

Tek Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Tek

Project type

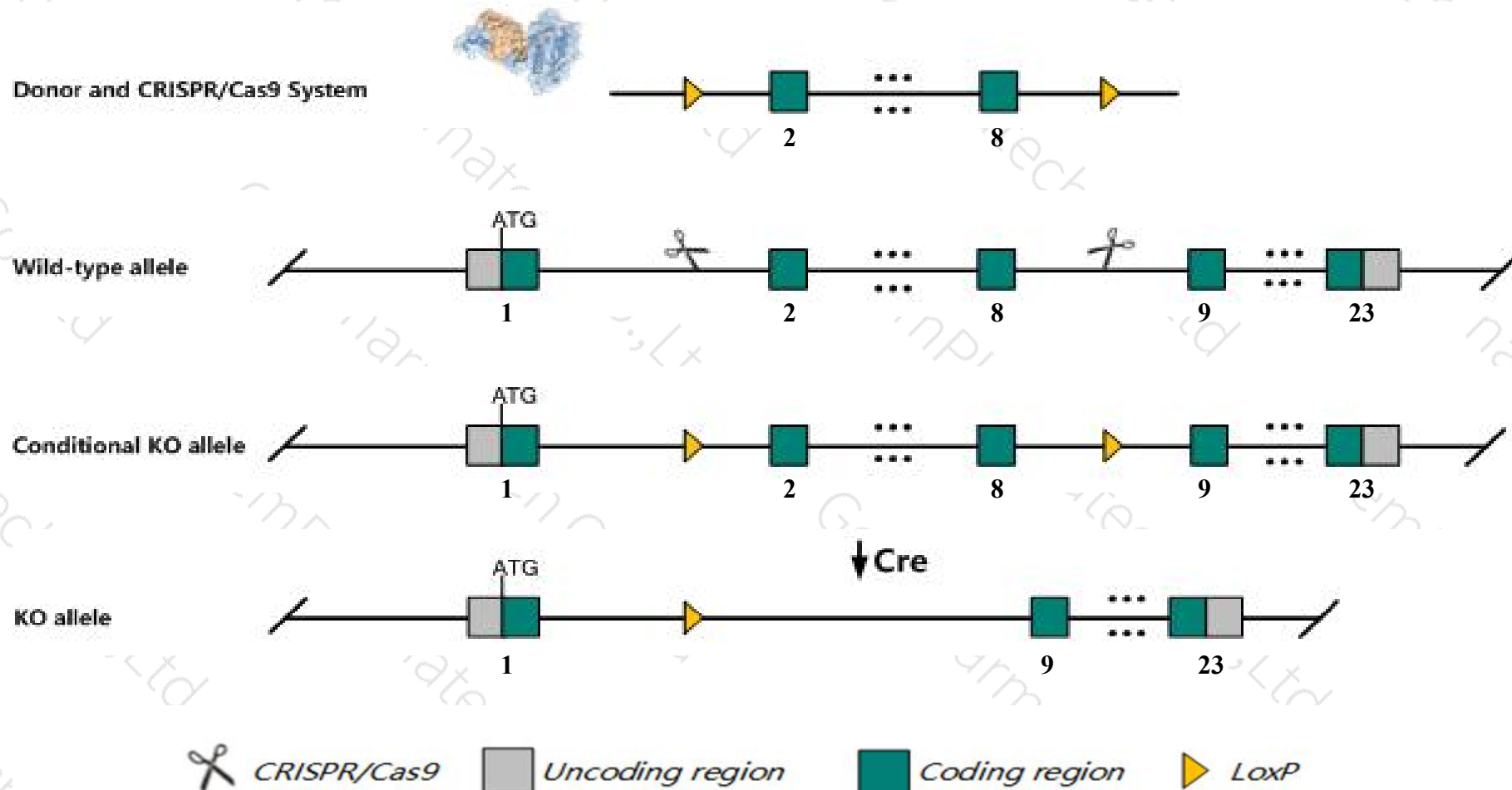
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Tek* gene has 4 transcripts. According to the structure of *Tek* gene, exon2-exon8 of *Tek-203* (ENSMUST00000102798.7) transcript is recommended as the knockout region. The region contains 1130bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tek* 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, Homozygous mutation of this gene results in embryonic lethality during organogenesis, impaired vascular branching in the embryo and yolk sac, abnormal cardiac development, and in some cases hemorrhages.
- The *Tek* 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)

Tek TEK receptor tyrosine kinase [Mus musculus (house mouse)]

Gene ID: 21687, updated on 2-Apr-2019

Summary



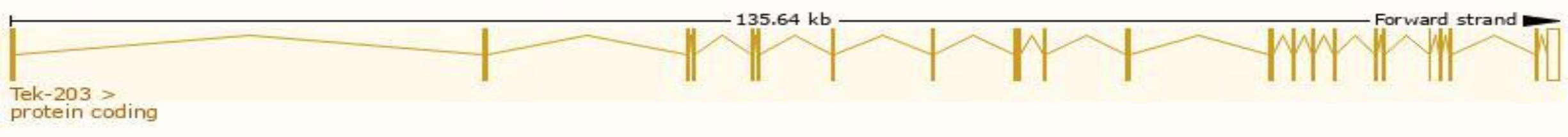
Official Symbol	Tek provided by MGI
Official Full Name	TEK receptor tyrosine kinase provided by MGI
Primary source	MGI:MGI:98664
See related	Ensembl:ENSMUSG00000006386
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA517024, Cd202b, Hyk, STK1, Tie-2, Tie2
Expression	Broad expression in lung adult (RPKM 28.4), subcutaneous fat pad adult (RPKM 7.5) and 18 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

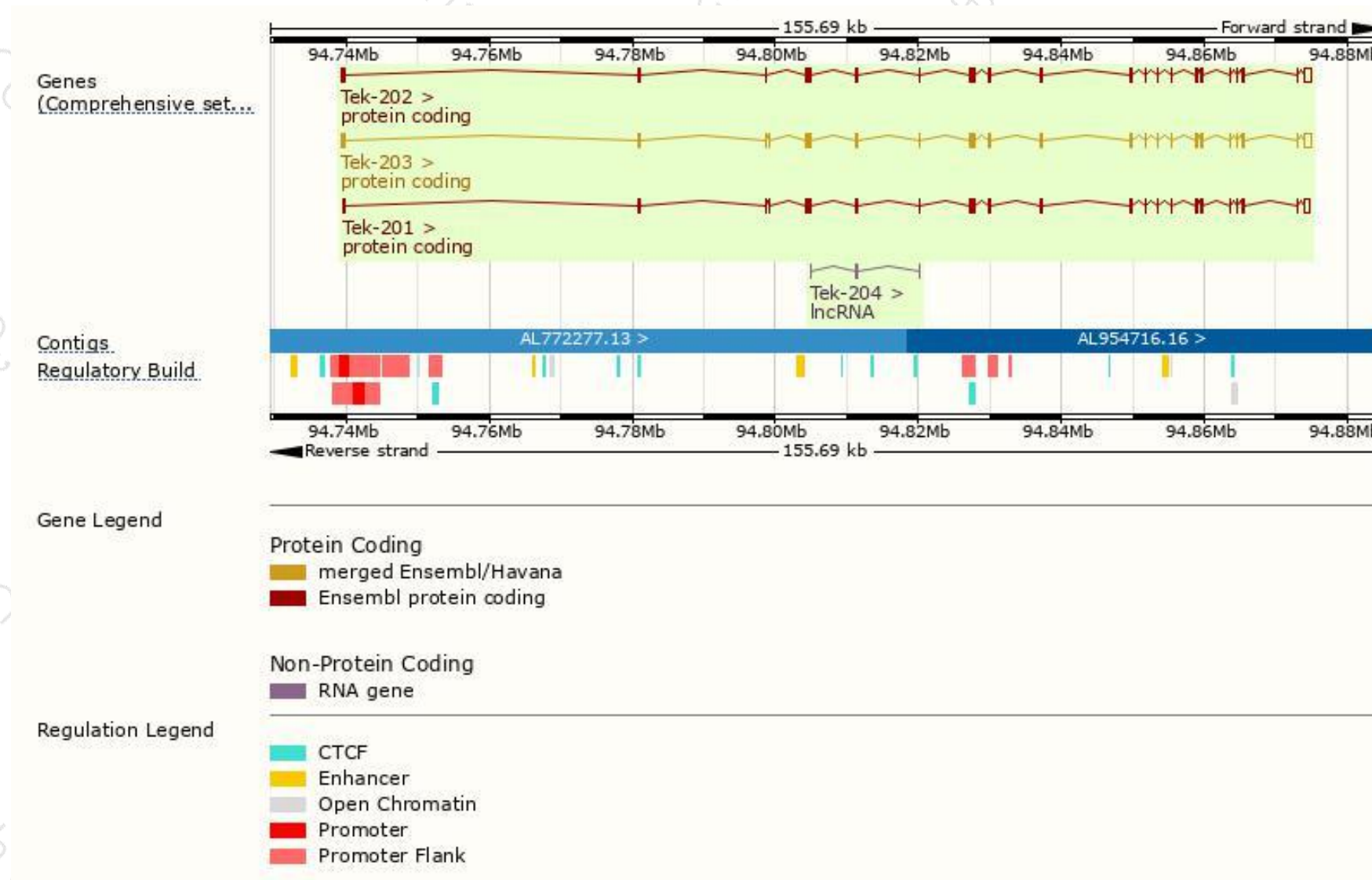
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tek-203	ENSMUST00000102798.7	4654	1123aa	Protein coding	CCDS18361	B1AWS8	TSL:1 GENCODE basic APPRIS P3
Tek-202	ENSMUST00000073939.12	4549	1072aa	Protein coding	CCDS80122	Q80YS4	TSL:1 GENCODE basic
Tek-201	ENSMUST00000071168.5	4176	1122aa	Protein coding	CCDS71421	Q02858	TSL:1 GENCODE basic APPRIS ALT 1
Tek-204	ENSMUST00000131958.1	361	No protein	lncRNA	-	-	TSL:3

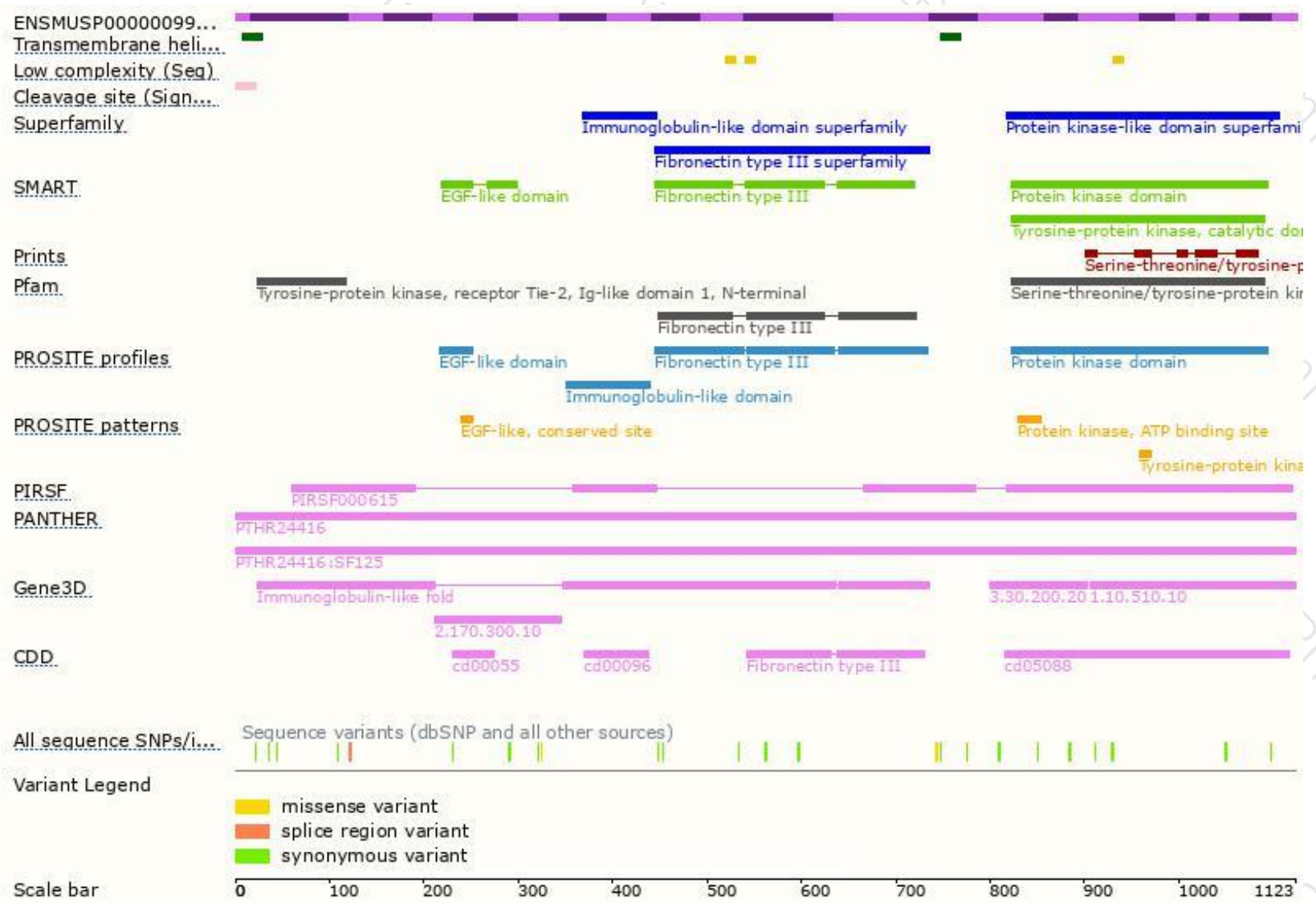
The strategy is based on the design of *Tek-203* transcript,The transcription is shown below



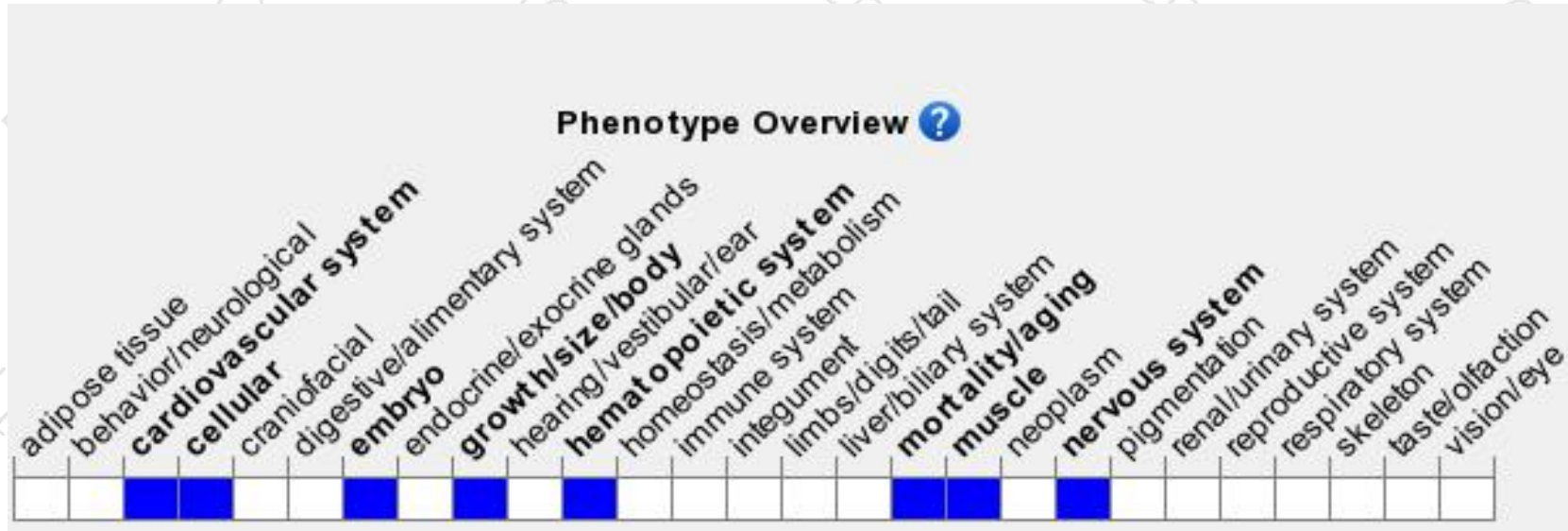
Genomic location distribution



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, Homozygous mutation of this gene results in embryonic lethality during organogenesis, impaired vascular branching in the embryo and yolk sac, abnormal cardiac development, and in some cases he

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

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