Ccn1(Cyr61) Cas9-KO Strategy

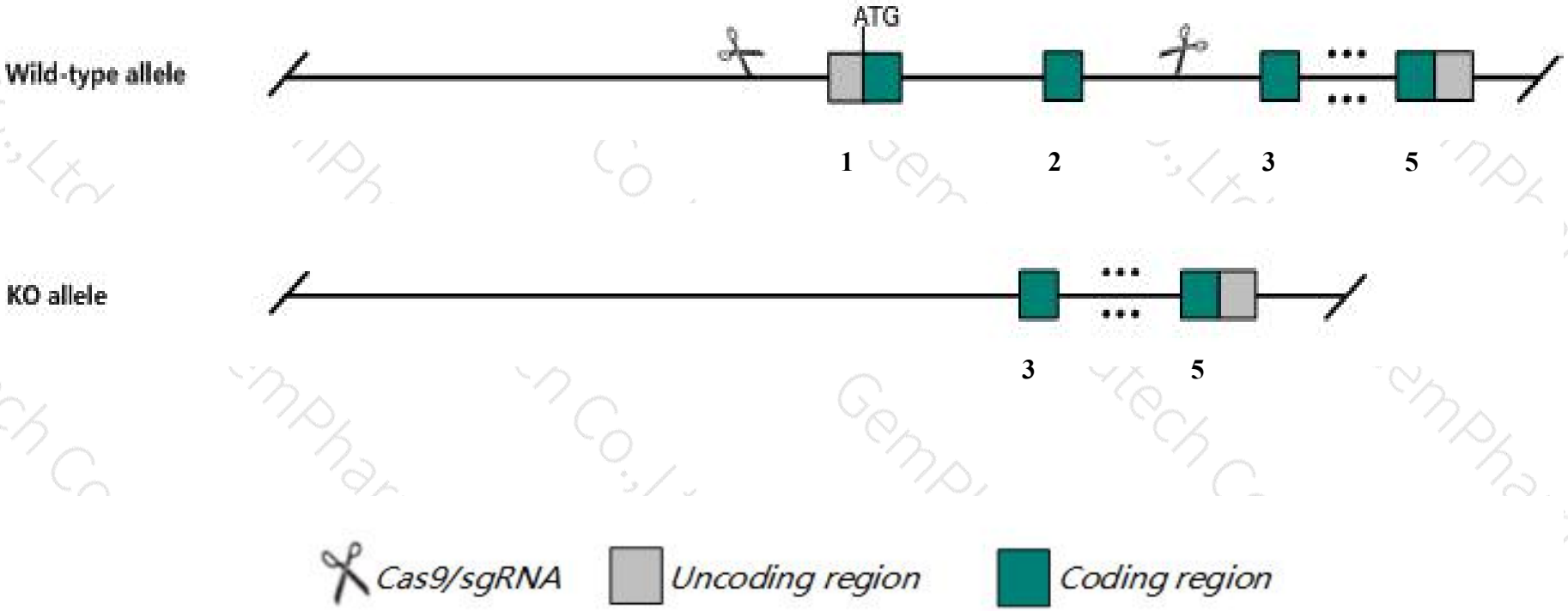
Designer:Xueting Zhang

Project Overview

Project Name	***Ccn1***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ccn1* gene. The schematic diagram is as follows:



Technical routes

- The *Ccn1* gene has 1 transcript. According to the structure of *Ccn1* gene, exon1-exon2 of *Ccn1-201* (ENSMUST00000029846.4) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ccn1* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- According to the existing MGI data,Targeted null mice die pre- or perinatally, and none survive beyond 24 hrs of birth. About 30% of embryos die by E10.5 from defects in chorioallantoic fusion, whereas 70% die from placental vascular defects, including impaired allantoic vessel bifurcation, and loss of large-vessel integrity.

- The konckout region contains start codon ATG,there is another ATG that can promote the protein coding.

- The *Ccn1* gene is located on the Chr3. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information（NCBI）

集萃药康 GemPharmatech

Ccn1 cellular communication network factor 1 [Mus musculus (house mouse)]

Gene ID: 16007, updated on 31-Jan-2019

Summary

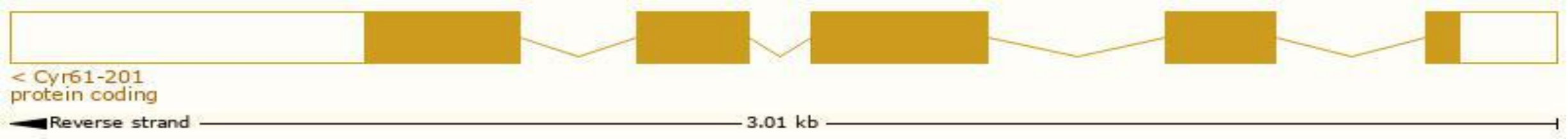
Official Symbol	Ccn1 provided by MGI
Official Full Name	cellular communication network factor 1 provided by MGI
Primary source	MGI:MGI:88613
See related	Ensembl:ENSMUSG00000028195
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI325051, Cyr61, Igfbp10
Expression	Broad expression in lung adult (RPKM 41.5), limb E14.5 (RPKM 37.8) and 26 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

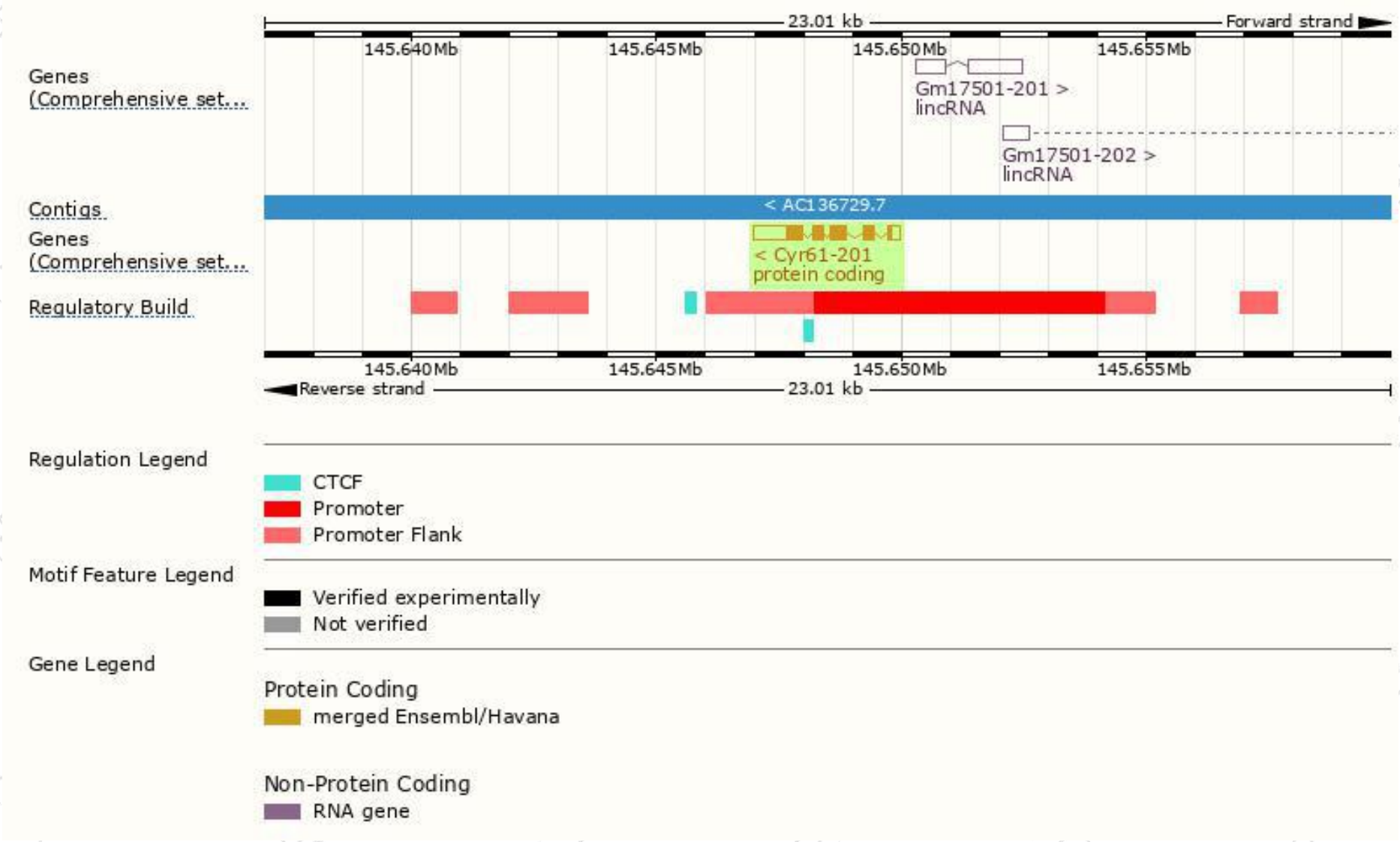
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccn1-201	ENSMUST00000029846.4	2019	379aa	Protein coding	CCDS17895	P18406 Q3TX21	TSL:1 GENCODE basic APPRIS P1

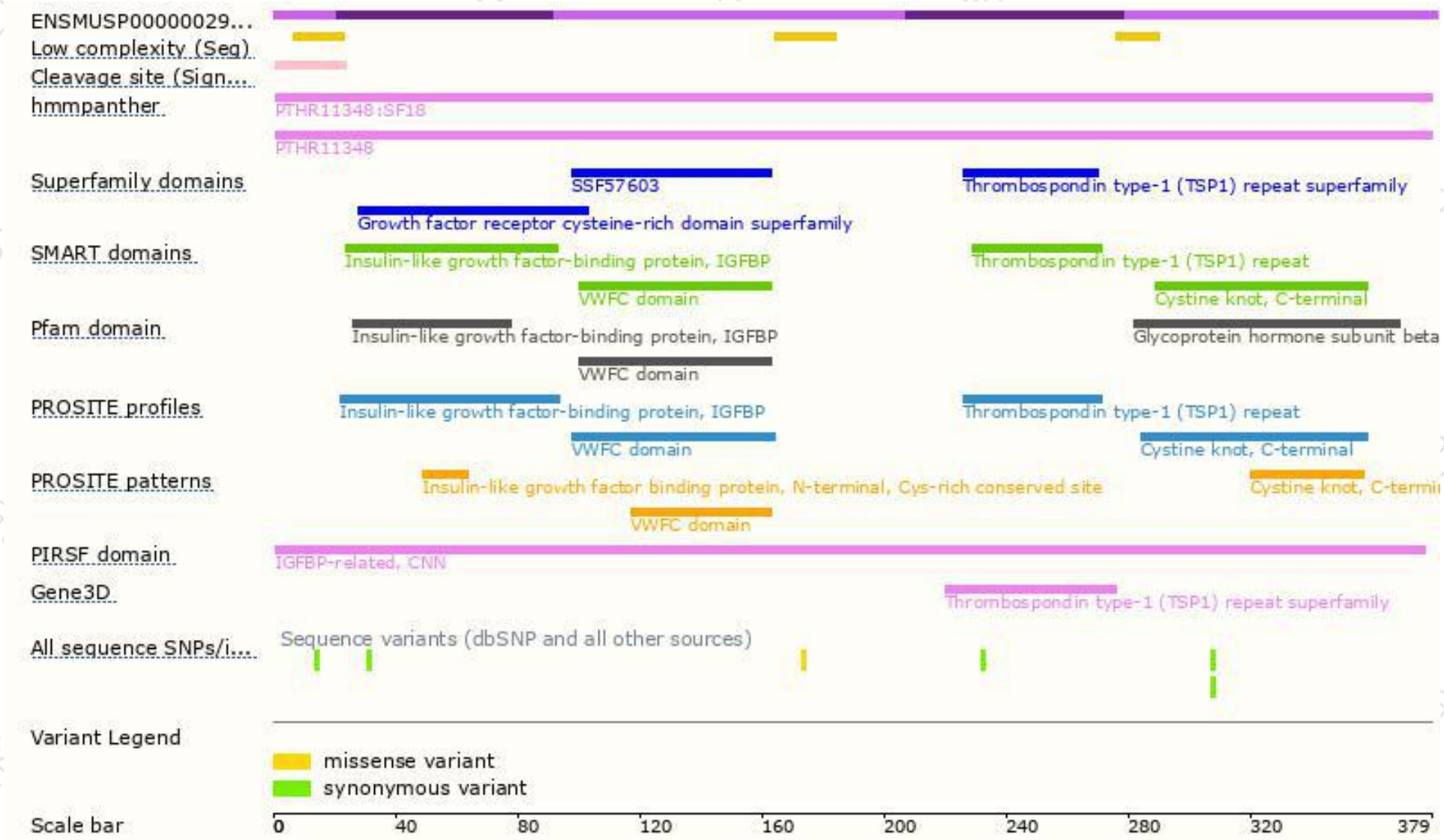
The strategy is based on the design of *Ccn1-201* transcript,The transcription is shown below



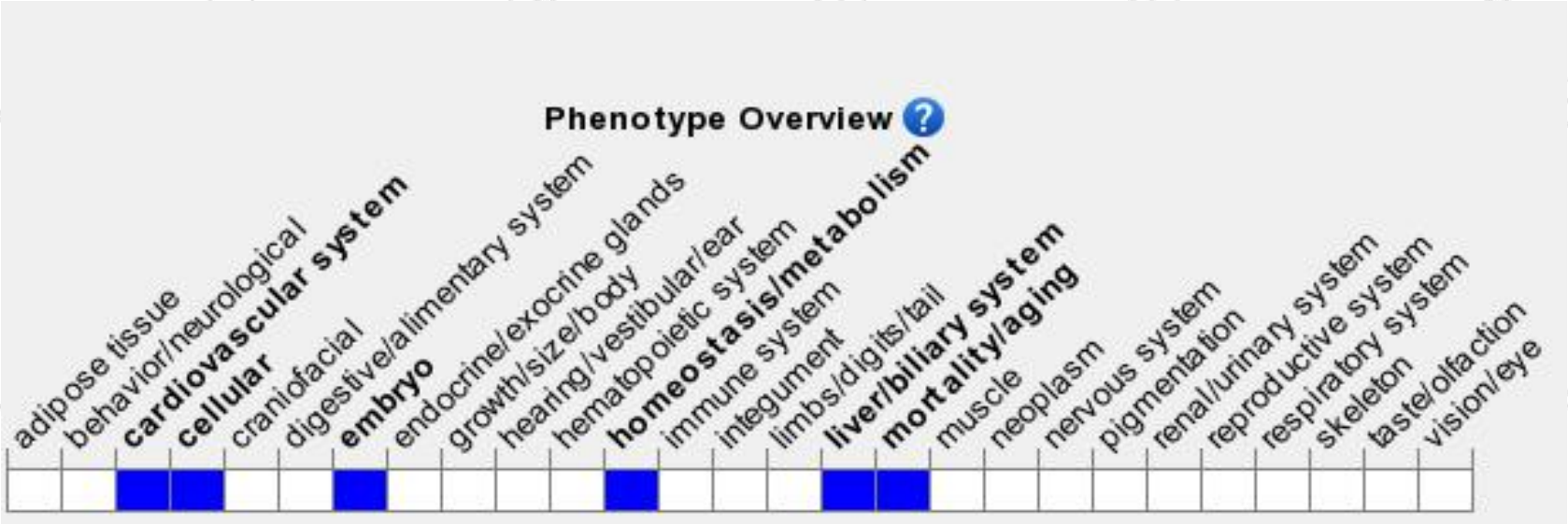
Genomic location distribution



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/).

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

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