Ccn2 Cas9-CKO Strategy

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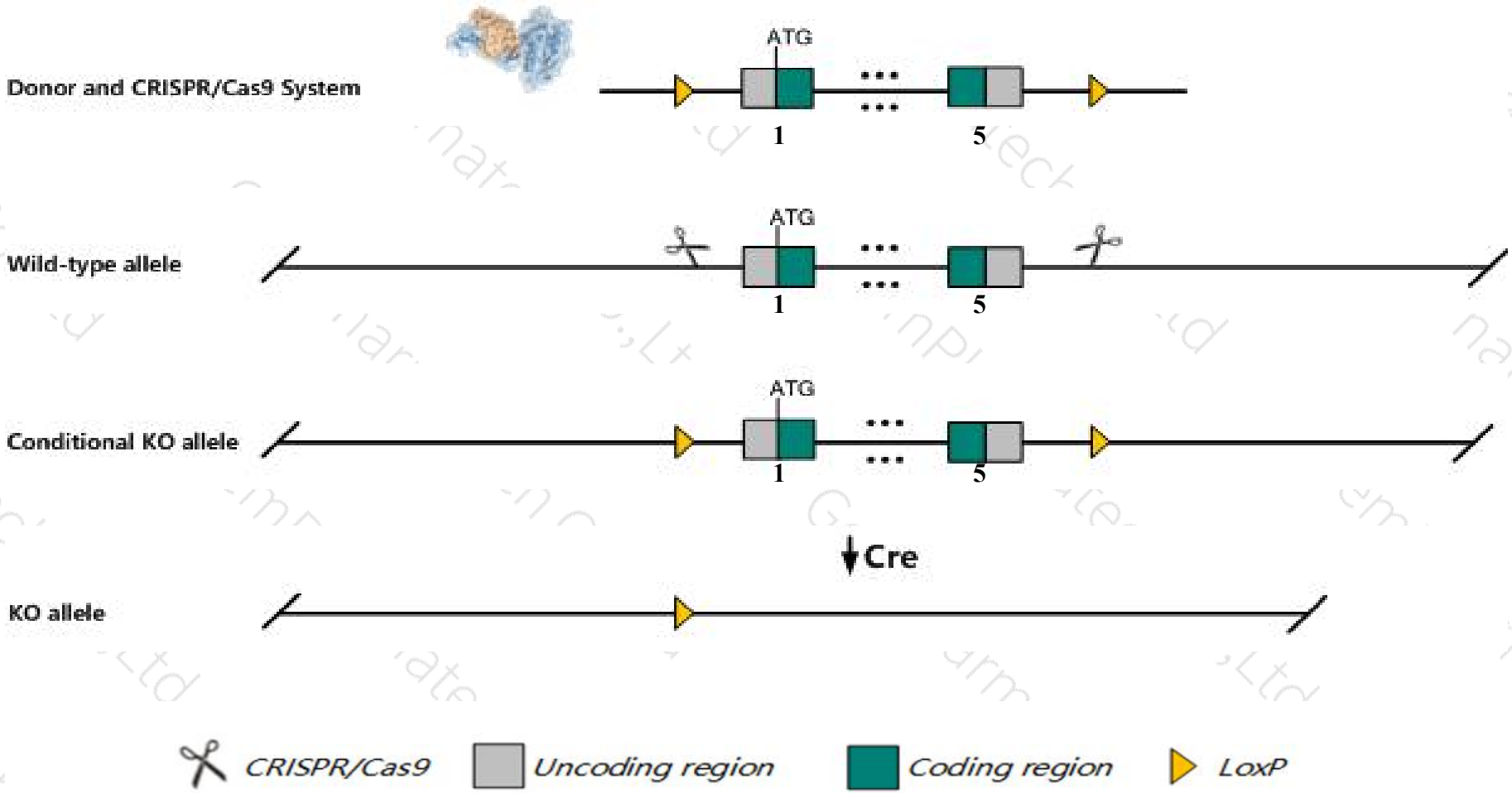
Project Overview

Project Name	***Ccn2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ccn2* gene. The schematic diagram is as follows:



Technical routes

- The *Ccn2* gene has 3 transcripts. According to the structure of *Ccn2* gene, exon1-exon5 of *Ccn2-201* (ENSMUST00000020171.11) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ccn2* 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.

Notice

- According to the existing MGI data,Homozygous null mice die at birth from respiratory failure due to axial skeletal defects and pulmonary hypoplasia associated with reduced cell proliferation, enhanced apoptosis and altered pneumocyte maturation. Osteogenesis is impaired due to impaired chondrogenesis and growth plate angiogenesis.
- The KO region contains functional region of the *Gm15270* gene.Knockout the region may affect the function of *Gm15270* gene.
- The *Ccn2* gene is located on the Chr10. 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）

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Ccn2 cellular communication network factor 2 [Mus musculus (house mouse)]

Gene ID: 14219, updated on 9-Apr-2019

Summary

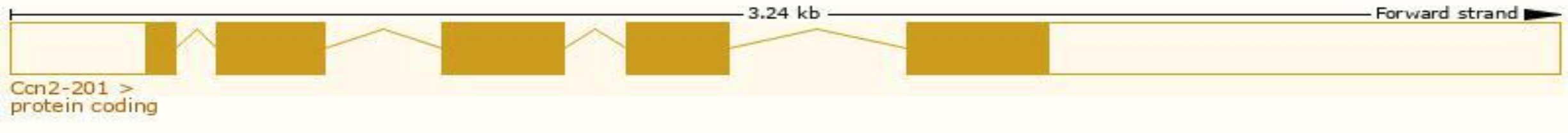
Official Symbol	Ccn2 provided by MGI
Official Full Name	cellular communication network factor 2 provided by MGI
Primary source	MGI:MGI:95537
See related	Ensembl:ENSMUSG00000019997
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ctgf, Fisp12, Hcs24, fisp-12
Expression	Broad expression in lung adult (RPKM 127.1), ovary adult (RPKM 111.5) and 19 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

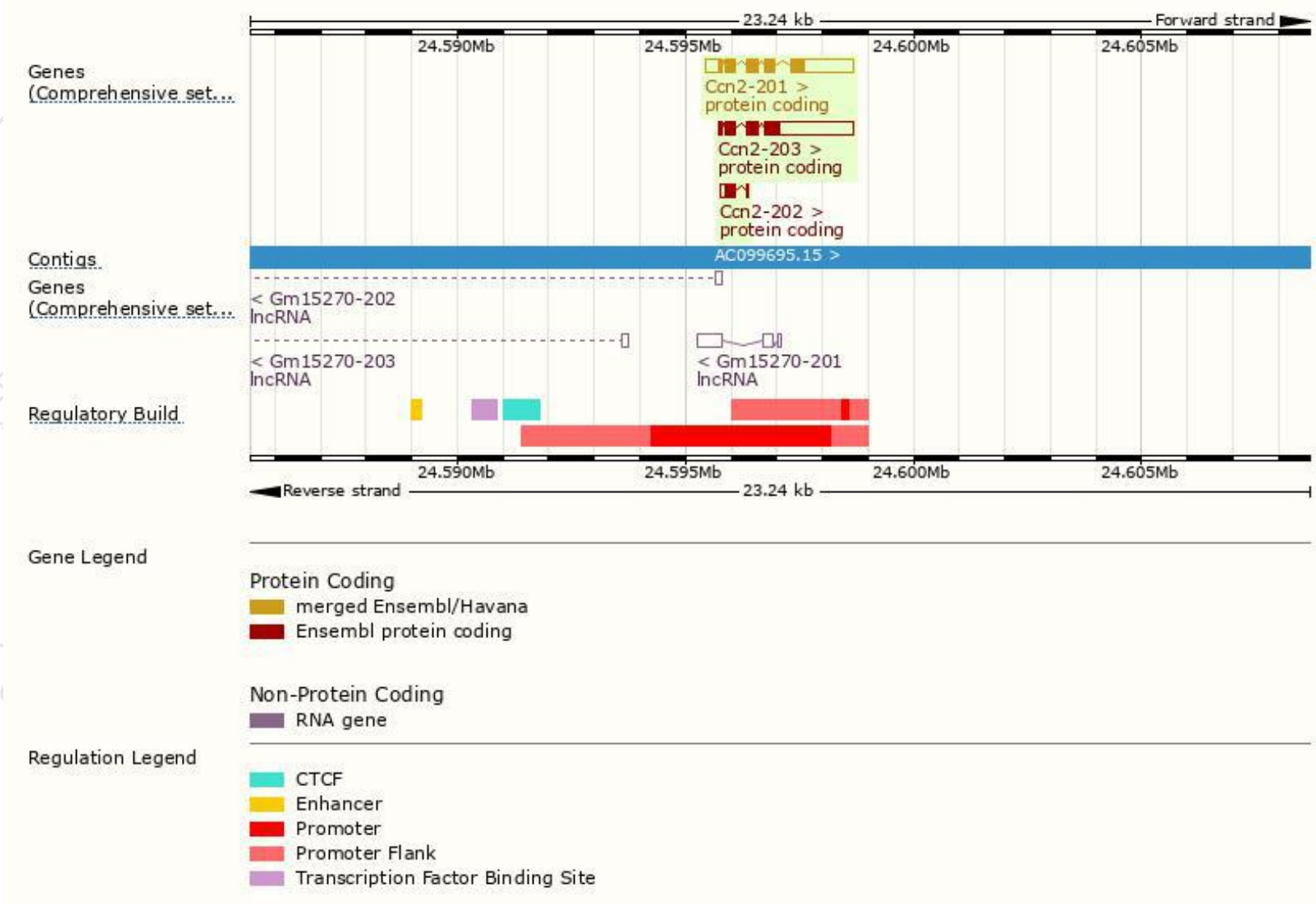
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccn2-201	ENSMUST00000020171.11	2398	348aa	Protein coding	CCDS23751	P29268	TSL:1 GENCODE basic APPRIS P1
Ccn2-203	ENSMUST00000176228.1	2490	293aa	Protein coding	-	H3BJW0	TSL:2 GENCODE basic
Ccn2-202	ENSMUST00000129142.1	343	80aa	Protein coding	-	H3BK14	CDS 3' incomplete TSL:2

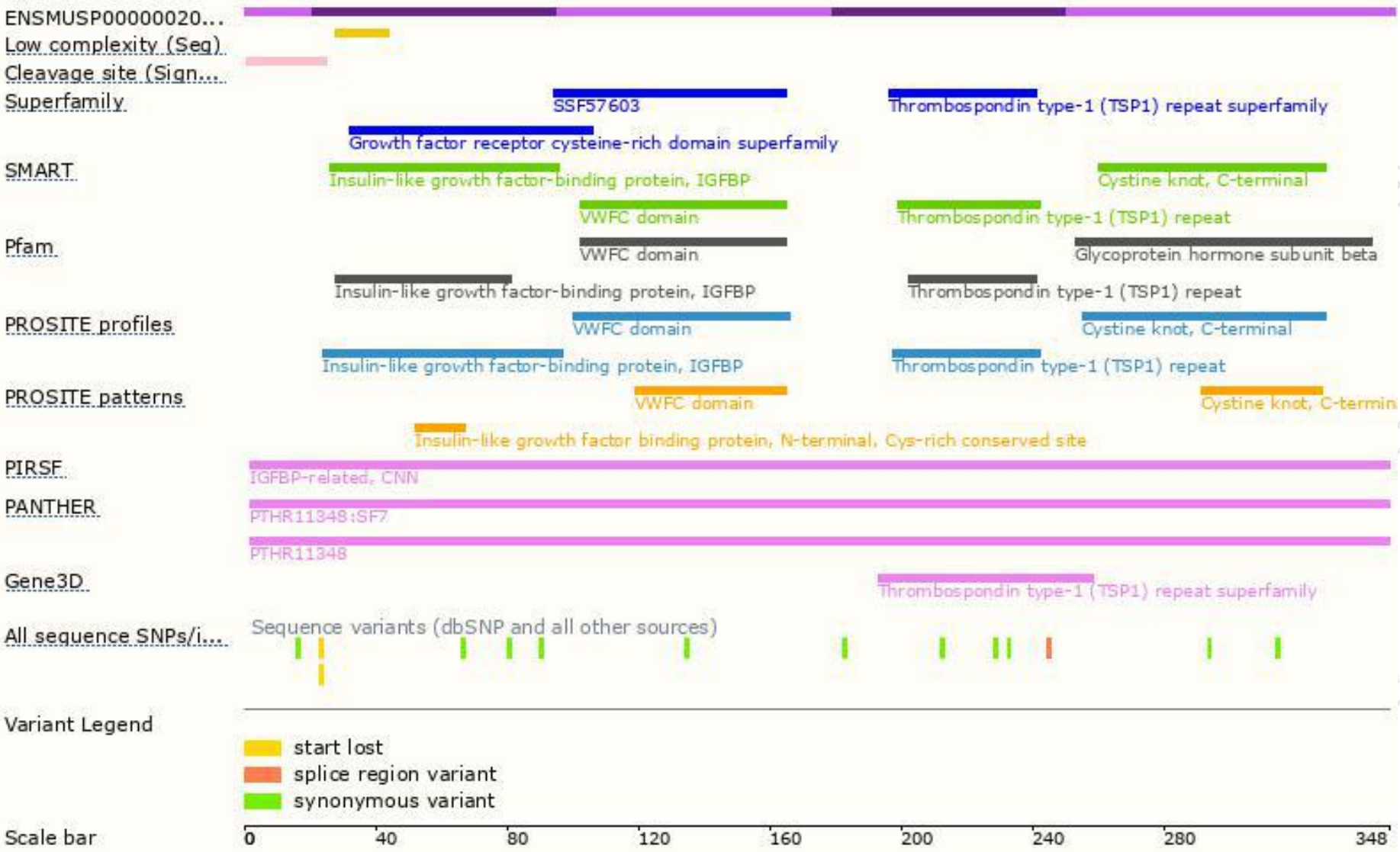
The strategy is based on the design of *Ccn2-201* transcript,The transcription is shown below



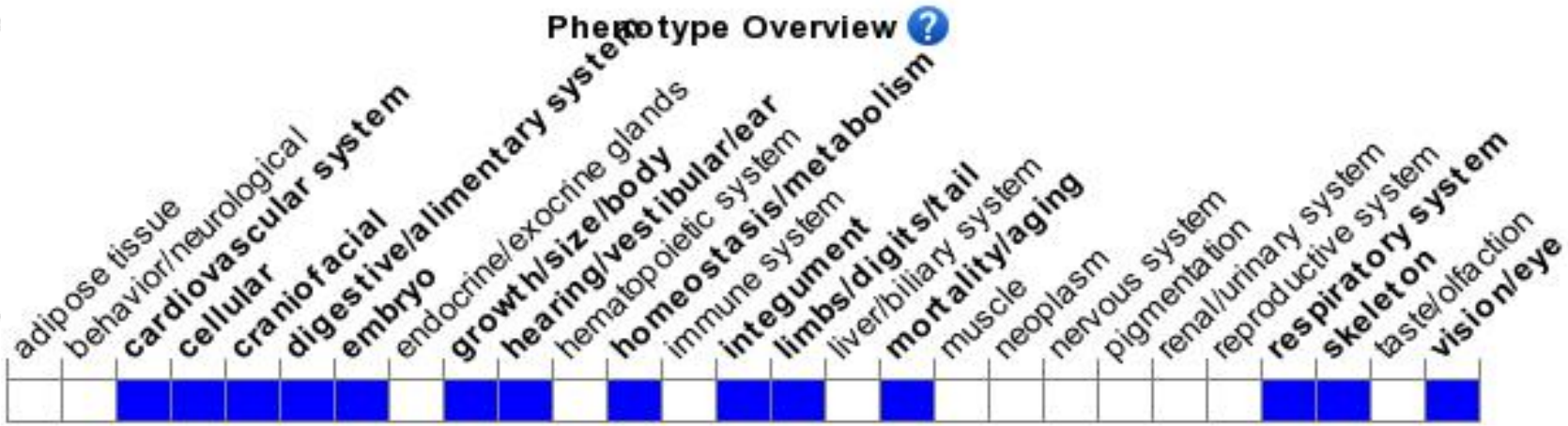
Genomic location distribution



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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