

***Kcnh8* Cas9-CKO Strategy**

Designer: Rui Xiong

Reviewer: Longyun Hu

Design Date: 2021-7-12

Project Overview

Project Name

Kcnh8

Project type

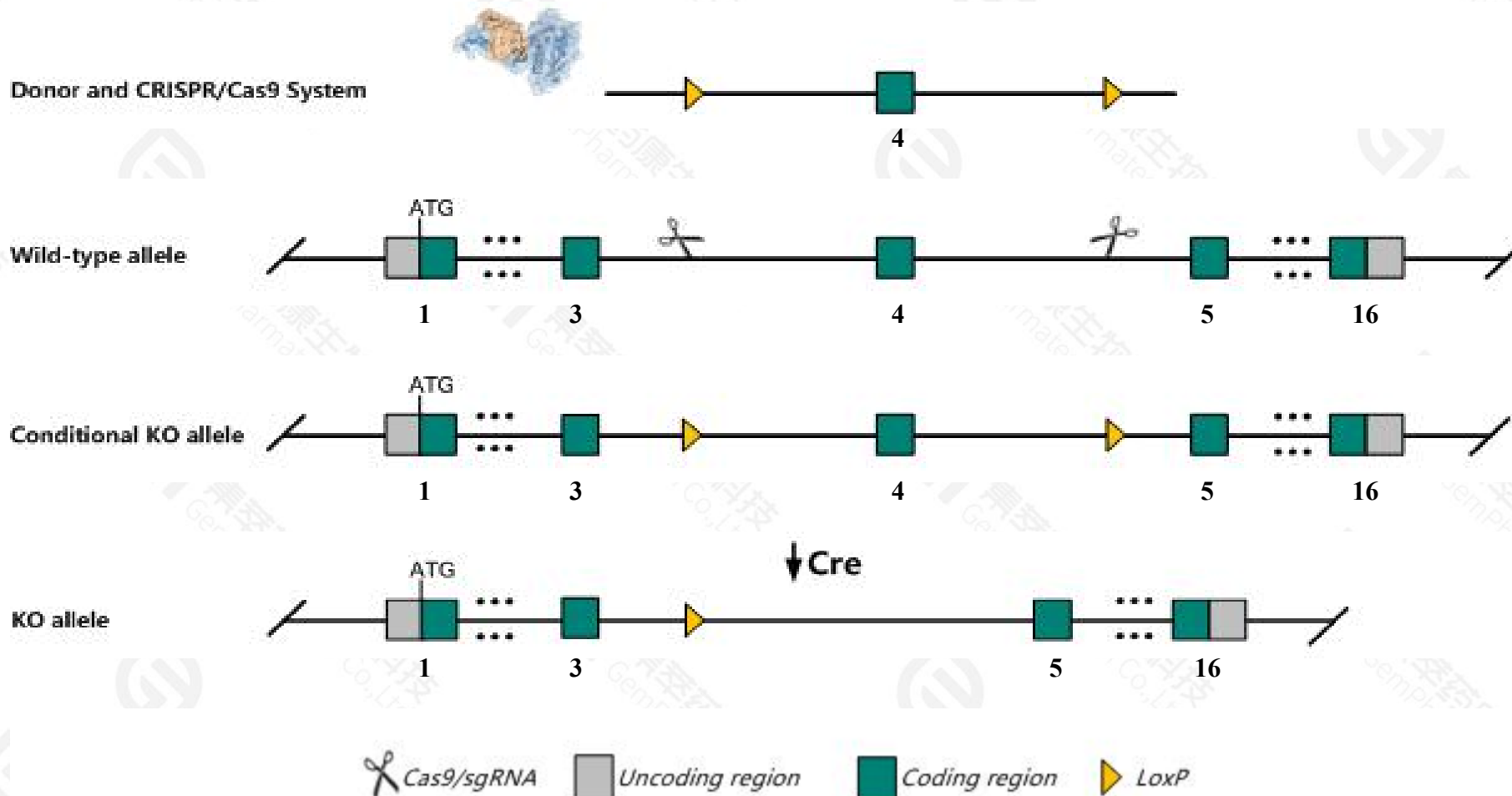
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcnh8* gene. The schematic diagram is as follows:



Technical routes

- The *Kcnh8* gene has 2 transcripts. According to the structure of *Kcnh8* gene, exon4 of *Kcnh8*-201(ENSMUST00000039366.11) transcript is recommended as the knockout region. The region contains 128bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kcnh8* 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.

- The *Kcnh8* gene is located on the Chr17. 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)

Kcnh8 potassium voltage-gated channel, subfamily H (eag-related), member 8 [Mus musculus (house mouse)]

Gene ID: 211468, updated on 17-Nov-2020

Summary



Official Symbol	Kcnh8 provided by MGI
Official Full Name	potassium voltage-gated channel, subfamily H (eag-related), member 8 provided by MGI
Primary source	MGI:MGI:2445160
See related	Ensembl:ENSMUSG00000035580
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	C130090D05Rik, ELK, ELK1, ELK3, Kv12., Kv12.1
Expression	Biased expression in whole brain E14.5 (RPKM 1.5), CNS E14 (RPKM 1.3) and 9 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

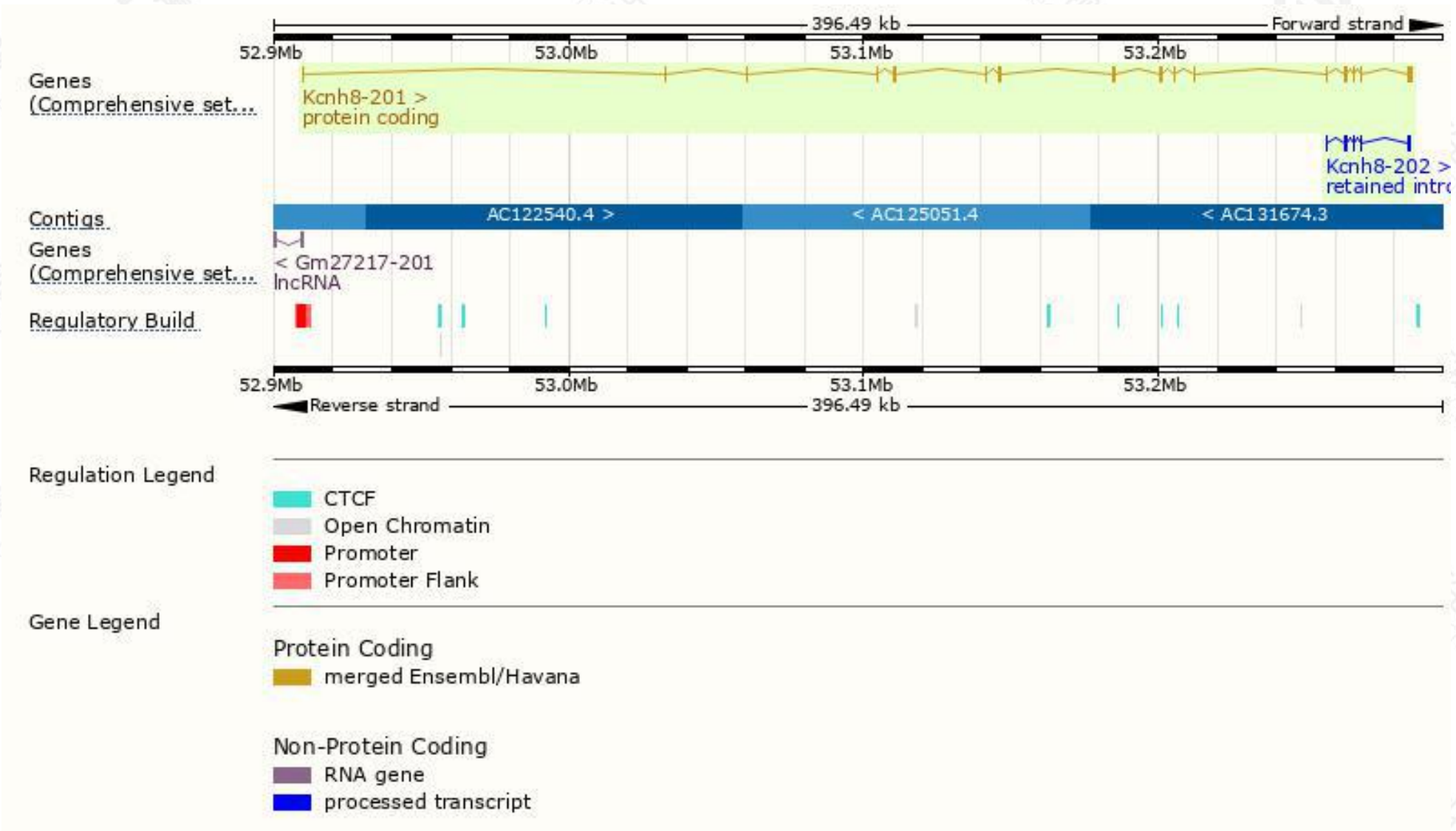
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcnh8-201	ENSMUST00000039366.11	4287	1102aa	Protein coding	CCDS57101		TSL:1 , GENCODE basic , APPRIS P1 ,
Kcnh8-202	ENSMUST00000184279.2	1606	No protein	Retained intron	-		TSL:1 ,

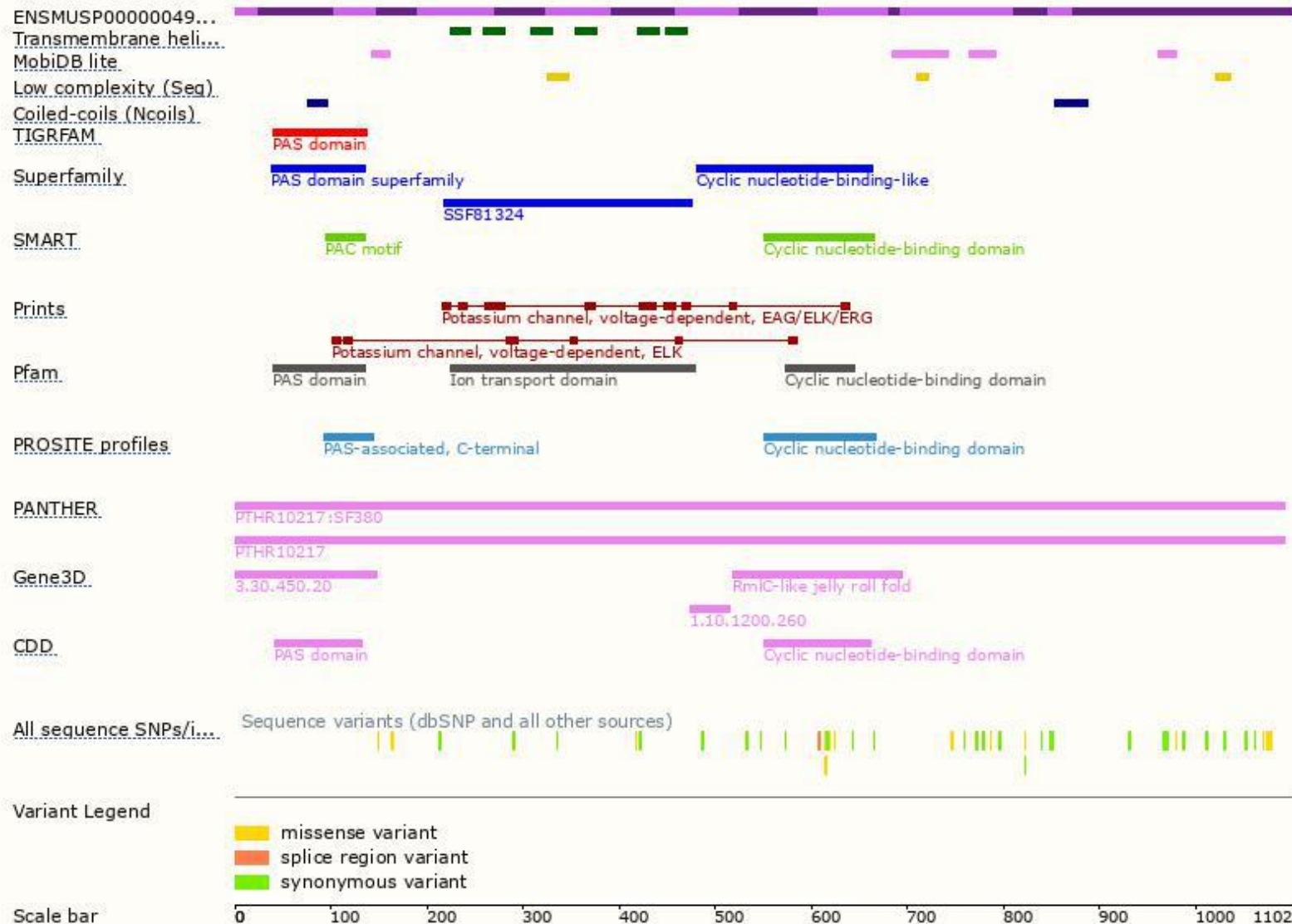
The strategy is based on the design of *Kcnh8-201* transcript,the transcription is shown below:



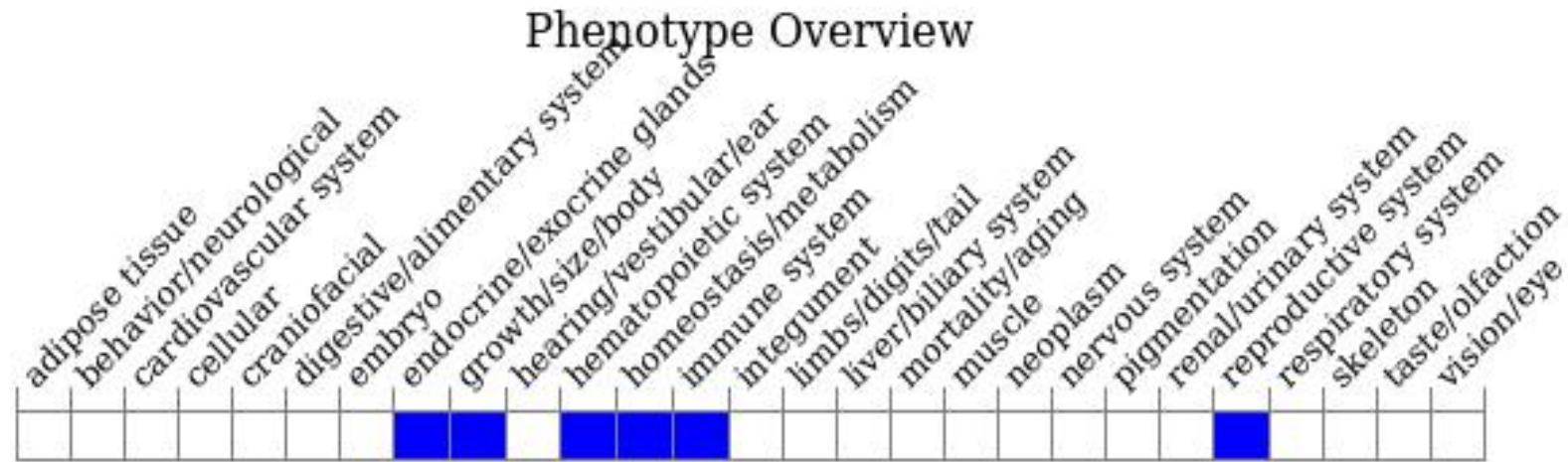
Genomic location distribution



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/>).

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

Tel: 025-5864 1534

