Slc8a2 Cas9-CKO Strategy

Designer: Daohua Xu
Reviewer: Huimin Su

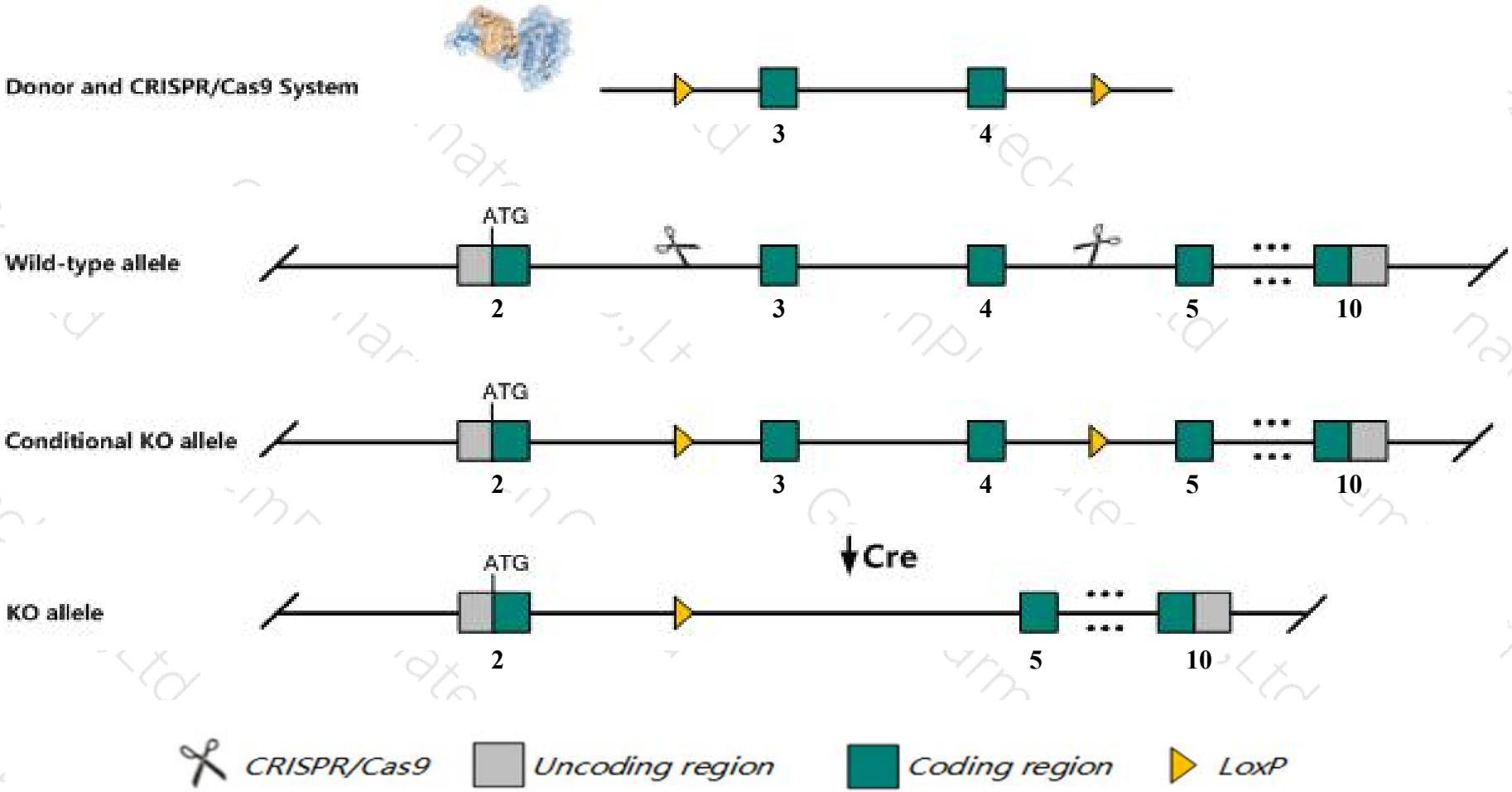
Design Date: 2020-2-14

Project Overview

Project Name	***Slc8a2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc8a2* gene. The schematic diagram is as follows:



Technical routes

集萃药康 GemPharmatech

- The *Slc8a2* gene has 2 transcripts. According to the structure of *Slc8a2* gene, exon3-exon4 of *Slc8a2-202* (ENSMUST00000211649.1) transcript is recommended as the knockout region.The region contains 1088bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Slc8a2* 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,The clearance of elevated calcium following depolarization is delayed in homozygous mutant mice, which exhibit enhanced learning and memory.

➢ The *Slc8a2* gene is located on the Chr7. 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

Slc8a2 solute carrier family 8 (sodium/calcium exchanger), member 2 [Mus musculus (house mouse)]

Gene ID: 110891, updated on 7-Apr-2019

Summary

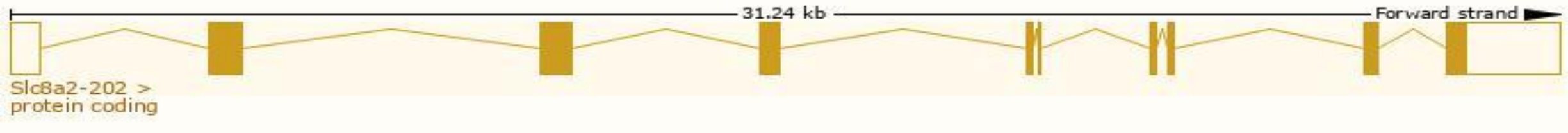
Official Symbol	Slc8a2 provided by MGI
Official Full Name	solute carrier family 8 (sodium/calcium exchanger), member 2 provided by MGI
Primary source	MGI:MGI:107996
See related	Ensembl:ENSMUSG00000030376
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ncx2
Expression	Biased expression in cortex adult (RPKM 30.5), frontal lobe adult (RPKM 22.5) and 8 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

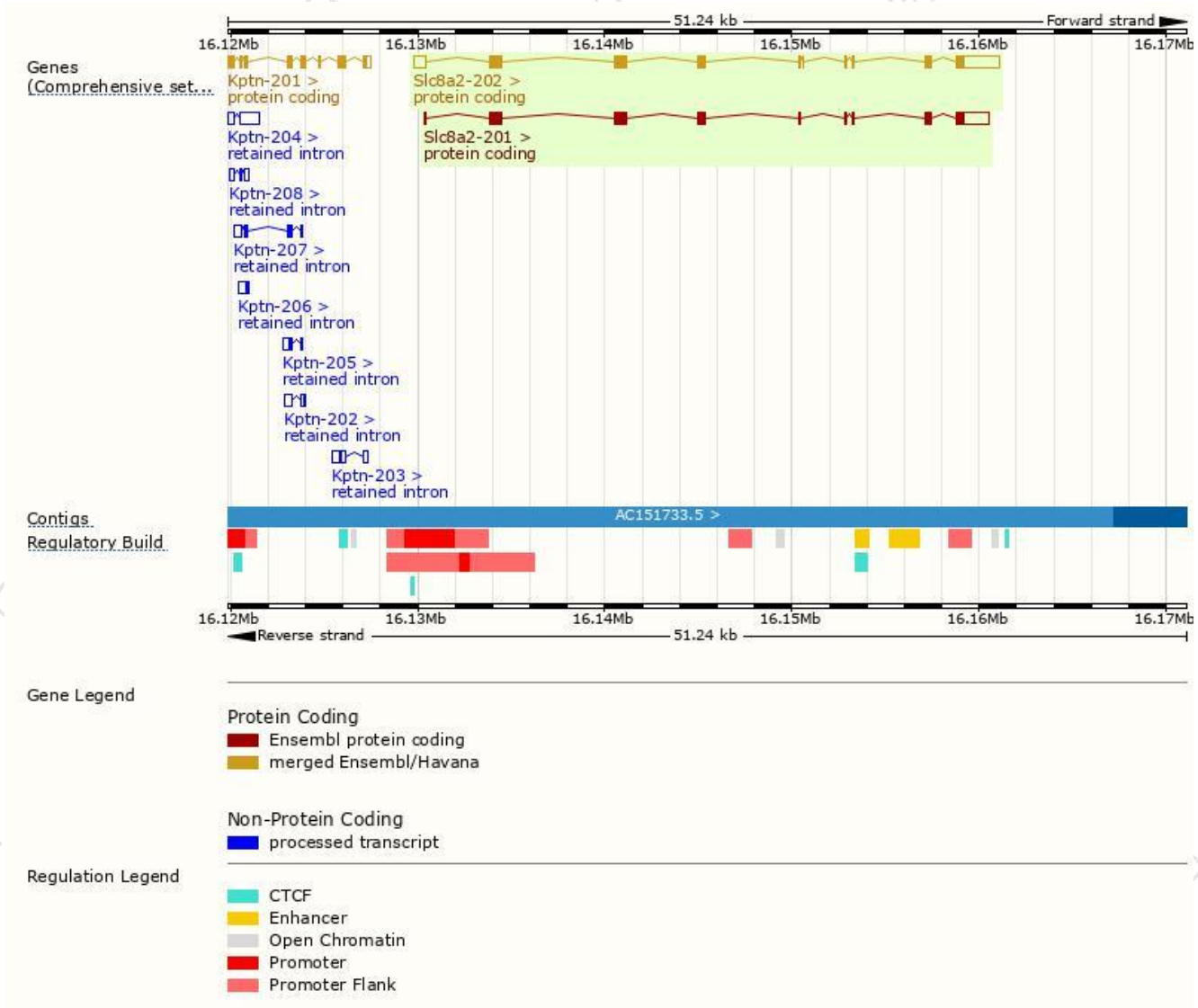
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc8a2-202	ENSMUST00000211649.1	5261	921aa	Protein coding	CCDS20845	Q8K596	TSL:1 GENCODE basic APPRIS P3
Slc8a2-201	ENSMUST00000168693.2	4171	915aa	Protein coding	CCDS85220	Q8K596	TSL:1 GENCODE basic APPRIS ALT2

The strategy is based on the design of *Slc8a2-202* transcript,The transcription is shown below

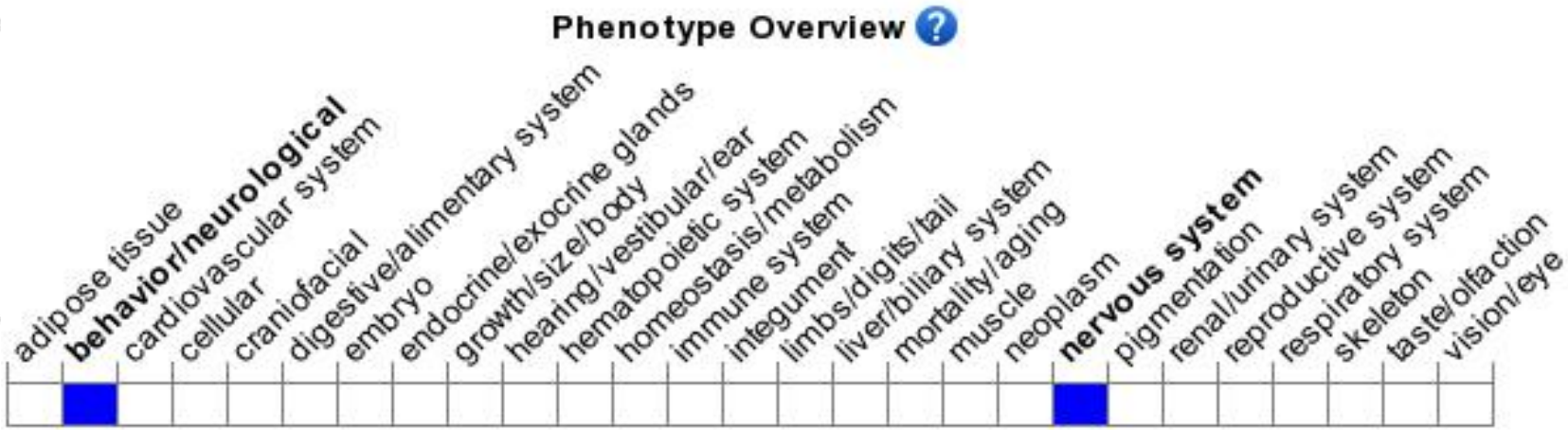


Genomic location distribution



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,The clearance of elevated calcium following depolarization is delayed in homozygous mutant mice, which exhibit enhanced learning and memory.

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