

Kcna5 Cas9-KO Strategy

Designer:

Yang Zeng

Reviewer:

Ruirui Zhang

Design Date:

2019-11-25

Project Overview

Project Name

Kcna5

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcna5* gene. The schematic diagram is as follows:



- The *Kcna5* gene has 1 transcript. According to the structure of *Kcna5* gene, exon1 of *Kcna5-201* (ENSMUST00000060972.4) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kcna5* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit abnormal microglial proliferation and nitric oxide release after LPS treatment or facial nerve lesion. Mice homozygous for a knock-in allele exhibit impaired hypoxic pulmonary vasoconstriction, and resistance to drug-induced cardiac QT prolongation.
- The *Kcna5* gene is located on the Chr6. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Kcna5 potassium voltage-gated channel, shaker-related subfamily, member 5 [*Mus musculus* (house mouse)]

Gene ID: 16493, updated on 10-Oct-2019

Summary

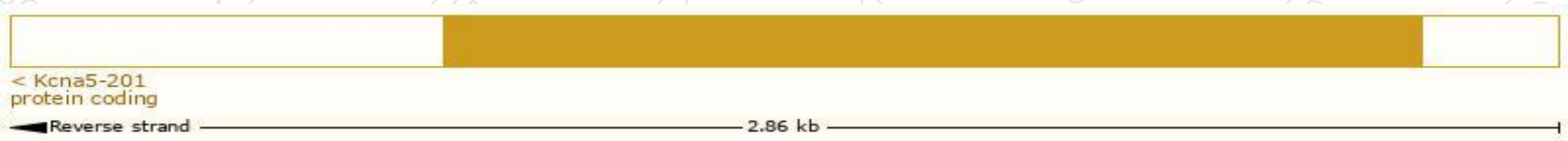
Official Symbol	Kcna5 provided by MGI
Official Full Name	potassium voltage-gated channel, shaker-related subfamily, member 5 provided by MGI
Primary source	MGI:MGI:96662
See related	Ensembl:ENSMUSG00000045534
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Kv1.5
Orthologs	human all

Transcript information (Ensembl)

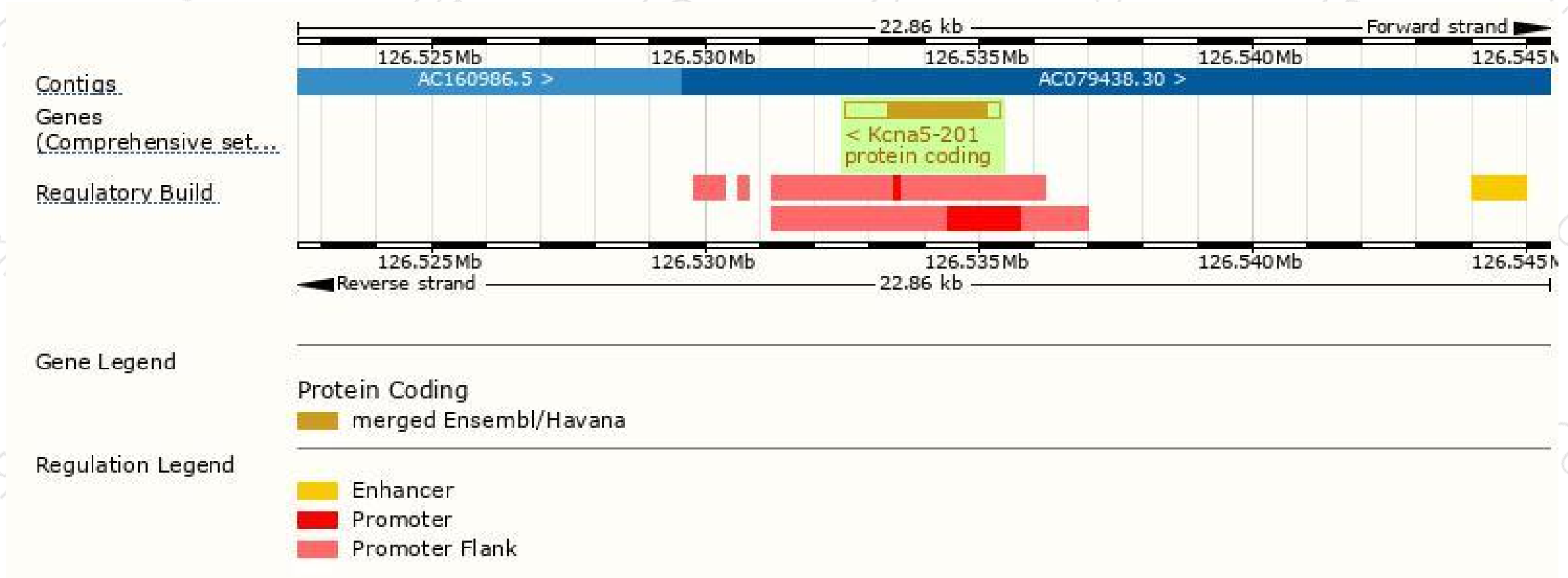
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcna5-201	ENSMUST00000060972.4	2862	602aa	Protein coding	CCDS20554	Q61762	TSL:NA GENCODE basic APPRIS P1

The strategy is based on the design of *Kcna5-201* transcript, The transcription is shown below



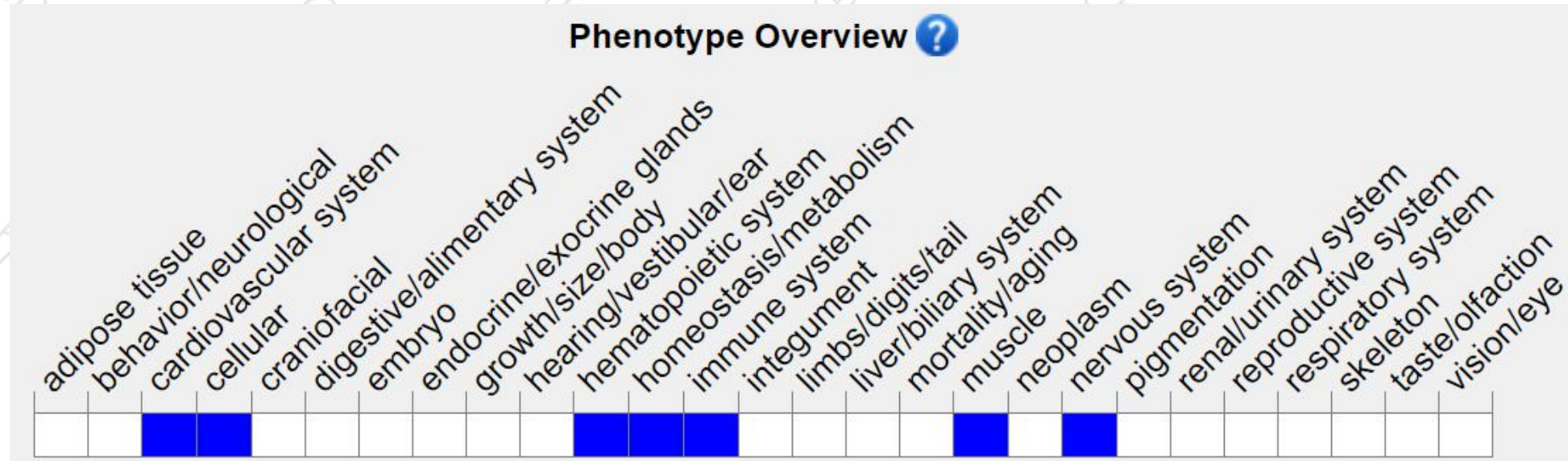
Genomic location distribution



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 abnormal microglial proliferation and nitric oxide release after LPS treatment or facial nerve lesion. Mice homozygous for a knock-in allele exhibit impaired hypoxic pulmonary vasoconstriction, and resistance to drug-induced cardiac QT prolongation.

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

Tel: 400-9660890

