Tgfbr2 Cas9-CKO Strategy

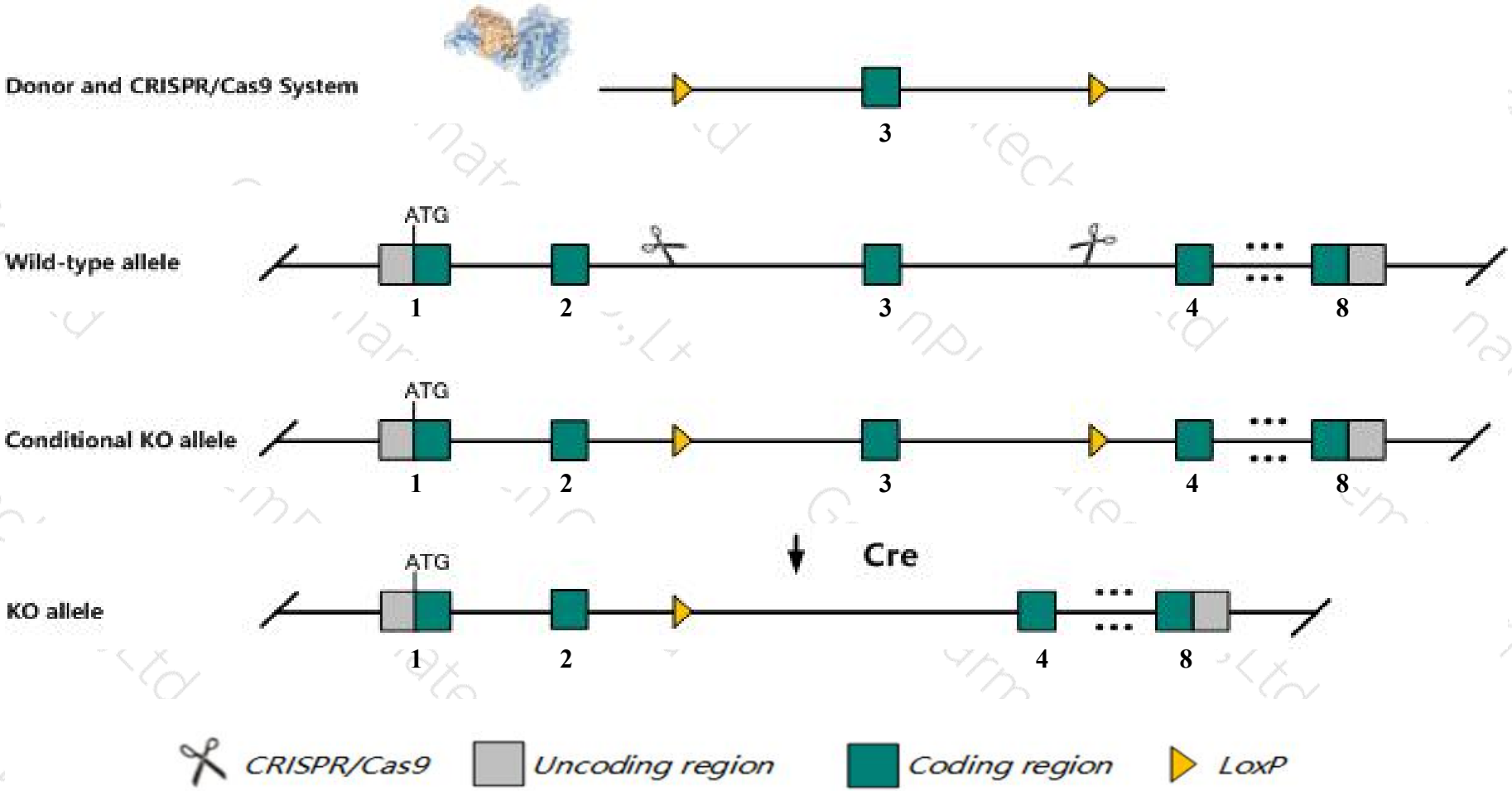
Designer:Xueting Zhang

Project Overview

Project Name	***Tgfbr2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tgfbr2* gene. The schematic diagram is as follows:



Technical routes

- The *Tgfbr2* gene has 2 transcripts. According to the structure of *Tgfbr2* gene, exon3 of *Tgfbr2-202* (ENSMUST00000061101.11) transcript is recommended as the knockout region.The region contains 169bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Tgfbr2* 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,Homozygotes for targeted null mutations die in midgestation with impaired yolk sac hematopoiesis and vasculogenesis. Selective knockouts in bone marrow cells and cranial neural crest show inflammation and cleft palate/calvarial defects, respectively.

- The *Tgfbr2* gene is located on the Chr9. 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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Tgfbr2 transforming growth factor, beta receptor II [Mus musculus (house mouse)]

Gene ID: 21813, updated on 19-Mar-2019

Summary

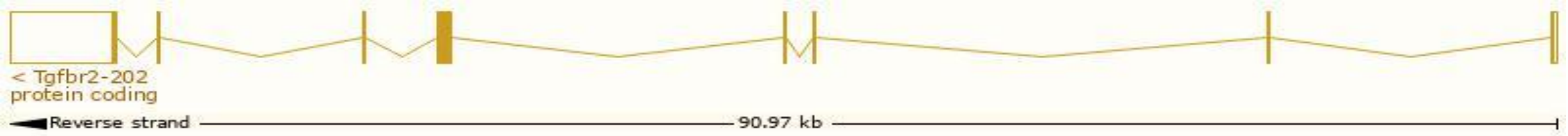
Official Symbol	Tgfbr2 provided by MGI
Official Full Name	transforming growth factor, beta receptor II provided byMGI
Primary source	MGI:MGI:98729
See related	Ensembl:ENSMUSG00000032440
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110020H15Rik, AU042018, DNIIR, RIIDN, TBR-II, TbetaR-II, TbetaRII
Expression	Broad expression in lung adult (RPKM 56.6), subcutaneous fat pad adult (RPKM 56.5) and 23 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

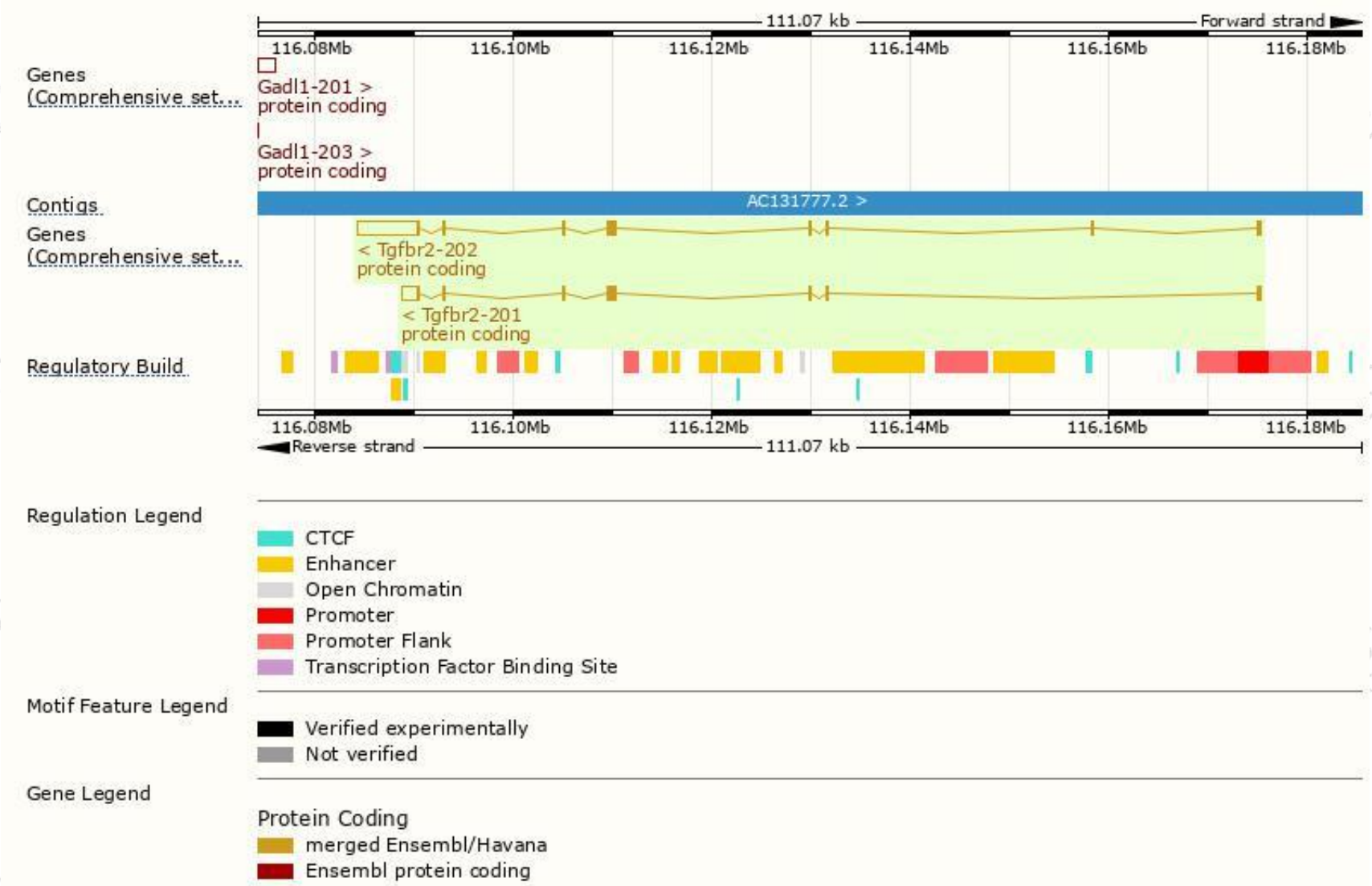
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tgfbr2-202	ENSMUST00000061101.11	8092	592aa	Protein coding	CCDS23601	Q543C0 Q62312	TSL:1 GENCODE basic
Tgfbr2-201	ENSMUST00000035014.7	3476	567aa	Protein coding	CCDS23602	Q62312	TSL:1 GENCODE basic APPRIS P1

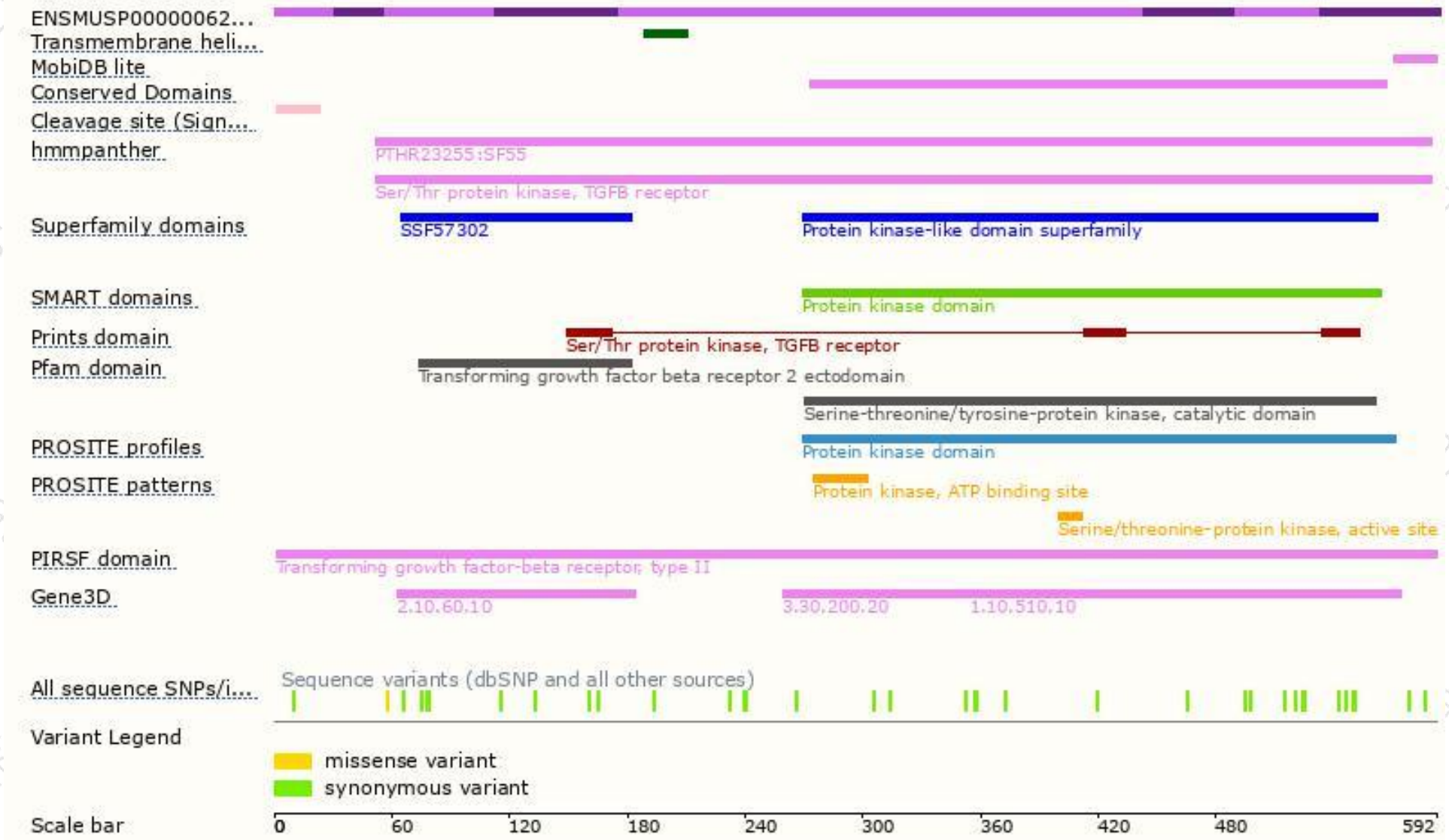
The strategy is based on the design of *Tgfbr2-202* transcript,The transcription is shown below



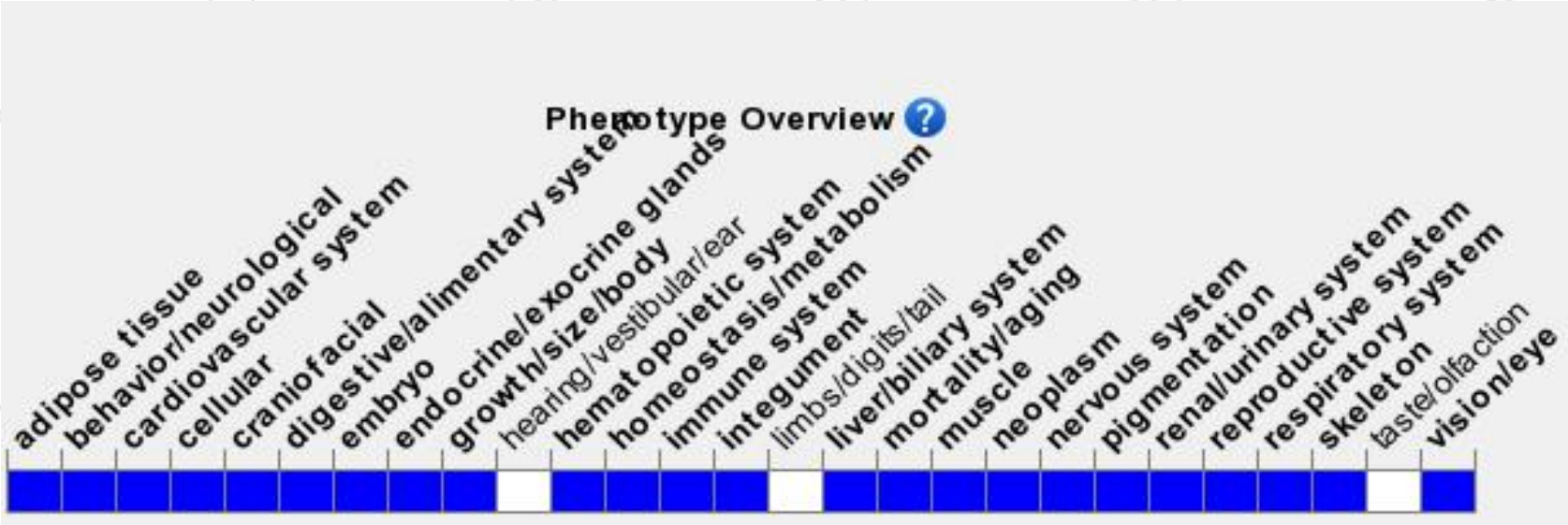
Genomic location distribution



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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集萃药康
GemPharmatech

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

Tel: 400-9660890

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GemPharmatech Co.,Ltd