Slc9a4 Cas9-CKO Strategy

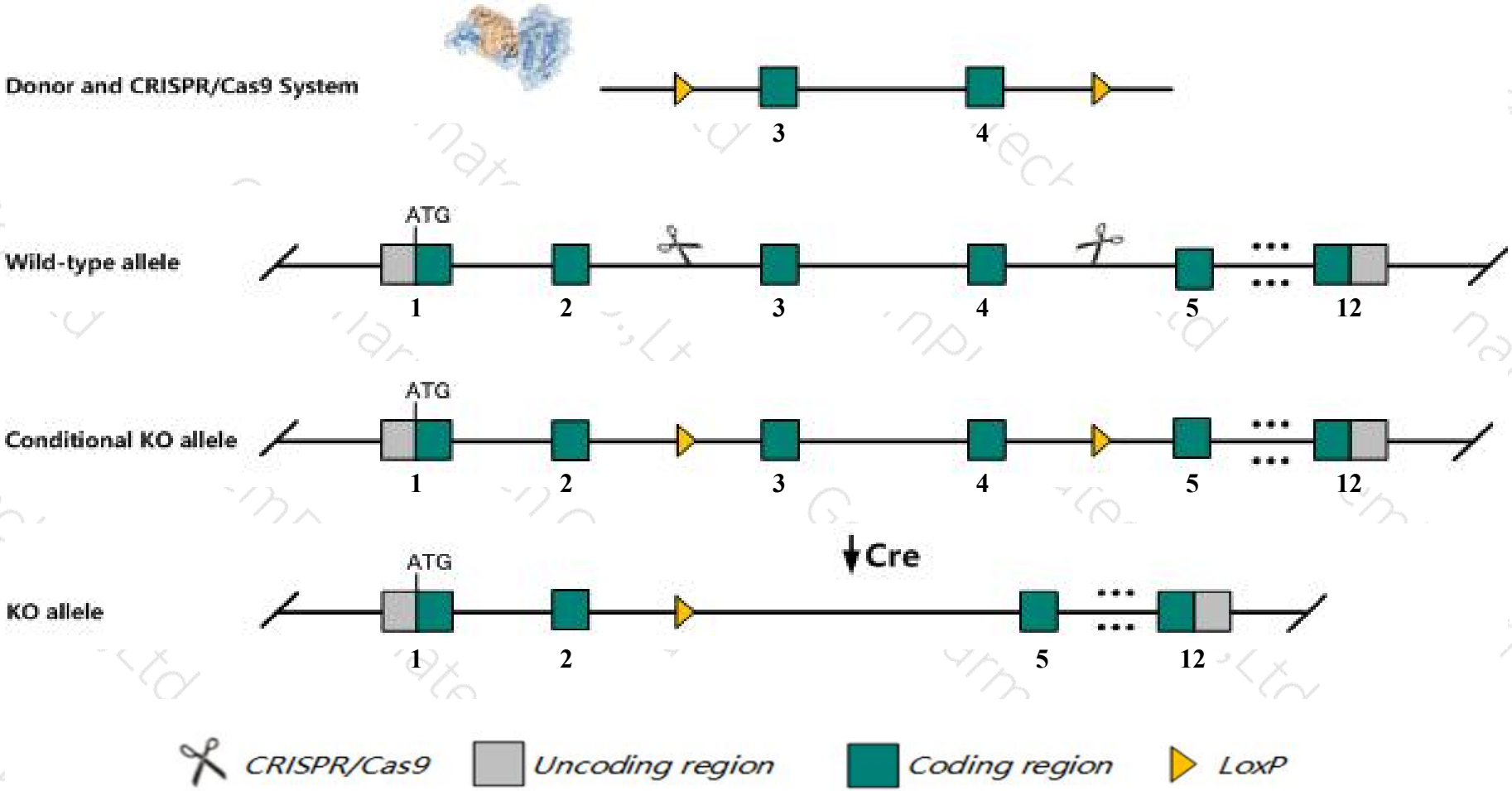
Designer: Daohua Xu
Reviewer: Huimin Su
Design Date: 2020-2-20

Project Overview

Project Name	***Slc9a4***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc9a4* gene. The schematic diagram is as follows:



Technical routes

- The *Slc9a4* gene has 4 transcripts. According to the structure of *Slc9a4* gene, exon3-exon4 of *Slc9a4-201* (ENSMUST00000027233.8) transcript is recommended as the knockout region.The region contains 478bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Slc9a4* 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 display normal growth and survival but have gastric secretions with reduced acidity, mild gastric necrosis and apoptosis, and abnormal gastric mucosa with reduced numbers of parietal and chief cells.

➢ The *Slc9a4* gene is located on the Chr1. 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

Slc9a4 solute carrier family 9 (sodium/hydrogen exchanger), member 4 [Mus musculus (house mouse)]

Gene ID: 110895, updated on 31-Jan-2019

Summary

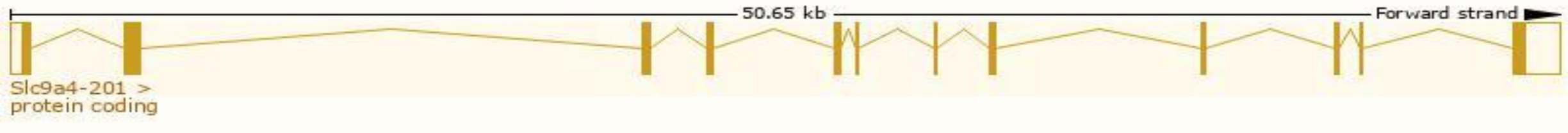
Official Symbol	Slc9a4 provided by MGI
Official Full Name	solute carrier family 9 (sodium/hydrogen exchanger), member 4 provided by MGI
Primary source	MGI:MGI:105074
See related	Ensembl:ENSMUSG00000026065
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW990558, D730009J23Rik, NHE4
Expression	Biased expression in stomach adult (RPKM 9.5), bladder adult (RPKM 2.3) and 5 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

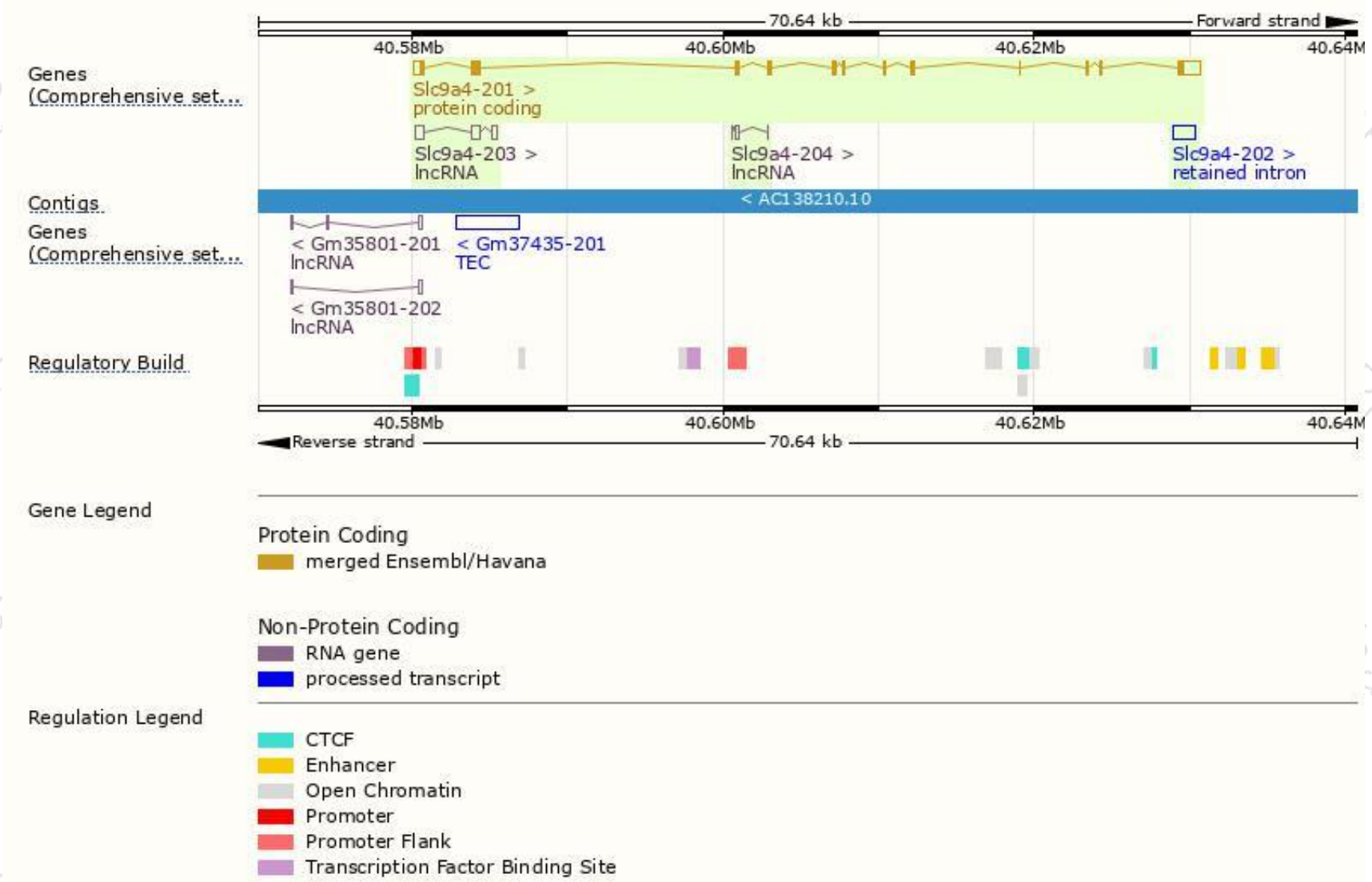
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc9a4-201	ENSMUST00000027233.8	3962	797aa	Protein coding	CCDS14913	Q8BUE1	TSL:1 GENCODE basic APPRIS P1
Slc9a4-202	ENSMUST00000192454.1	1449	No protein	Retained intron	-	-	TSL:NA
Slc9a4-203	ENSMUST00000192849.1	1332	No protein	lncRNA	-	-	TSL:1
Slc9a4-204	ENSMUST00000193371.1	342	No protein	lncRNA	-	-	TSL:2

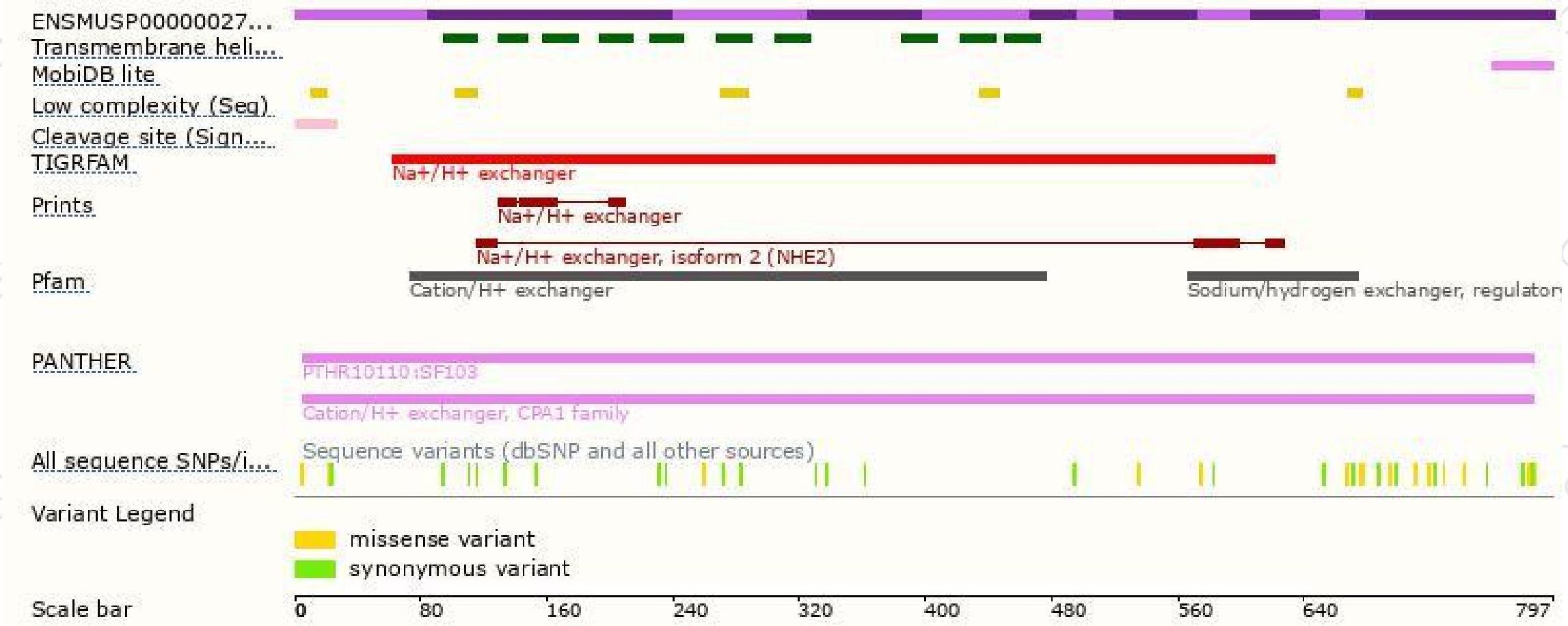
The strategy is based on the design of *Slc9a4-201* transcript,The transcription is shown below



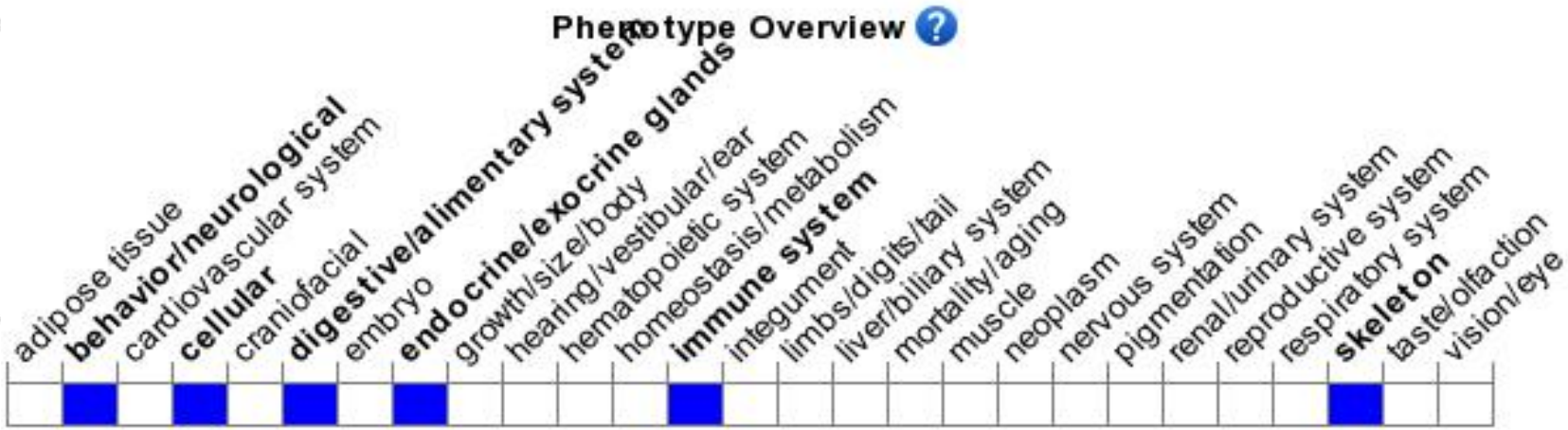
Genomic location distribution



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 normal growth and survival but have gastric secretions with reduced acidity, mild gastric necrosis and apoptosis, and abnormal gastric mucosa with reduced numbers of pa and chief cells.

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