

Serping1 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Serping1

Project type

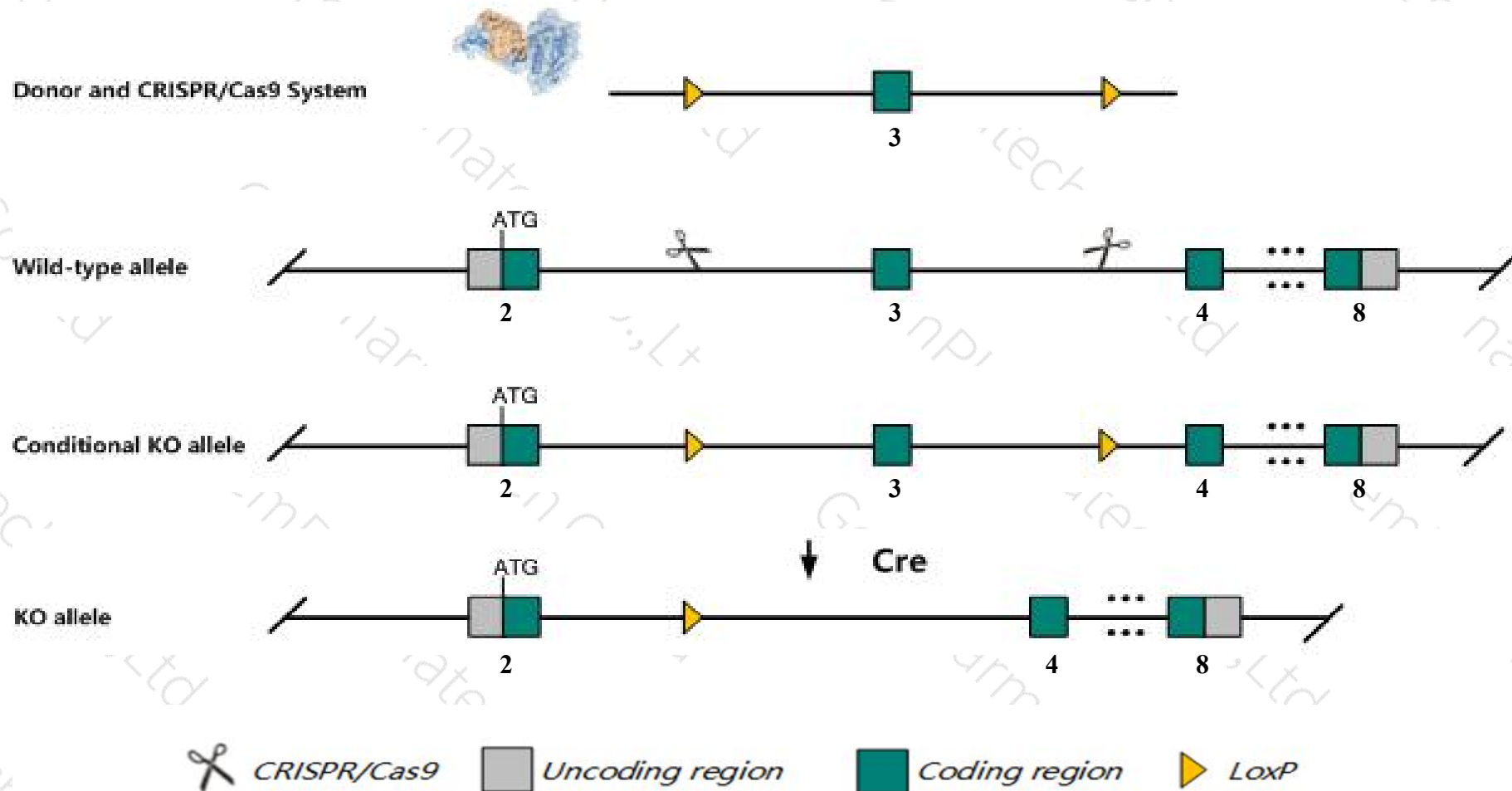
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Serping1* gene. The schematic diagram is as follows:



Technical routes

- The *Serping1* gene has 3 transcripts. According to the structure of *Serping1* gene, exon3 of *Serping1-201* (ENSMUST00000023994.9) transcript is recommended as the knockout region. The region contains 514bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Serping1* 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, Mutant mice exhibit an increased vascular permeability compared to controls.
- The *Serping1* gene is located on the Chr2. 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)

Serping1 serine (or cysteine) peptidase inhibitor, clade G, member 1 [Mus musculus (house mouse)]

Gene ID: 12258, updated on 31-Jan-2019

Summary



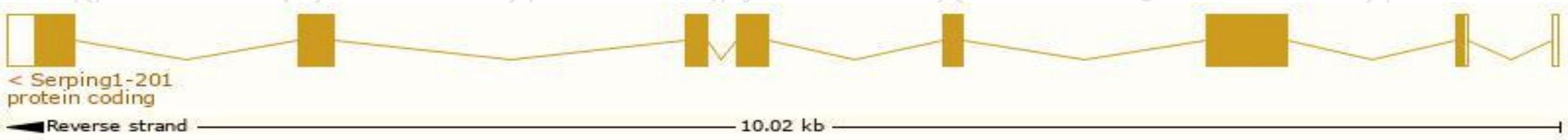
Official Symbol	Serping1 provided by MGI
Official Full Name	serine (or cysteine) peptidase inhibitor, clade G, member 1 provided by MGI
Primary source	MGI:MGI:894696
See related	Ensembl:ENSMUSG00000023224
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C1INH, C1nh
Expression	Broad expression in liver adult (RPKM 378.2), lung adult (RPKM 269.8) and 18 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

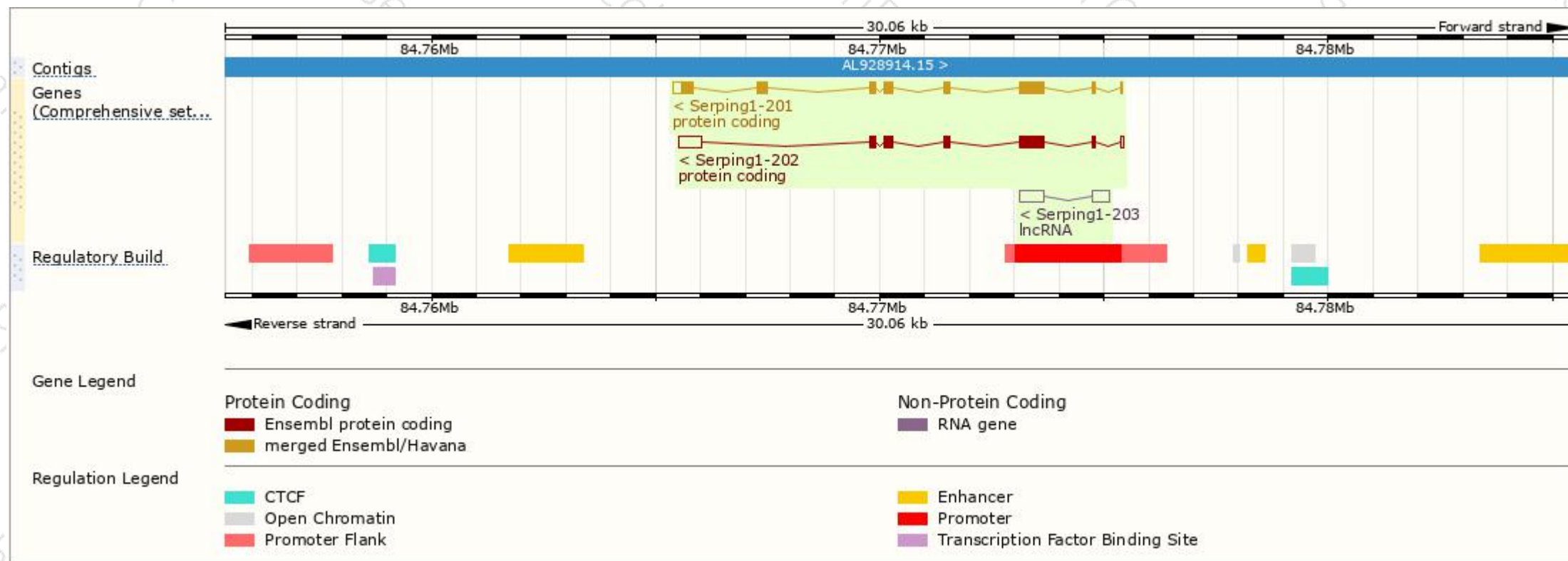
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Serping1-201	ENSMUST00000023994.9	1768	504aa	Protein coding	CCDS16193	P97290	TSL:1 GENCODE basic APPRIS P1
Serping1-202	ENSMUST00000111641.1	1665	347aa	Protein coding	-	A2ATR8	TSL:5 GENCODE basic
Serping1-203	ENSMUST00000131456.1	903	No protein	lncRNA	-	-	TSL:2

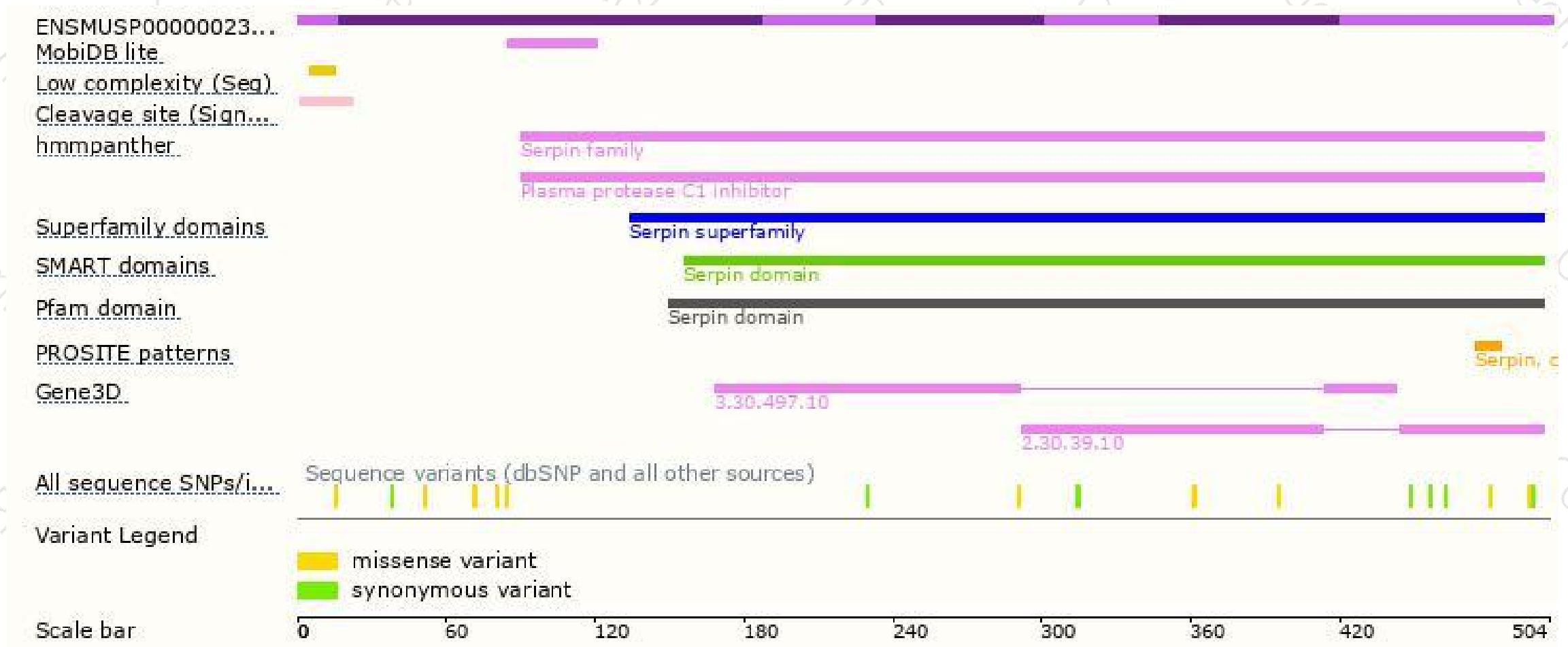
The strategy is based on the design of *Serping1-201* transcript,The transcription is shown below



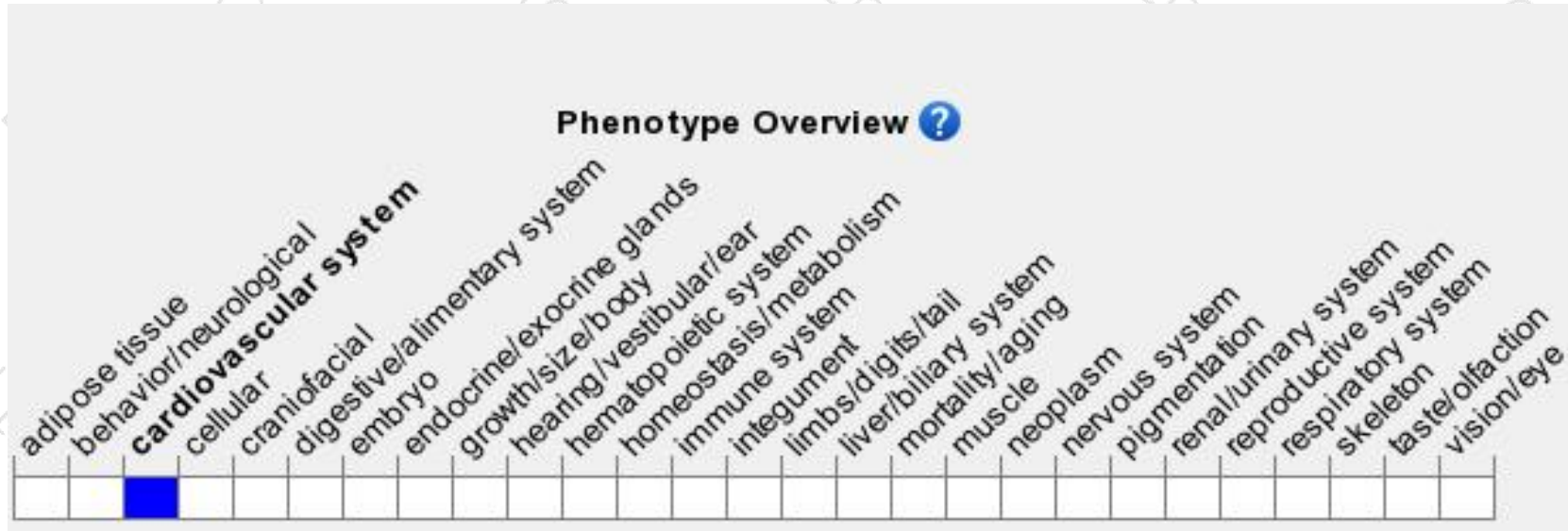
Genomic location distribution



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, Mutant mice exhibit an increased vascular permeability compared to controls.

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

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