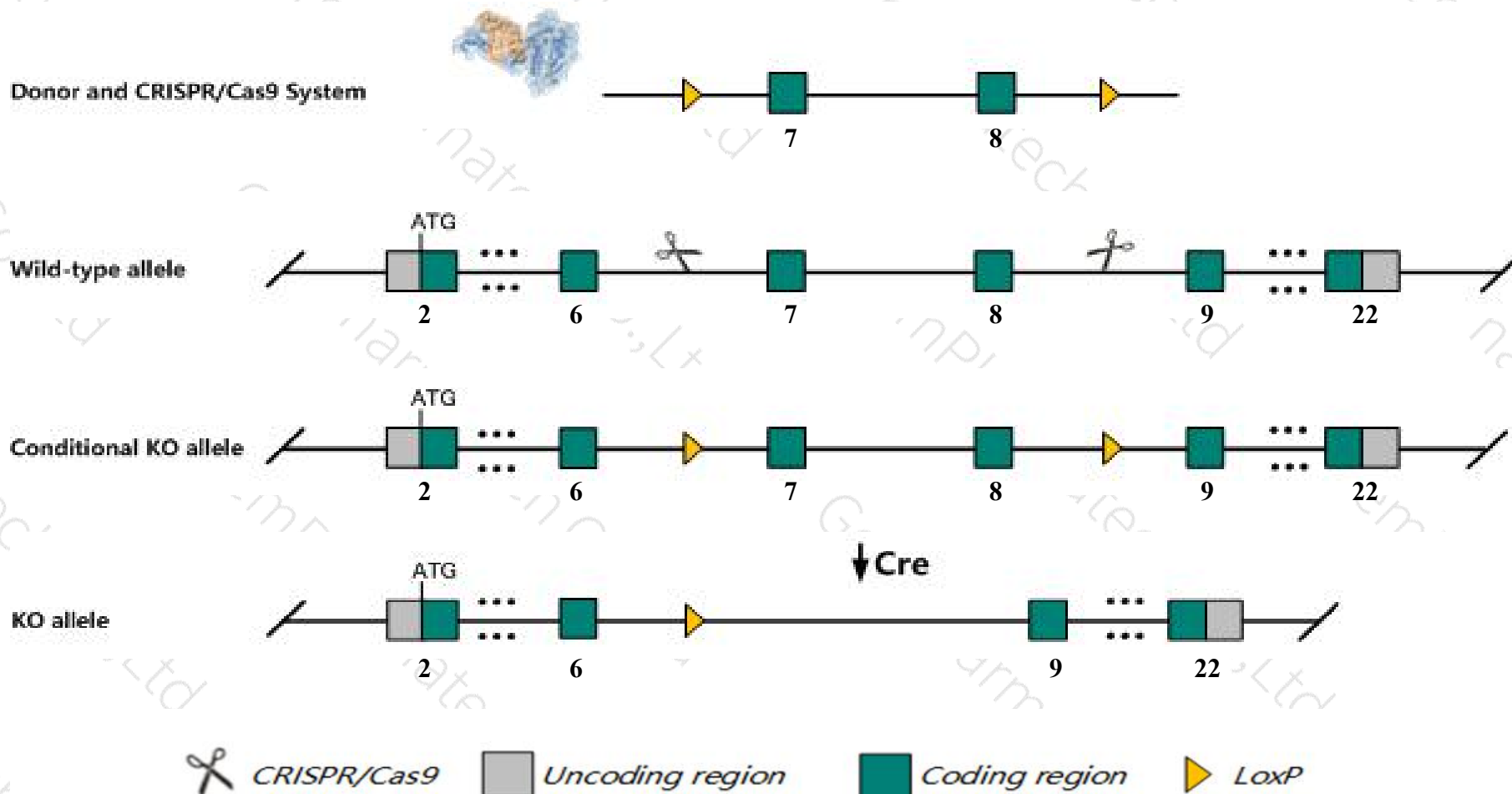
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Capn1* gene. The schematic diagram is as follows:



- The *Capn1* gene has 6 transcripts. According to the structure of *Capn1* gene, exon7-exon8 of *Capn1-201* (ENSMUST00000025891.9) transcript is recommended as the knockout region. The region contains 170bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Capn1* 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, Animals homozygous for a mutation of this gene exhibit decreased platelet aggregation and defective clot retraction although bleeding times remain similar to wild-type.
- The influence of *Capn1*-203&204&206 is unknown.
- The N-terminal of *Capn1* gene will remain 281aa, it may remain the partial function of *Capn1* gene.
- The *Capn1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Capn1 calpain 1 [Mus musculus (house mouse)]

Gene ID: 12333, updated on 31-Jan-2019

Summary



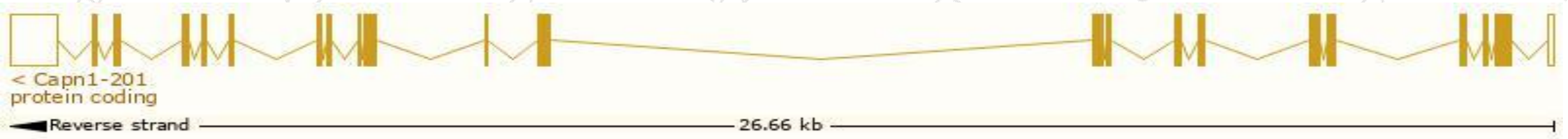
Official Symbol	Capn1 provided by MGI
Official Full Name	calpain 1 provided by MGI
Primary source	MGI:MGI:88263
See related	Ensembl:ENSMUSG00000024942
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Capa-1, Capa1, mu-calpin
Expression	Ubiquitous expression in large intestine adult (RPKM 48.9), bladder adult (RPKM 44.0) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

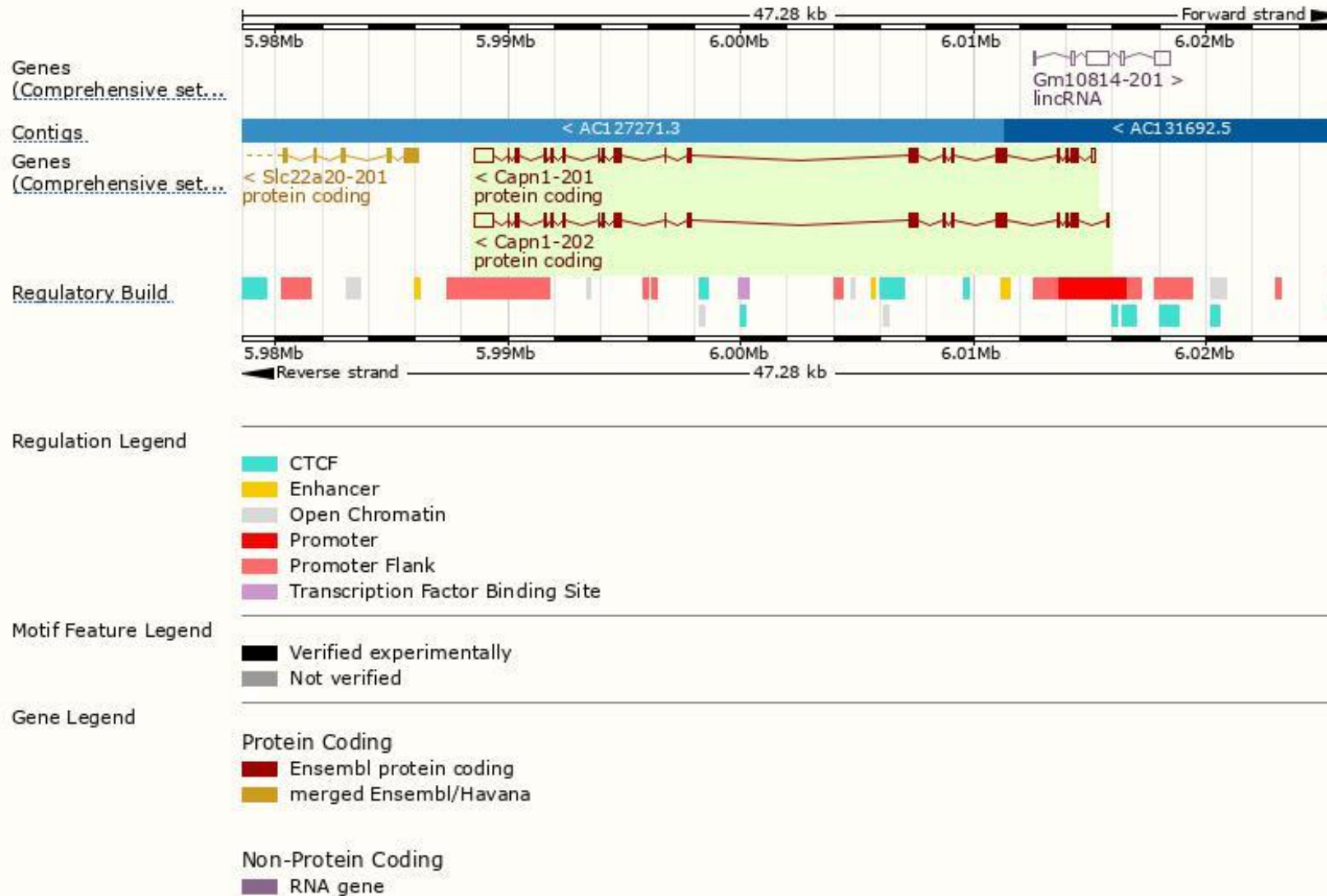
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Capn1-201	ENSMUST00000025891.9	3060	713aa	Protein coding	CCDS37893	Q35350 Q3TI07	TSL:1 GENCODE basic APPRIS P1
Capn1-202	ENSMUST00000164843.7	3048	713aa	Protein coding	CCDS37893	Q35350 Q3TI07	TSL:5 GENCODE basic APPRIS P1
Capn1-205	ENSMUST00000236798.1	2260	699aa	Protein coding	-	-	CDS 3' incomplete
Capn1-206	ENSMUST00000237519.1	679	196aa	Protein coding	-	-	CDS 3' incomplete
Capn1-204	ENSMUST00000236537.1	409	79aa	Protein coding	-	-	CDS 3' incomplete
Capn1-203	ENSMUST00000235138.1	326	79aa	Protein coding	-	-	CDS 3' incomplete

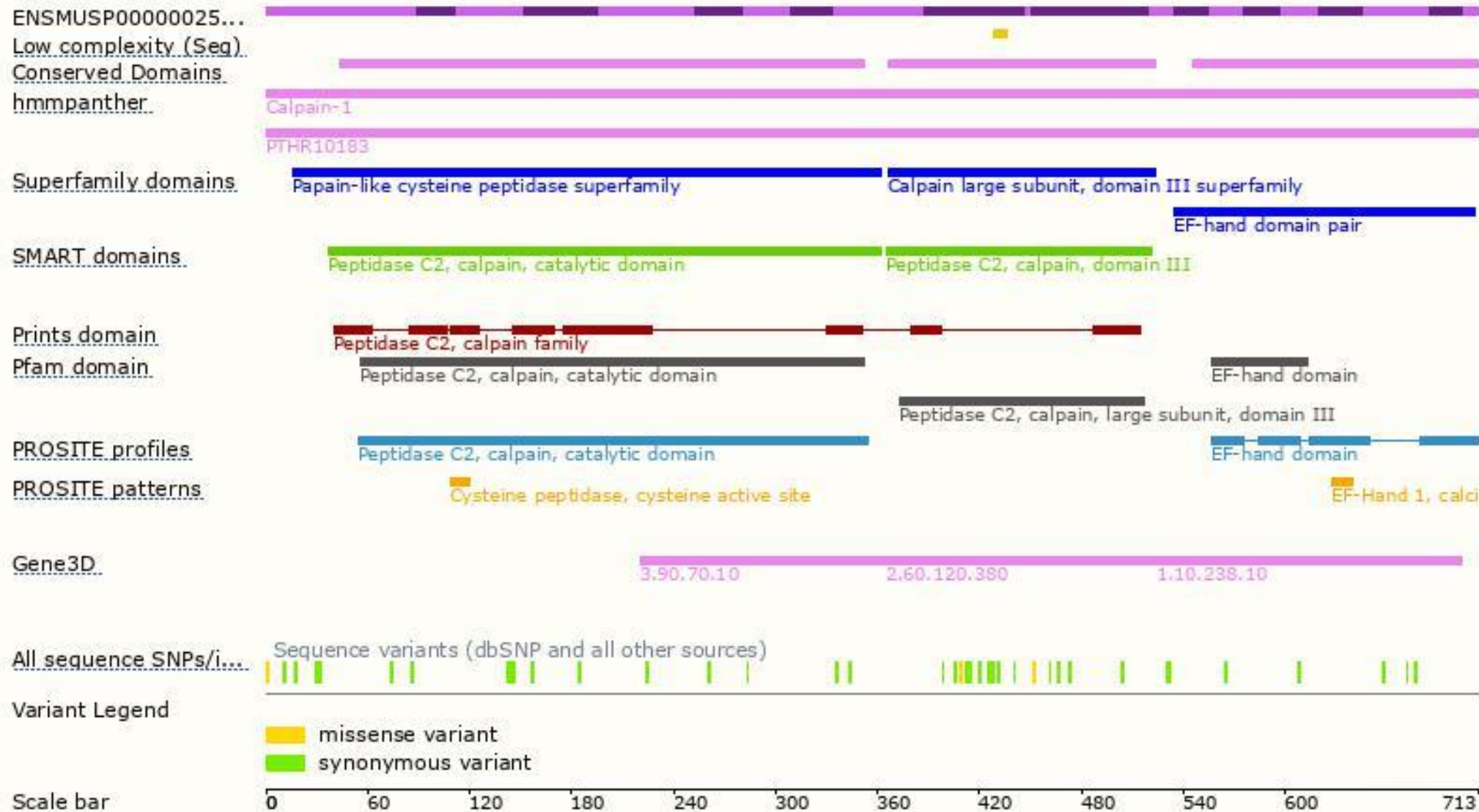
The strategy is based on the design of *Capn1-201* transcript,The transcription is shown below



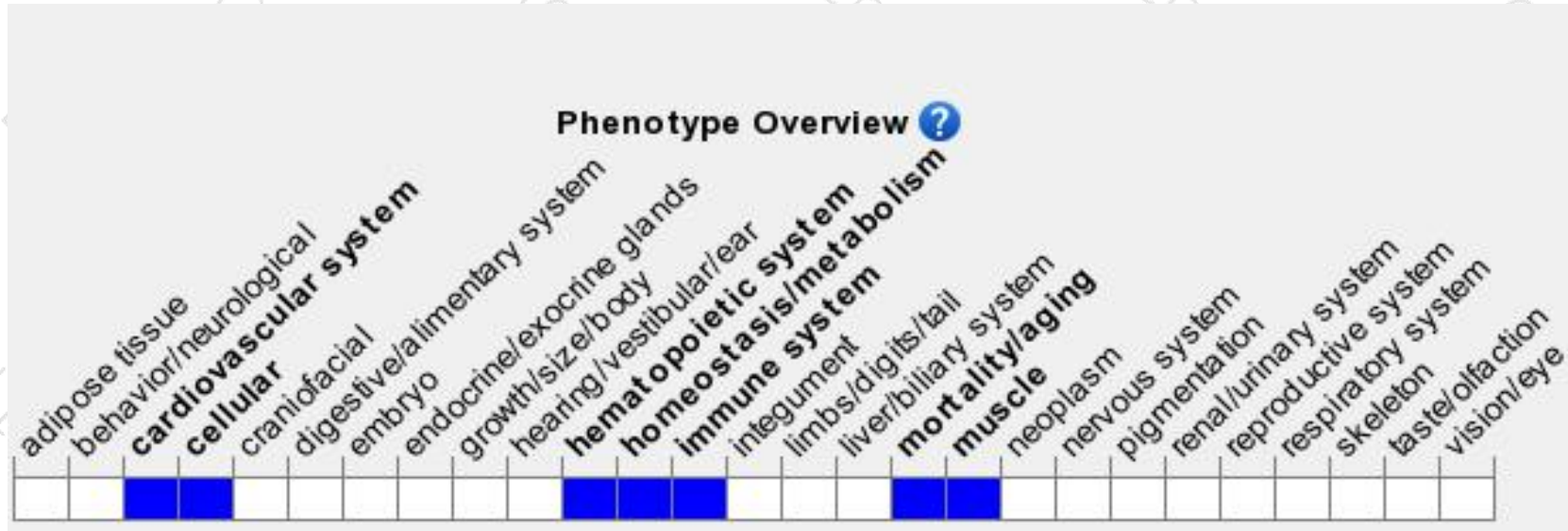
Genomic location distribution



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, Animals homozygous for a mutation of this gene exhibit decreased platelet aggregation and defective clot retraction although bleeding times remain similar to wild-type.

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

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