

F9 Cas9-KO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

F9

Project type

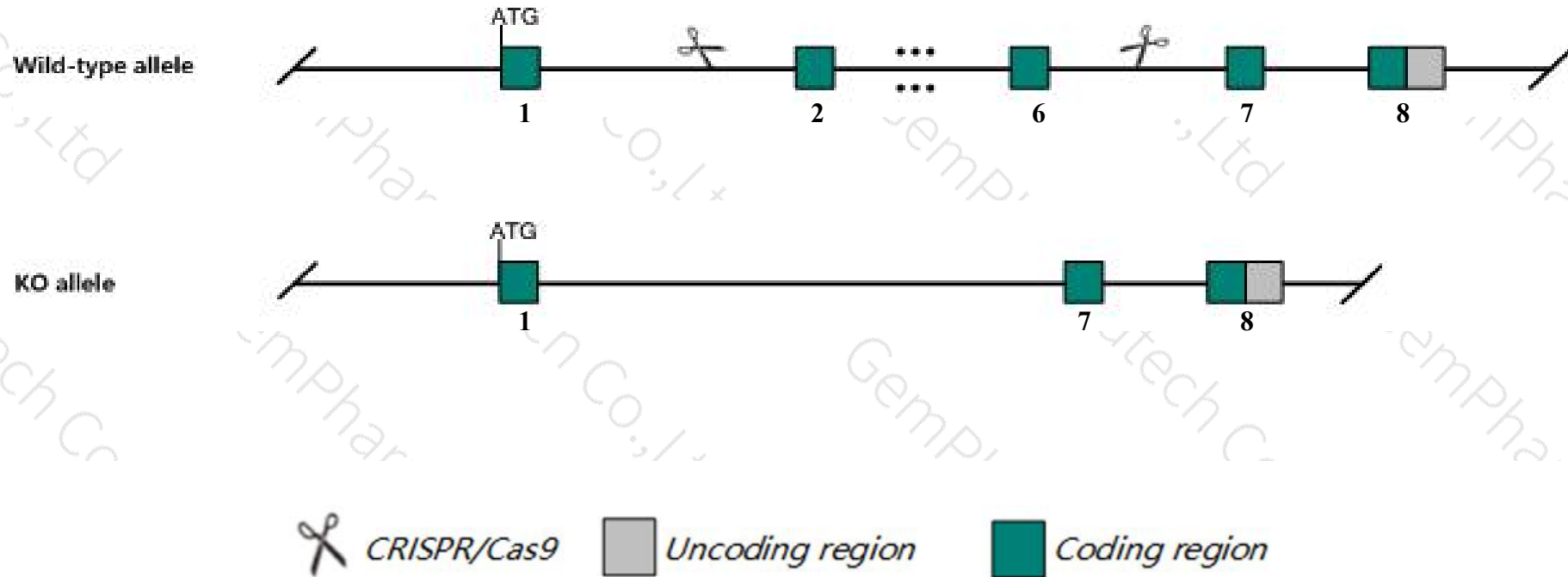
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *F9* gene. The schematic diagram is as follows:



- The *F9* gene has 1 transcript. According to the structure of *F9* gene, exon2-exon6 of *F9-201* (ENSMUST00000033477.4) transcript is recommended as the knockout region. The region contains 665bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *F9* gene. The brief process is as follows: CRISPR/Cas9 system we

- According to the existing MGI data, Male hemizygotes for targeted null mutations are subject to fatal blood loss after tail snipping, and some affected males spontaneously die from umbilical cord bleeding. Carrier females show reduced levels of factor IX.
- The *F9* gene is located on the ChrX. 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)

F9 coagulation factor IX [Mus musculus (house mouse)]

Gene ID: 14071, updated on 5-Mar-2019

Summary



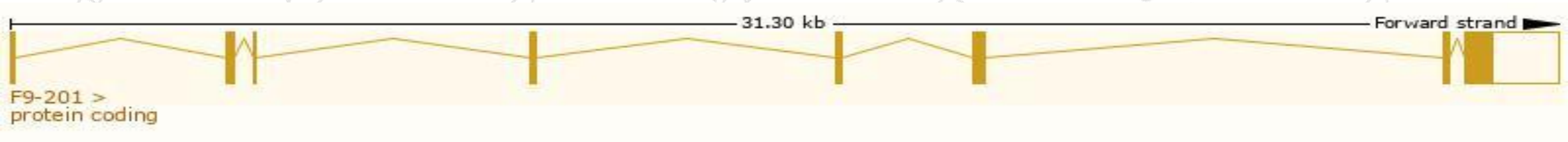
| | |
|---------------------------|--|
| Official Symbol | F9 provided by MGI |
| Official Full Name | coagulation factor IX provided by MGI |
| Primary source | MGI:MGI:88384 |
| See related | Ensembl:ENSMUSG000000031138 |
| Gene type | protein coding |
| RefSeq status | REVIEWED |
| Organism | Mus musculus |
| Lineage | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| Also known as | AW111646, Cf-9, Cf9 |
| Summary | This gene encodes a vitamin K-dependent serine protease that plays a critical role in the intrinsic pathway of blood coagulation. The encoded protein is an inactive zymogen that is activated by coagulation factor XIa to generate factor IXa, a heterodimer containing heavy and light chains. In association with factor VIII, membrane phospholipids and calcium ions, factor IXa cleaves the inactive zymogen factor X to generate active factor Xa. Genetic deletion of this gene in mice results in a severe bleeding phenotype. Alternative splicing of this gene results in multiple transcript variants. [provided by RefSeq, Apr 2015] |
| Expression | Biased expression in liver E18 (RPKM 11.7), liver adult (RPKM 11.4) and 2 other tissues See more |
| Orthologs | human all |

Transcript information (Ensembl)

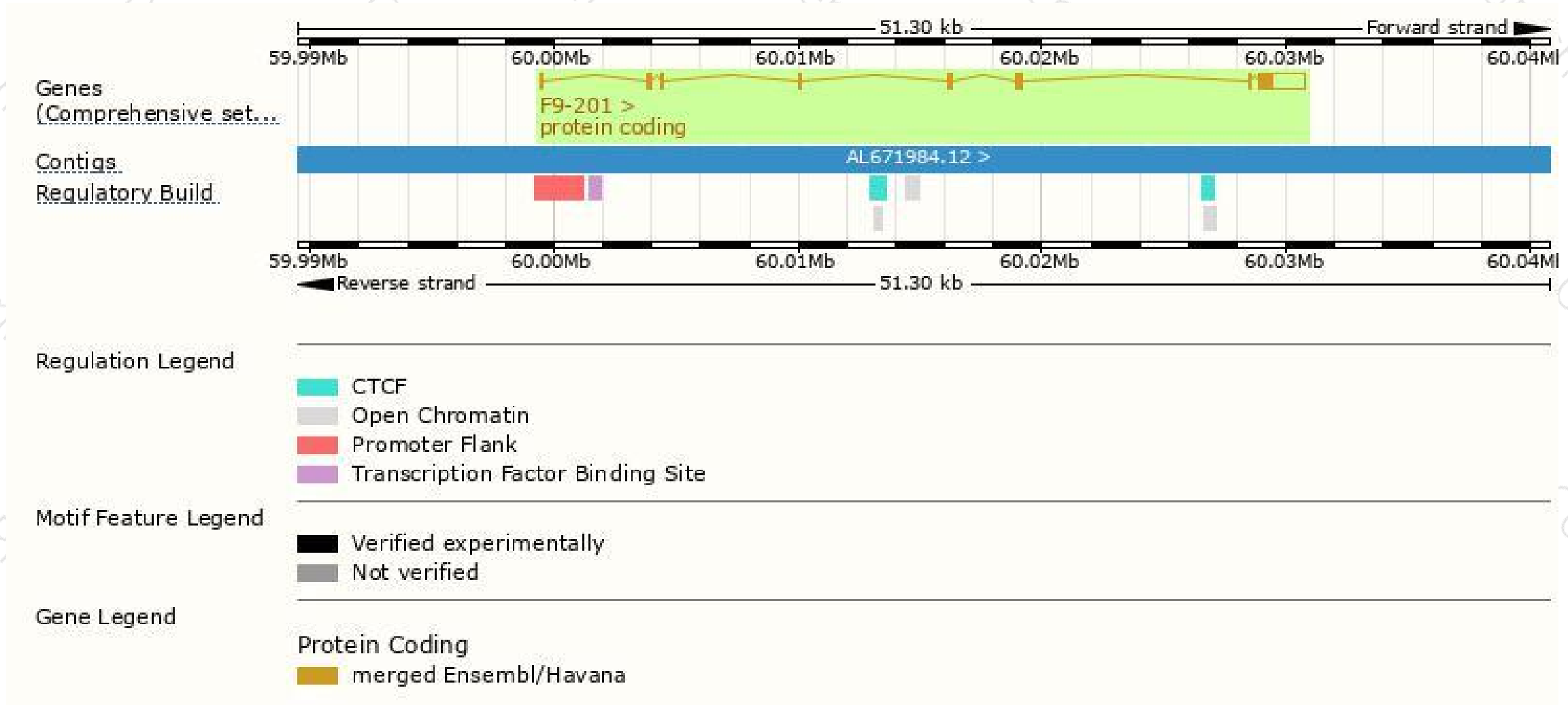
The gene has 1 transcript, and the transcript is shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|--------|--------------------------------------|------|-----------------------|----------------|---------------------------|------------------------|-------------------------------|
| F9-201 | ENSMUST00000033477.4 | 2734 | 471aa | Protein coding | CCDS30158 | P16294 | TSL:1 GENCODE basic APPRIS P1 |

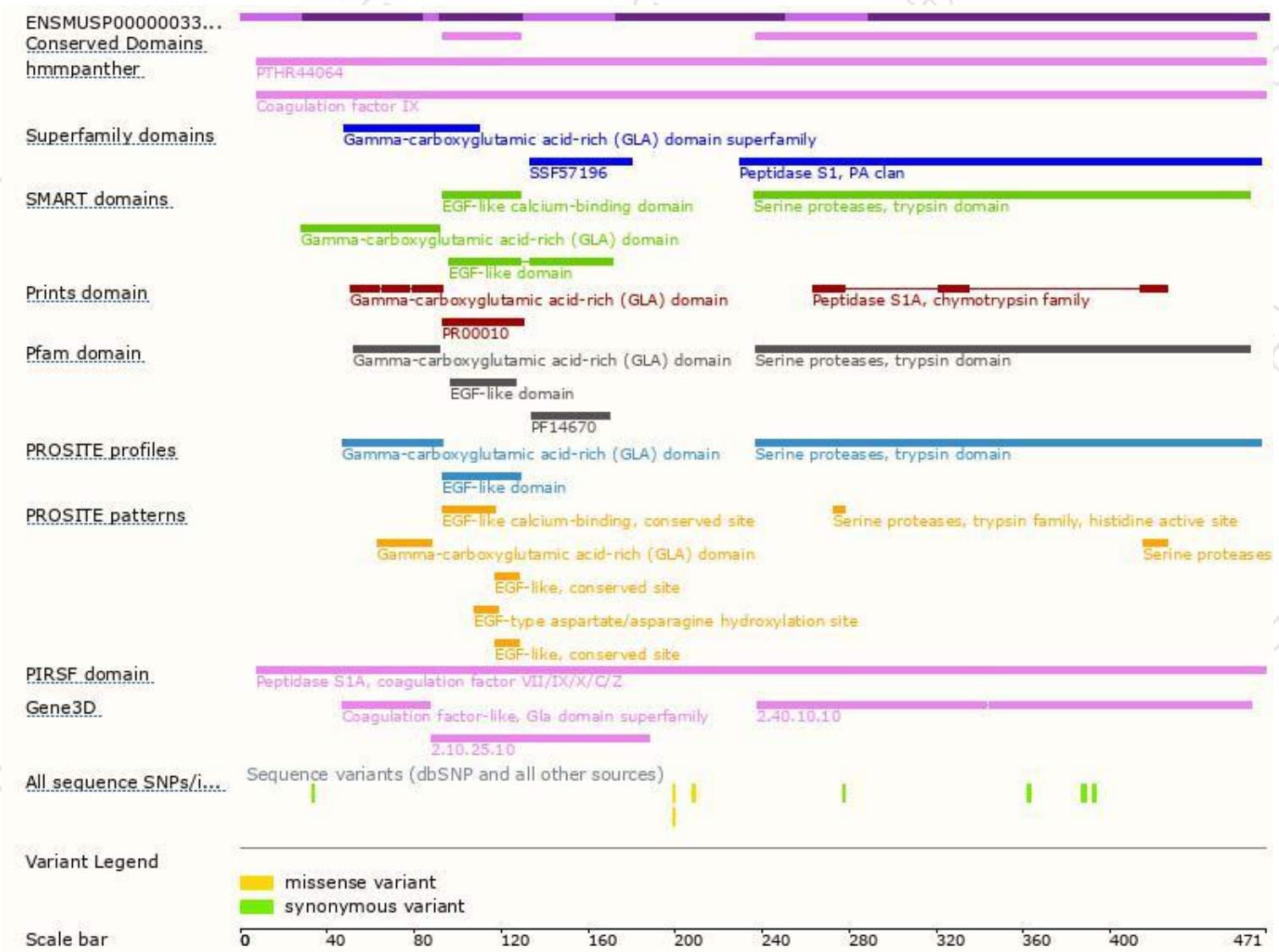
The strategy is based on the design of *F9-201* transcript, The transcription is shown below



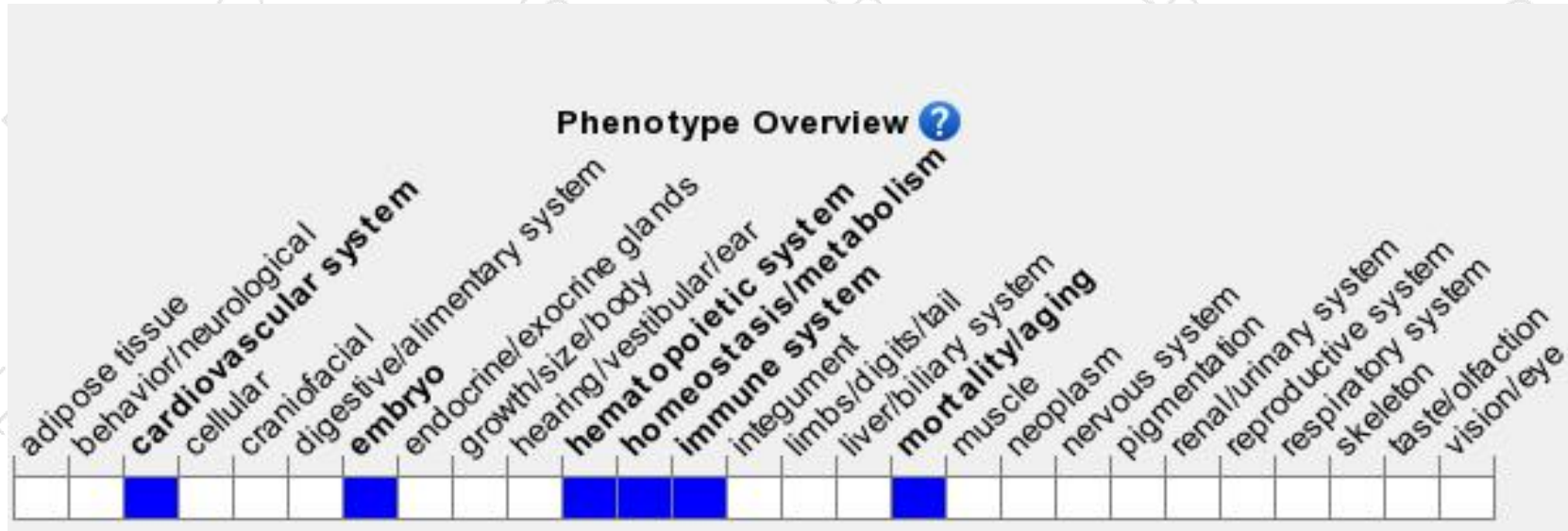
Genomic location distribution



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, Male hemizygotes for targeted null mutations are subject to fatal blood loss after tail snipping, and some affected males spontaneously die from umbilical cord bleeding. Carrier females show reduced levels of factor IX.

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

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