Bicc1 Cas9-CKO Strategy

Designer: Ruirui Zhang
Reviewer: Huimin Su
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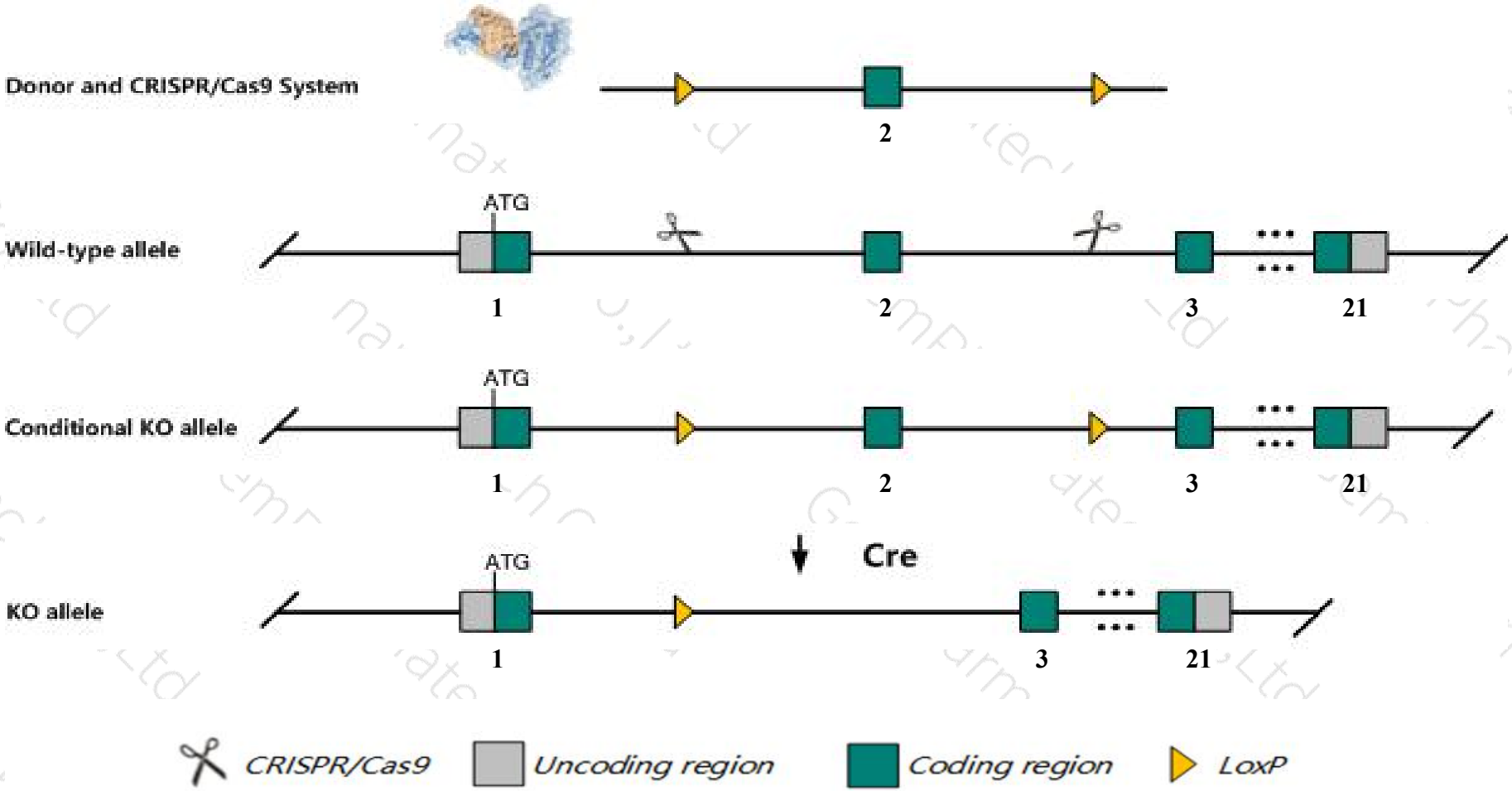
Project Overview

Project Name	***Bicc1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Bicc1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Bicc1* gene has 4 transcripts. According to the structure of *Bicc1* gene, exon2 of *Bicc1-203*(ENSMUST00000143791.7) transcript is recommended as the knockout region.The region contains 47bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Bicc1* 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 inactivation of this gene causes heteroxia, impaired nodal flow, ventricular septal defects, partial prenatal lethality and postnatal death due to renal failure. Chemically induced mutants develop kidney cysts and may show bulging abdomens, bile duct anomalies and cardiovascular defects.

➢ The *Bicc1* 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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Bicc1 BicC family RNA binding protein 1 [*Mus musculus* (house mouse)]

Gene ID: 83675, updated on 21-Jul-2020

Summary

Official Symbol	Bicc1 provided by MGI
Official Full Name	BicC family RNA binding protein 1 provided by MGI
Primary source	MGI:MGI:1933388
See related	Ensembl:ENSMUSG00000014329
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	bpk; jcpk; Bic-C
Expression	Broad expression in kidney adult (RPKM 21.7), ovary adult (RPKM 11.9) and 18 other tissues See more
Orthologs	human all

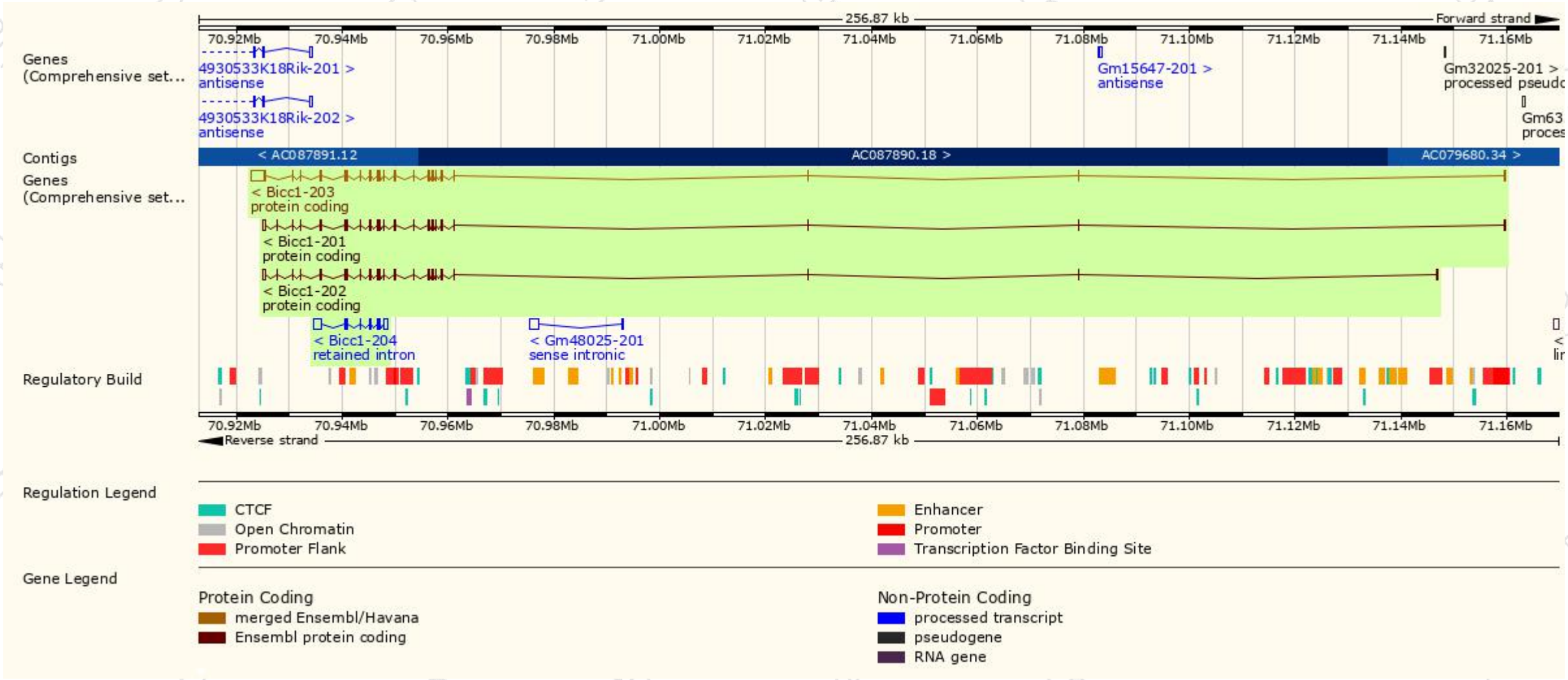
Transcript information（Ensembl）

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

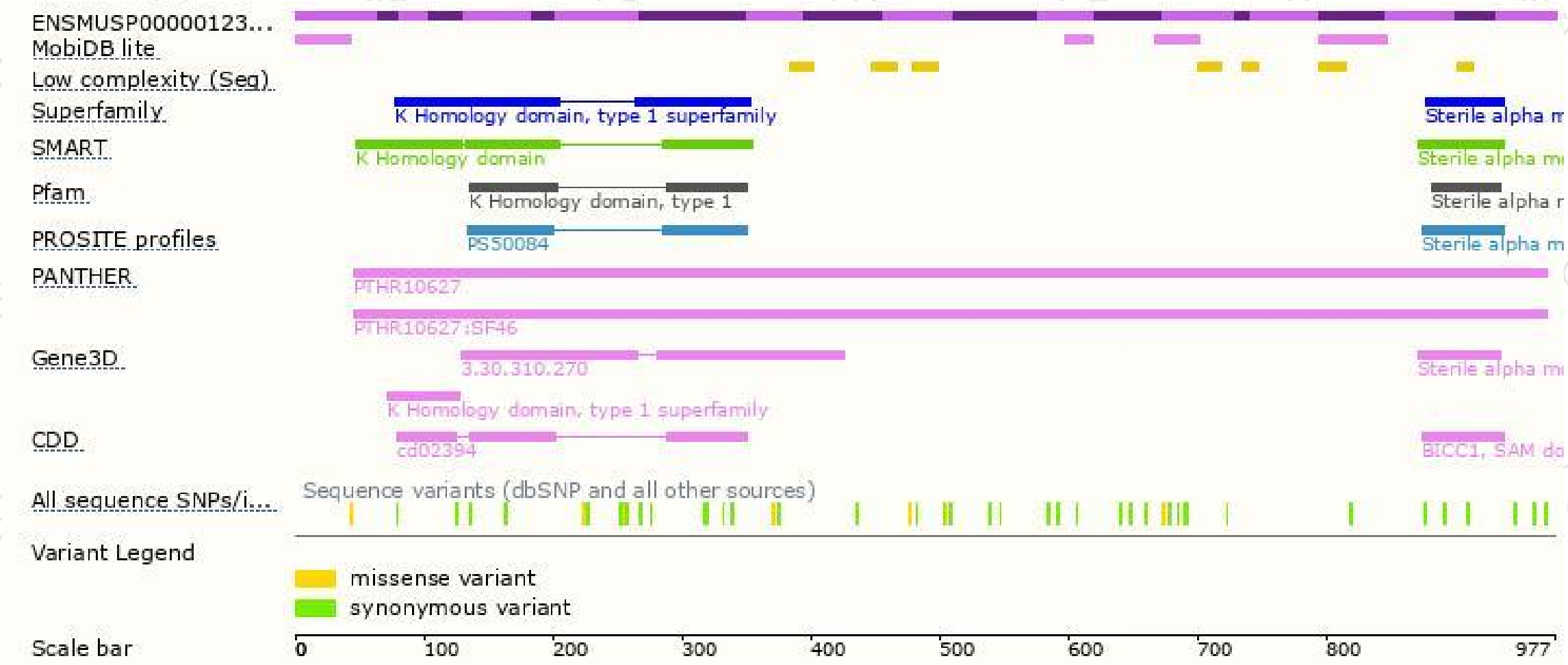
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bicc1-204	ENSMUST00000144740.1	3053	No protein	Retained intron	-	-	TSL:1
Bicc1-203	ENSMUST00000143791.7	5431	977aa	Protein coding	CCDS23915	Q99MQ1	TSL:1 GENCODE basic APPRIS P1
Bicc1-201	ENSMUST00000014473.5	3231	951aa	Protein coding	CCDS83710	G3X8S6	TSL:1 GENCODE basic
Bicc1-202	ENSMUST00000131445.7	3005	869aa	Protein coding	-	Q99MQ1	TSL:1 GENCODE basic

The strategy is based on the design of *Bicc1-203* transcript,the transcription is shown below:

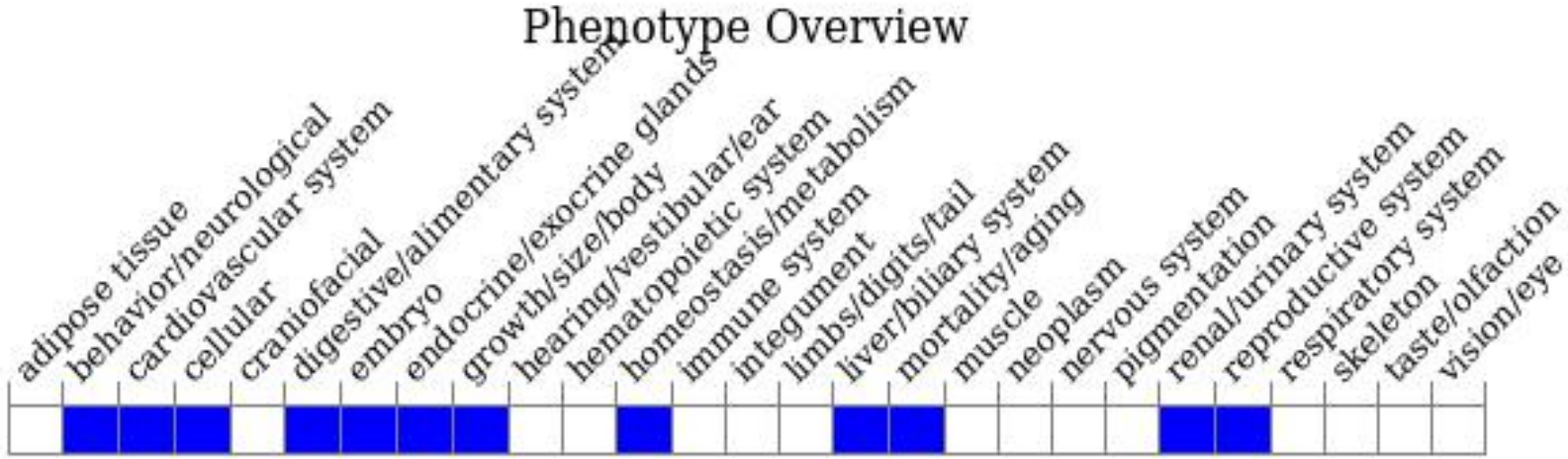
Genomic location distribution



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/).

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集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd