Slc9c1 Cas9-CKO Strategy

Designer: Lingyan Wu

Reviewer: Miaomiao Cui

Design Date: 2021-7-12

Project Overview

Project Name	***Slc9c1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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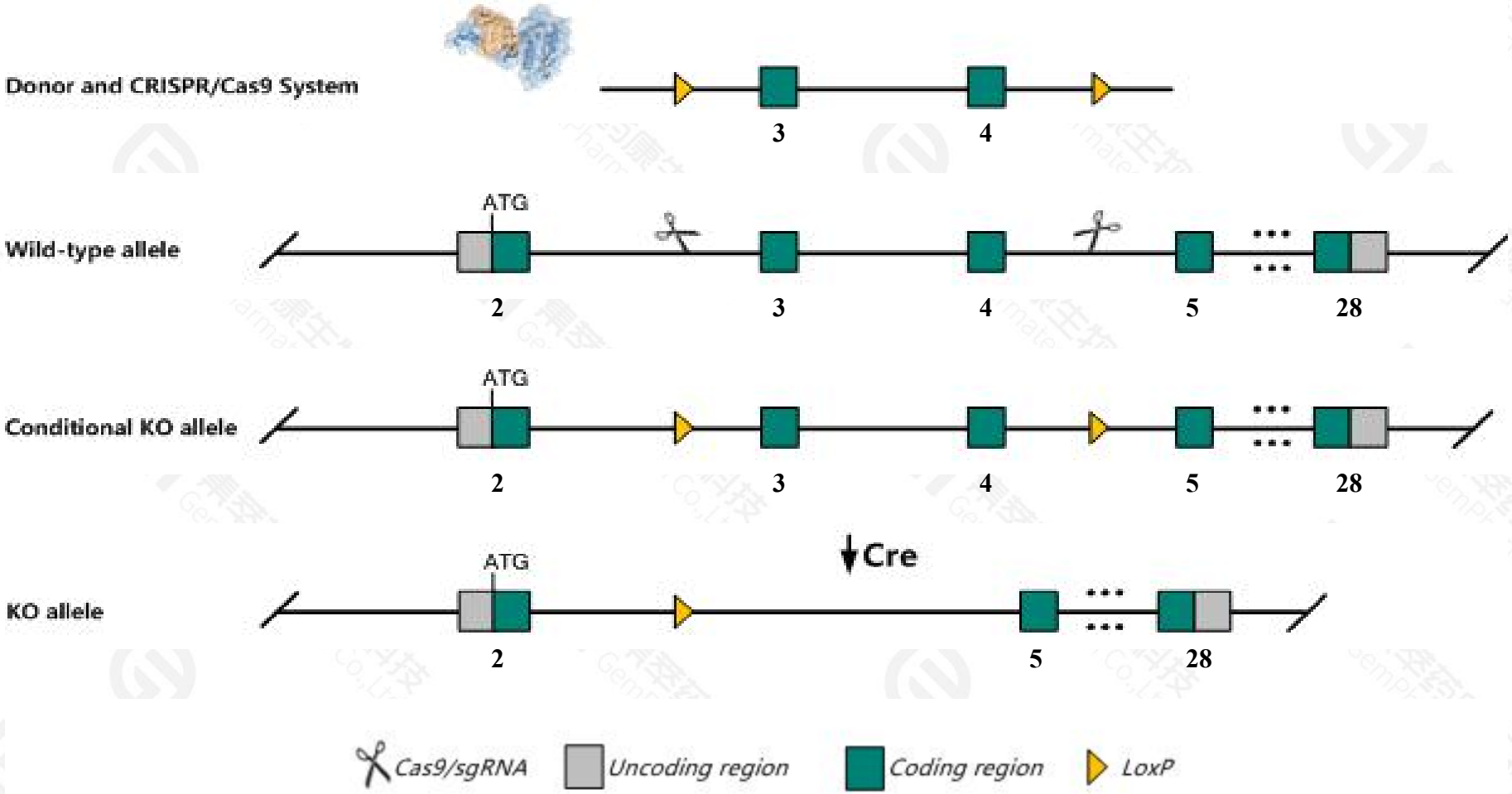
This model will use CRISPR/Cas9 technology to edit the *Slc9c1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Slc9c1* gene has 3 transcripts. According to the structure of *Slc9c1* gene, exon3-exon4 of *Slc9c1-201*(ENSMUST00000159945.8) transcript is recommended as the knockout region.The region contains 230bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc9c1* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor was constructed.Cas9, sgRNA 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 was 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 display male infertility and asthenozoospermia.

➢ The *Slc9c1* gene is located on the Chr16. 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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Slc9c1 solute carrier family 9, subfamily C (Na+-transporting carboxylic acid decarboxylase), member 1 [Mus musculus (house mouse)]

Gene ID: 208169, updated on 19-Jan-2021

Summary

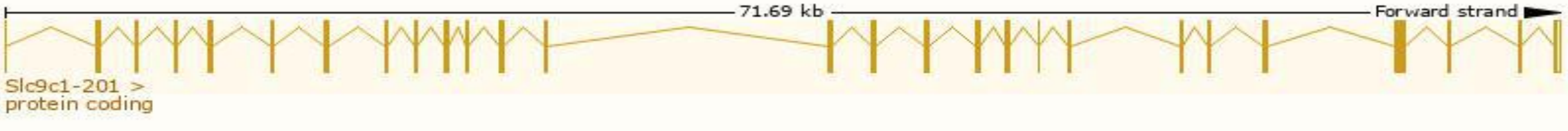
Official Symbol	Slc9c1 provided by MGI
Official Full Name	solute carrier family 9, subfamily C (Na+-transporting carboxylic acid decarboxylase), member 1 provided byMGI
Primary source	MGI:MGI:2685456
See related	Ensembl:ENSMUSG00000033210
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm610, NHE-10, Slc9, Slc9a10, sNHE, sper, spermNHE
Expression	Restricted expression toward testis adult (RPKM 10.4)See more
Orthologs	human all

Transcript information（Ensembl）

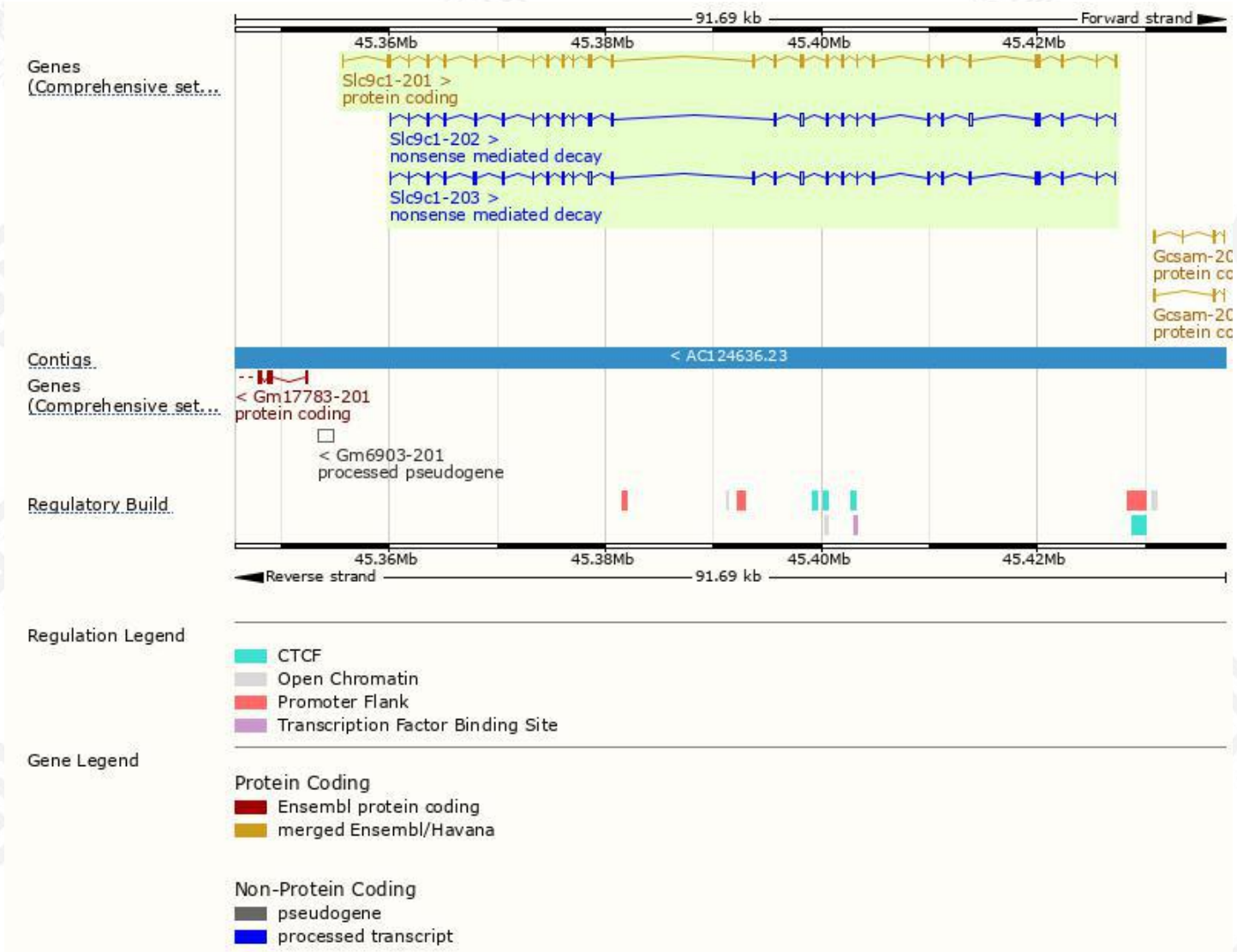
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc9c1-201	ENSMUST00000159945.8	3836	1175aa	Protein coding	CCDS28198		TSL:1 , GENCODE basic , APPRIS P1 ,
Slc9c1-203	ENSMUST00000162774.7	3583	163aa	Nonsense mediated decay	-		CDS 5' incomplete , TSL:1 ,
Slc9c1-202	ENSMUST00000162151.3	3474	520aa	Nonsense mediated decay	-		CDS 5' incomplete , TSL:1 ,

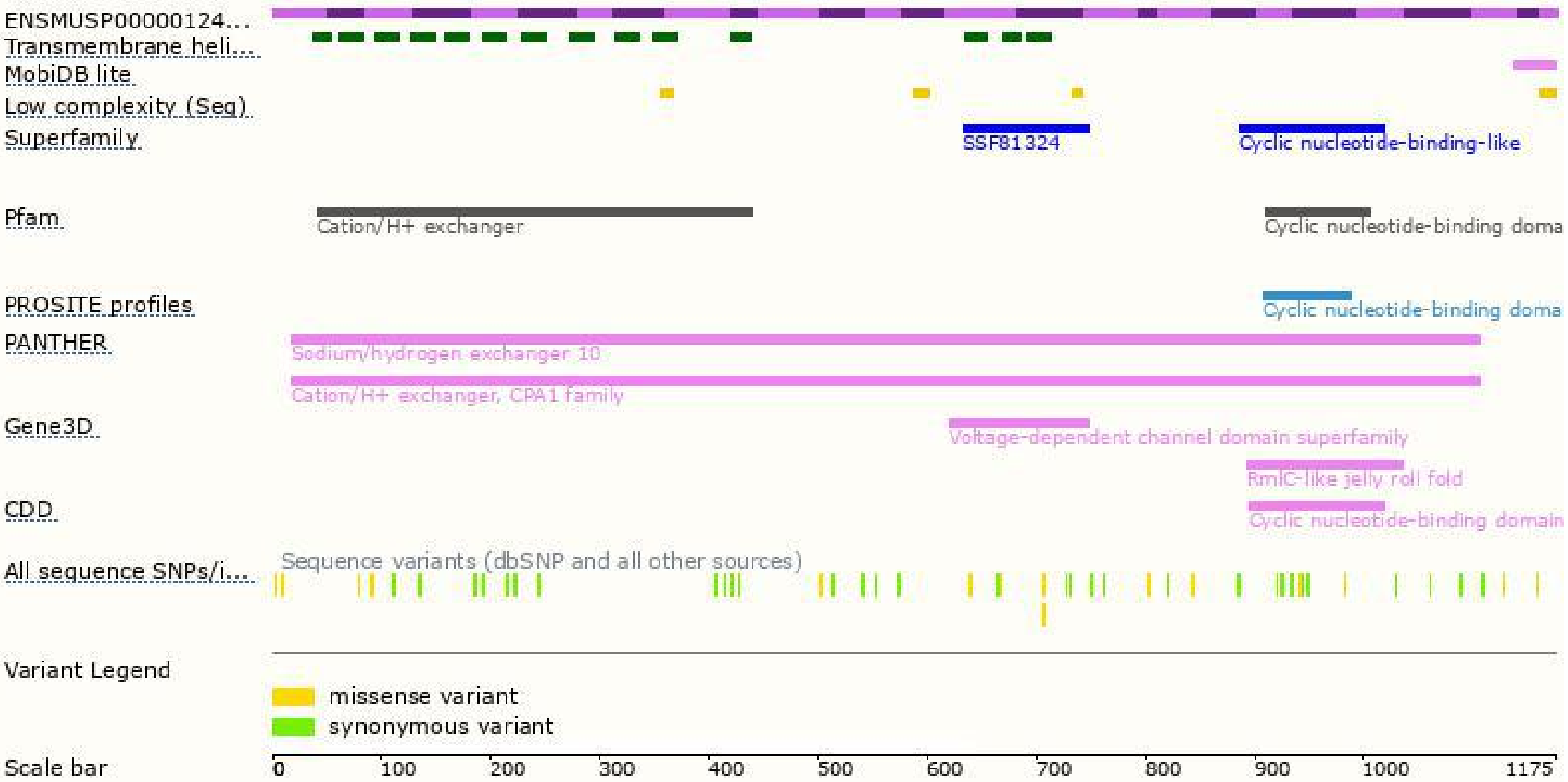
The strategy is based on the design of *Slc9c1-201* transcript,the transcription is shown below:



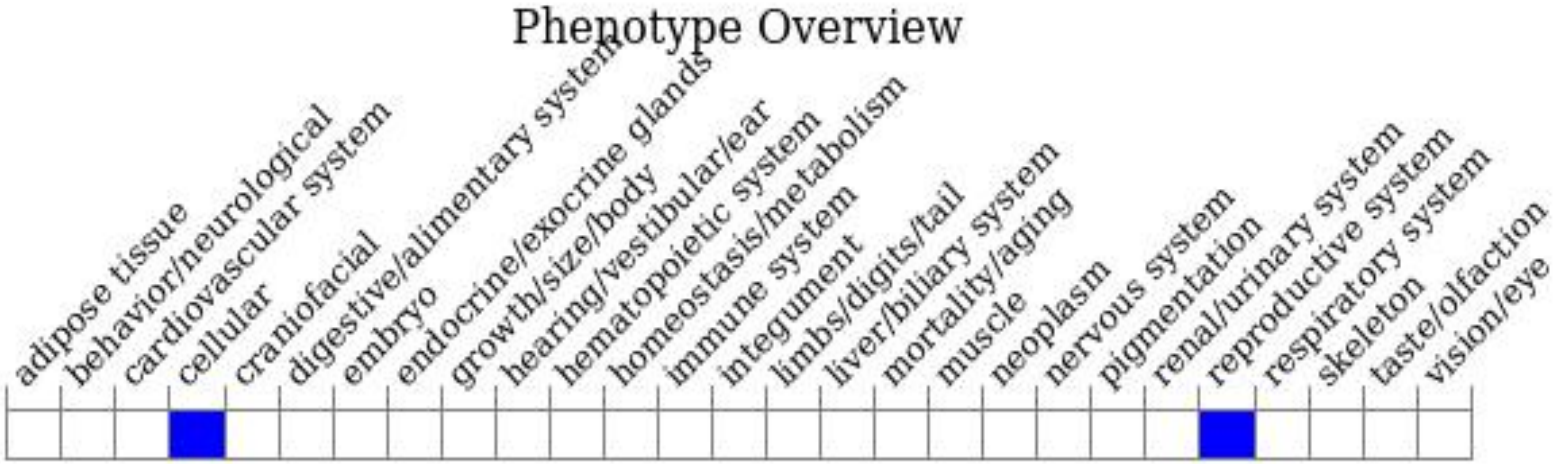
Genomic location distribution



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 display male infertility and asthenozoospermia.

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

Tel: 025-5864 1534

集萃药康生物科技
GemPharmatech Co.,Ltd