Slc2a5 Cas9-CKO Strategy

Designer: Daohua Xu

Reviewer: Xueting Zhang

Design Date: 2021-3-24

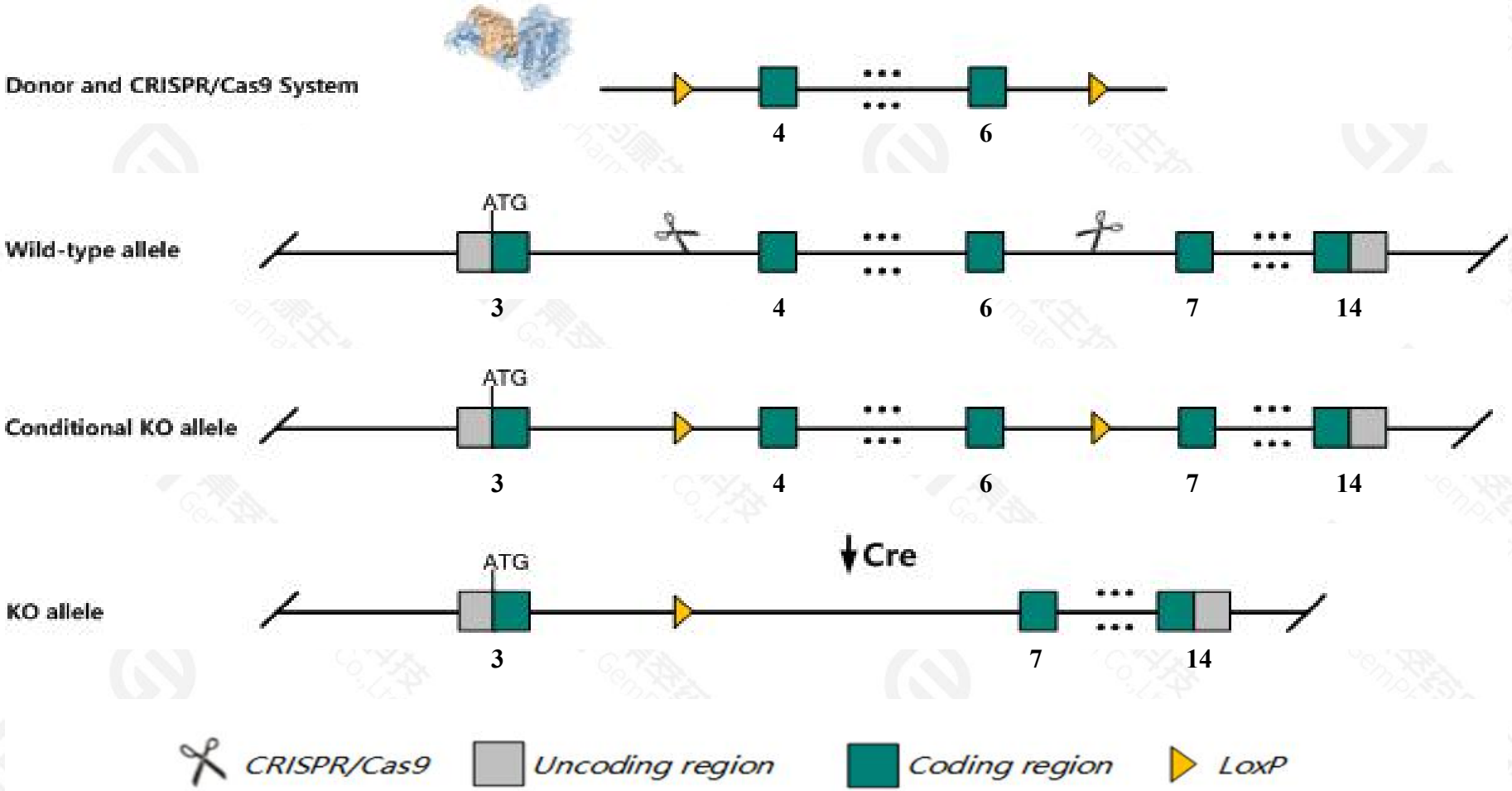
Project Overview

Project Name	***Slc2a5***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

集萃药康 GemPharmatech

This model will use CRISPR/Cas9 technology to edit the *Slc2a5* gene. The schematic diagram is as follows:



Technical routes

➢ The *Slc2a5* gene has 4 transcripts. According to the structure of *Slc2a5* gene, exon4-exon6 of *Slc2a5-201*(ENSMUST00000030826.4) transcript is recommended as the knockout region.The region contains 385bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc2a5* 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,mice homozygous for a knock-out allele exhibit normal cochlear morphology and physiology with no detectable alterations in outer hair cell morphology, electromotility or nonlinear capacitance.

➢ The *Slc2a5* gene is located on the Chr4. 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

Slc2a5 solute carrier family 2 (facilitated glucose transporter), member 5 [Mus musculus (house mouse)]

Gene ID: 56485, updated on 1-Nov-2020

Summary

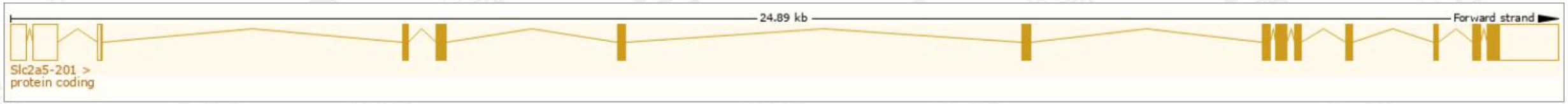
Official Symbol	Slc2a5 provided by MGI
Official Full Name	solute carrier family 2 (facilitated glucose transporter), member 5 provided by MGI
Primary source	MGI:MGI:1928369
See related	Ensembl:ENSMUSG00000028976
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI526984, GLUT, Glut5, Slc5a
Expression	Biased expression in testis adult (RPKM 204.2), kidney adult (RPKM 46.2) and 2 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

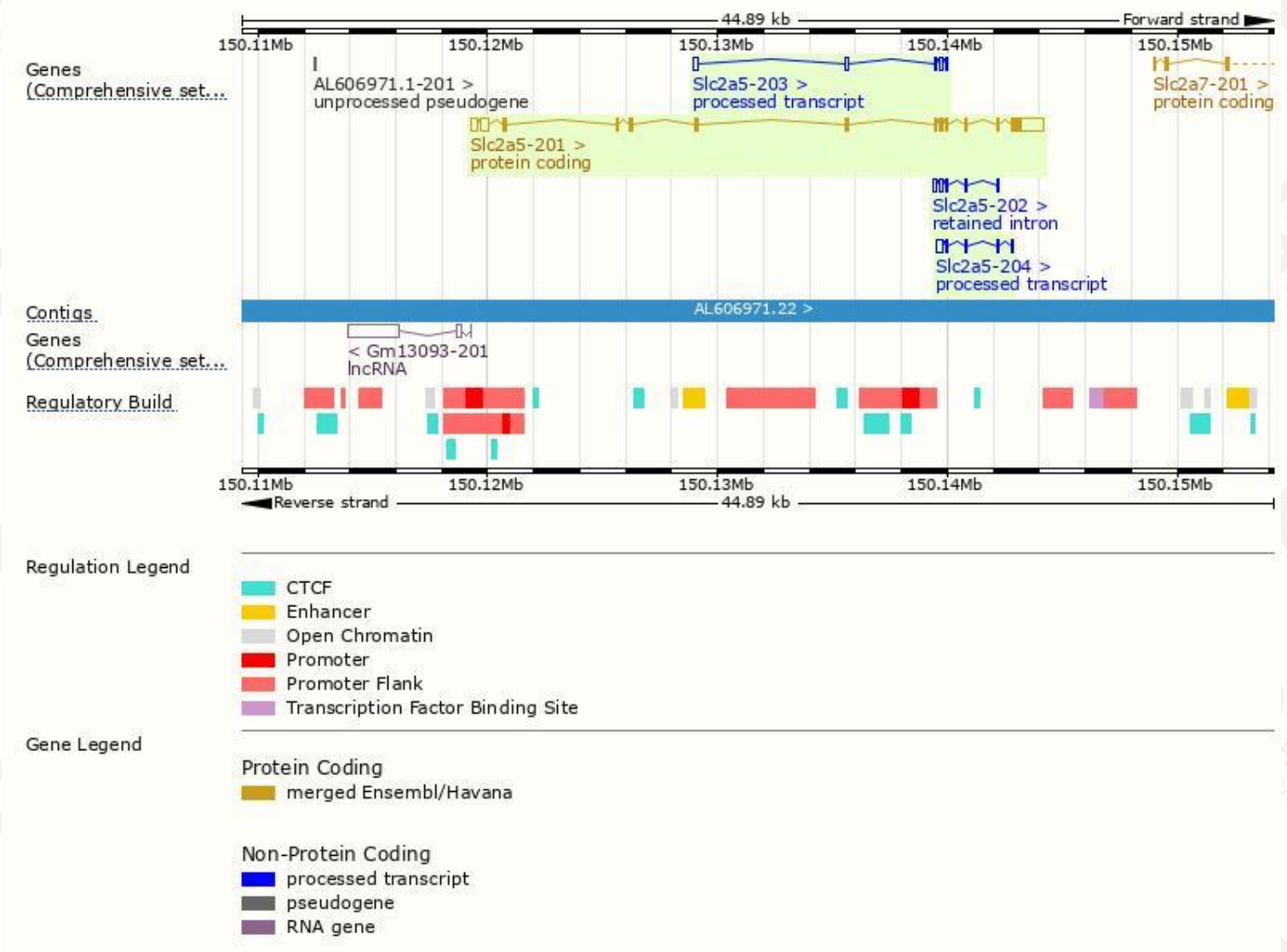
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc2a5-201	ENSMUST00000030826.4	3158	501aa	Protein coding	CCDS18968		TSL:1 , GENCODE basic , APPRIS P1 ,
Slc2a5-203	ENSMUST00000136610.8	799	No protein	Processed transcript	-		TSL:3 ,
Slc2a5-204	ENSMUST00000151504.2	594	No protein	Processed transcript	-		TSL:5 ,
Slc2a5-202	ENSMUST00000132426.8	672	No protein	Retained intron	-		TSL:2 ,

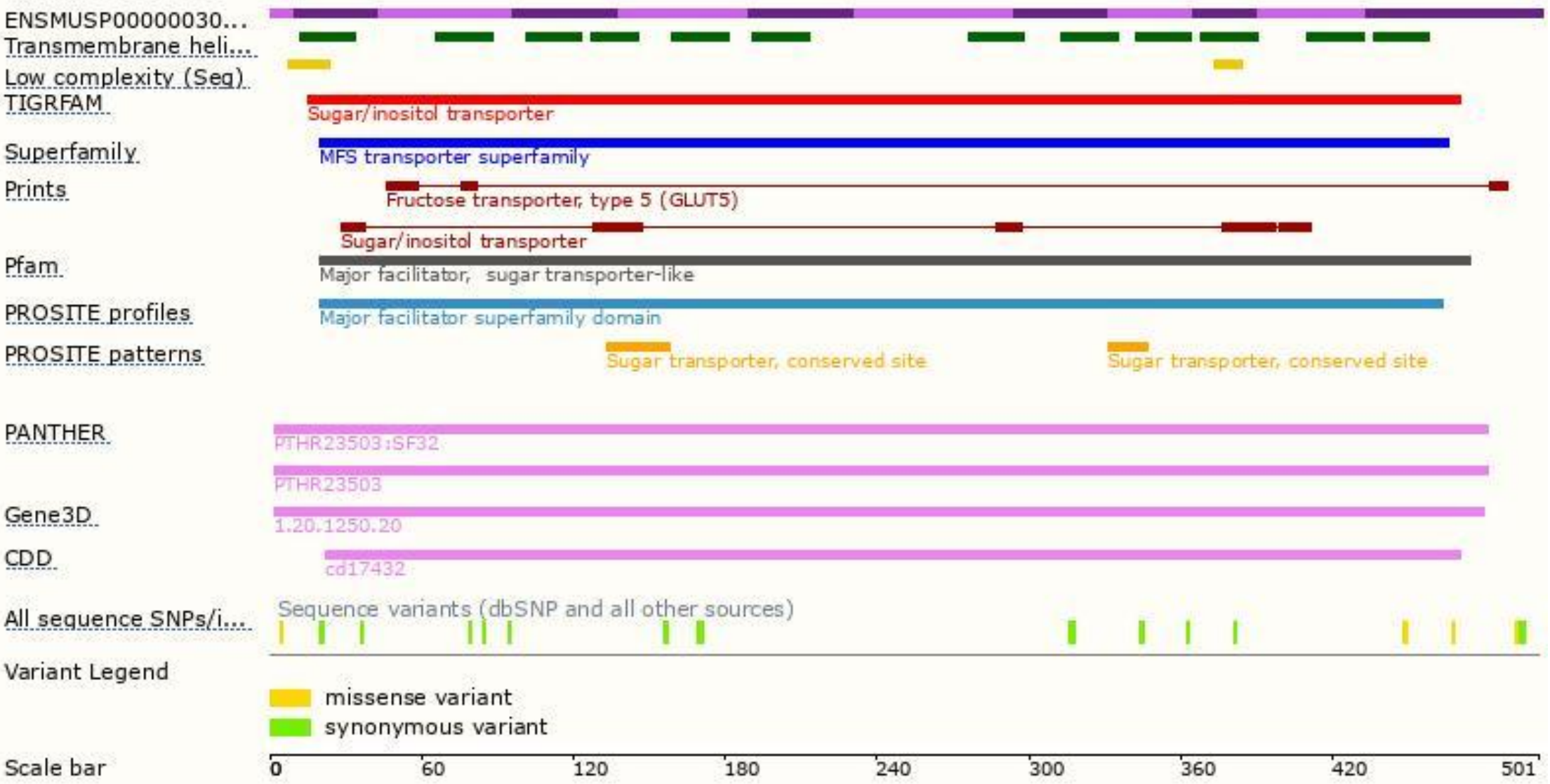
The strategy is based on the design of *Slc2a5-201* transcript,the transcription is shown below:



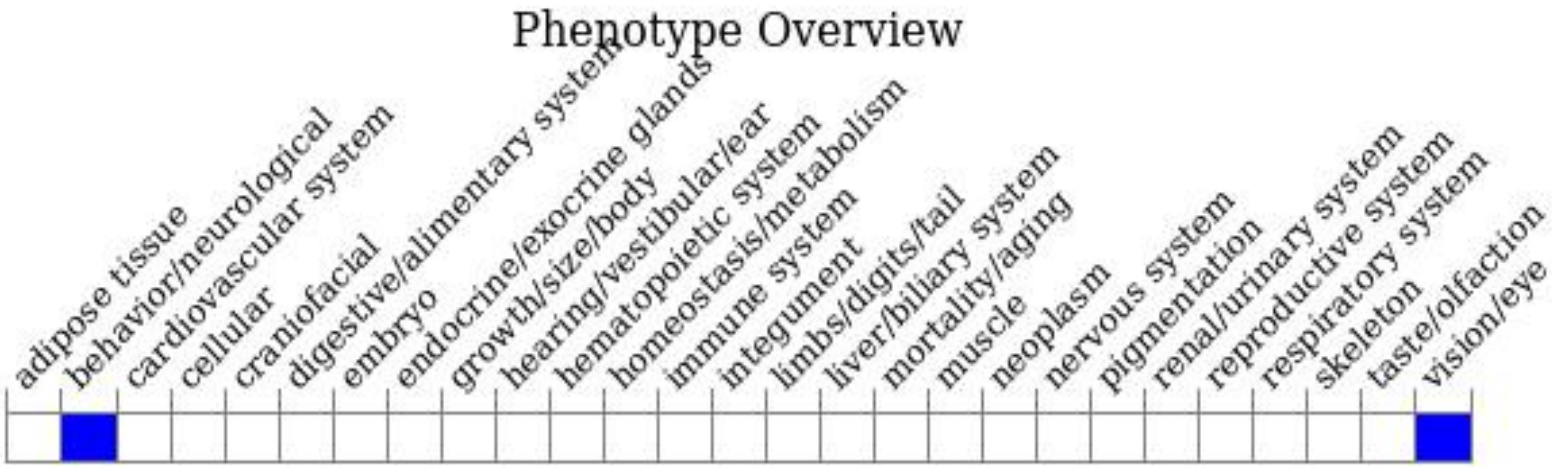
Genomic location distribution



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,mice homozygous for a knock-out allele exhibit normal cochlear morphology and physiology with no detectable alterations in outer hair cell morphology, electromotility or nonlinear capacitance.

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