Slc30a5 Cas9-CKO Strategy

Designer: Daohua Xu

Reviewer: Huimin Su

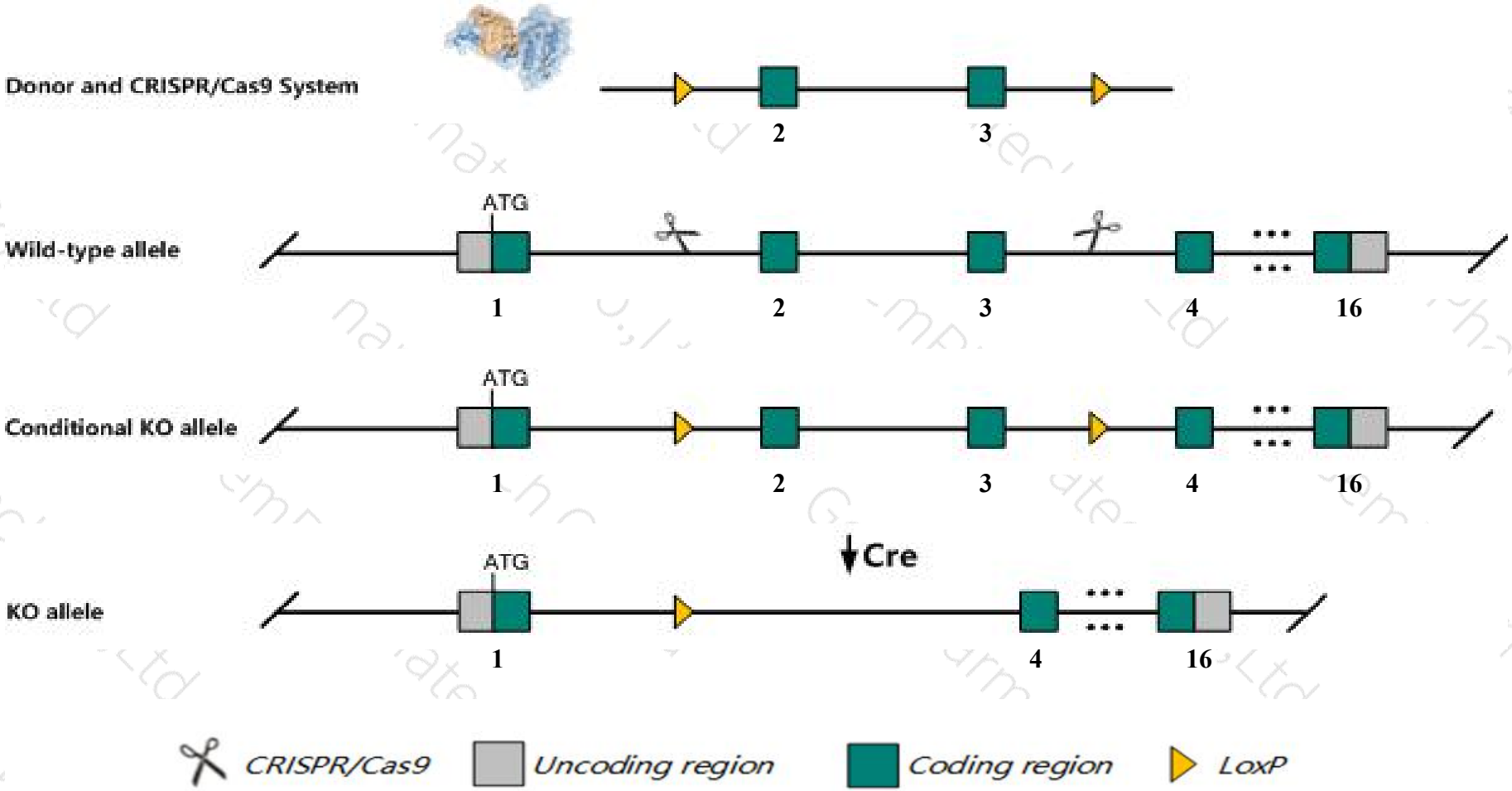
Design Date: 2020-5-28

Project Overview

Project Name	***Slc30a5***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc30a5* gene. The schematic diagram is as follows:



Technical routes

- The *Slc30a5* gene has 5 transcripts. According to the structure of *Slc30a5* gene, exon2-exon3 of *Slc30a5-201* (ENSMUST00000067246.5) transcript is recommended as the knockout region.The region contains 190bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Slc30a5* 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 are growth retarded and exhibit skeletal defects including reduced bone density. the majority of mutant male mice die suddenly when they reach reproductive age due to bradyarrhythmia, whereas female mice live a normal term.
- The *Slc30a5* gene is located on the Chr13. 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）

集萃药康 GemPharmatech

Slc30a5 solute carrier family 30 (zinc transporter), member 5 [Mus musculus (house mouse)]

Gene ID: 69048, updated on 13-Mar-2020

Summary

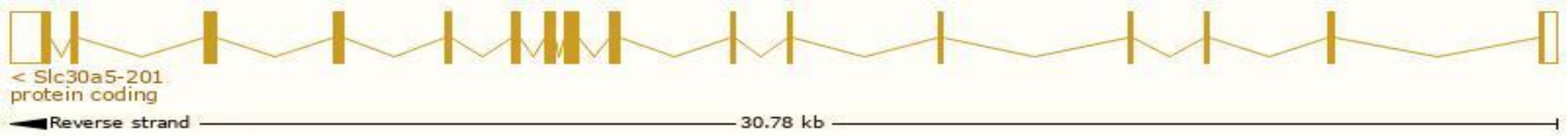
Official Symbol	Slc30a5 provided by MGI
Official Full Name	solute carrier family 30 (zinc transporter), member 5 provided by MGI
Primary source	MGI:MGI:1916298
See related	Ensembl:ENSMUSG00000021629
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1810010K08Rik, AF233321, ZNT5, ZTL1, ZnT-5, Zntl1
Expression	Ubiquitous expression in limb E14.5 (RPKM 20.1), large intestine adult (RPKM 17.7) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

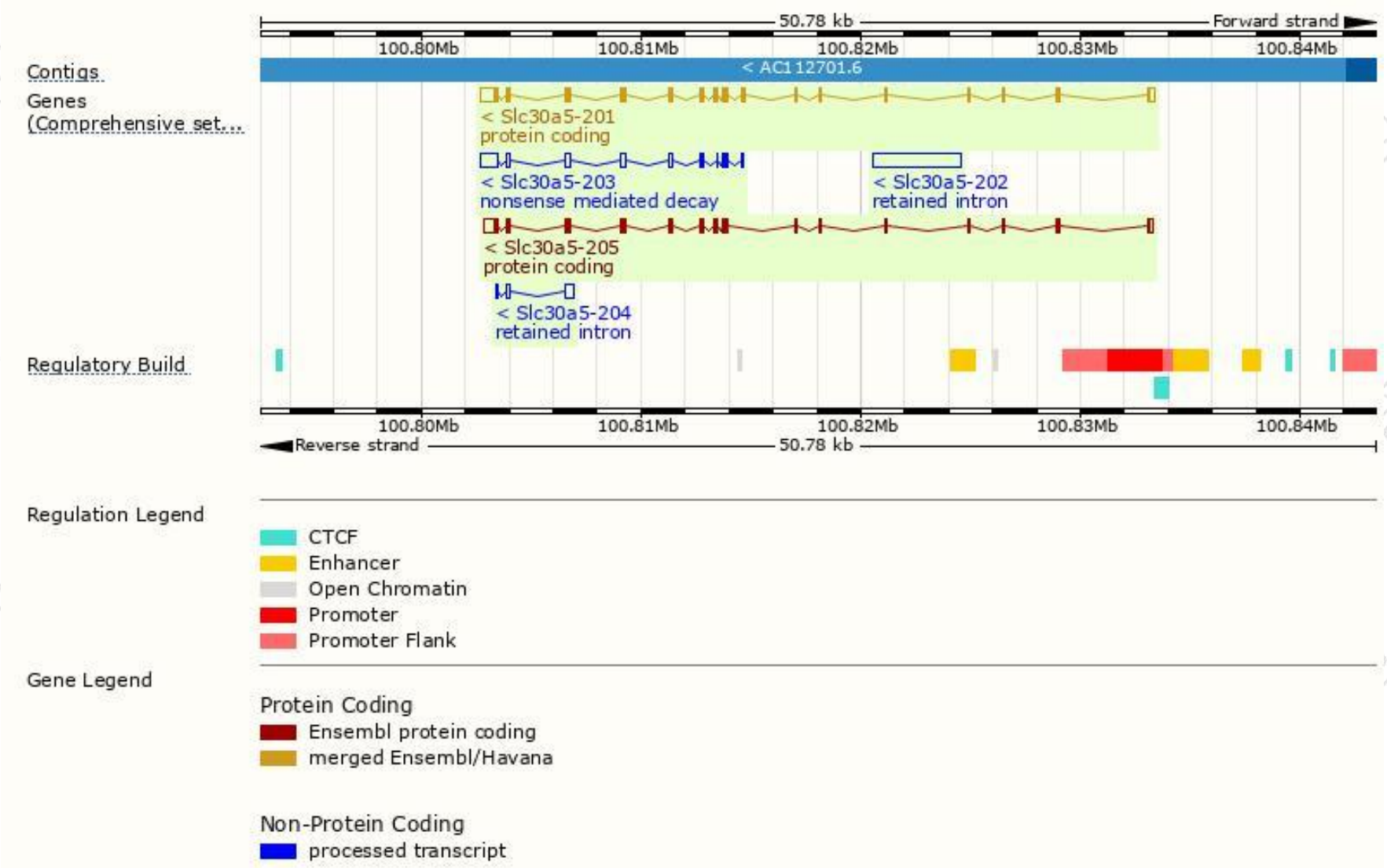
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc30a5-201	ENSMUST00000067246.5	3179	761aa	Protein coding	CCDS26739	Q8R4H9	TSL:1 GENCODE basic APPRIS P2
Slc30a5-205	ENSMUST00000225922.1	2722	704aa	Protein coding	-	A0A286YDV6	GENCODE basic APPRIS ALT2
Slc30a5-203	ENSMUST00000225086.1	2022	153aa	Nonsense mediated decay	-	A0A286YD86	CDS 5' incomplete
Slc30a5-202	ENSMUST00000224177.1	4000	No protein	Retained intron	-	-	
Slc30a5-204	ENSMUST00000225129.1	589	No protein	Retained intron	-	-	

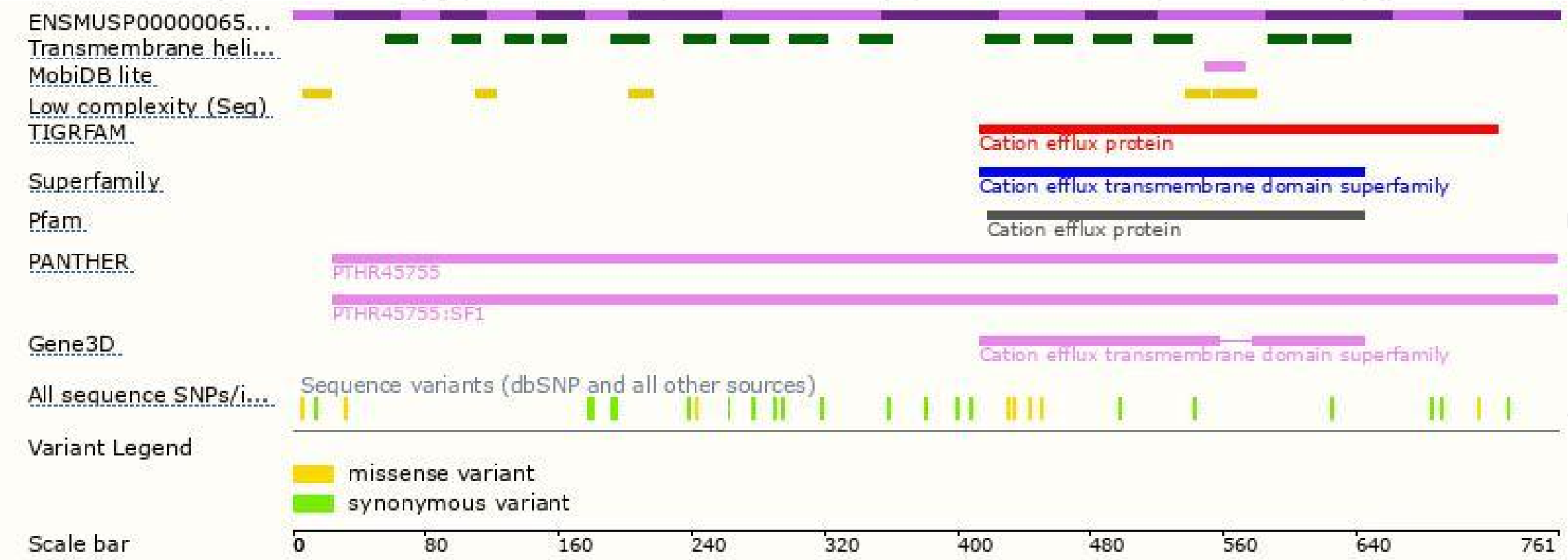
The strategy is based on the design of *Slc30a5-201* transcript,the transcription is shown below:



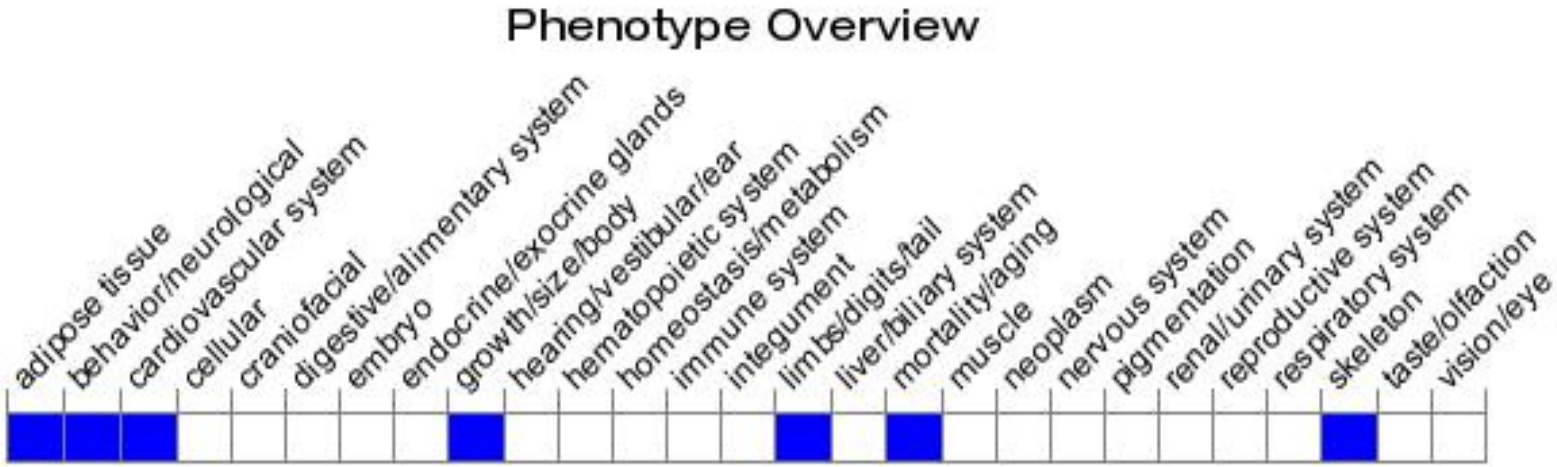
Genomic location distribution



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,homozygous null mice are growth retarded and exhibit skeletal defects including reduced bone density. The majority of mutant male mice die suddenly when they reach reproductive age due to bradyarrhythmia, whereas female mice live a normal term.

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