

***Kcnd2* Cas9-KO Strategy**

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Project Overview

Project Name

Kcnd2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcnd2* gene. The schematic diagram is as follows:



- The *Kcnd2* gene has 1 transcript. According to the structure of *Kcnd2* gene, exon1 of *Kcnd2-201* (ENSMUST00000081542.5) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kcnd2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutation of this gene reduces A-type currents in spinal cord dorsal horn neurons and increases their excitability, resulting in enhanced sensitivity to tactile and thermal stimuli.
- The *Kcnd2* 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)

Kcnd2 potassium voltage-gated channel, Shal-related family, member 2 [*Mus musculus* (house mouse)]

Gene ID: 16508, updated on 27-Aug-2019

Summary

- Official Symbol** Kcnd2 provided by [MGI](#)
- Official Full Name** potassium voltage-gated channel, Shal-related family, member 2 provided by [MGI](#)
- Primary source** [MGI:MGI:102663](#)
- See related** [Ensembl:ENSMUSG00000060882](#)
- 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** Kv4.2; R75121; AI839615; AW555701
- Expression** Biased expression in cerebellum adult (RPKM 27.7), frontal lobe adult (RPKM 12.3) and 5 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 6 A2-A3.1; 6 8.49 cM [See Kcnd2 in Genome Data Viewer](#)

Exon count: 6

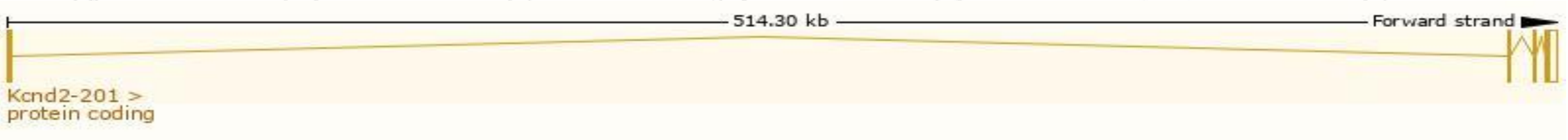
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	6	NC_000072.6 (21215346..21729805)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	6	NC_000072.5 (21166109..21679805)

Transcript information (Ensembl)

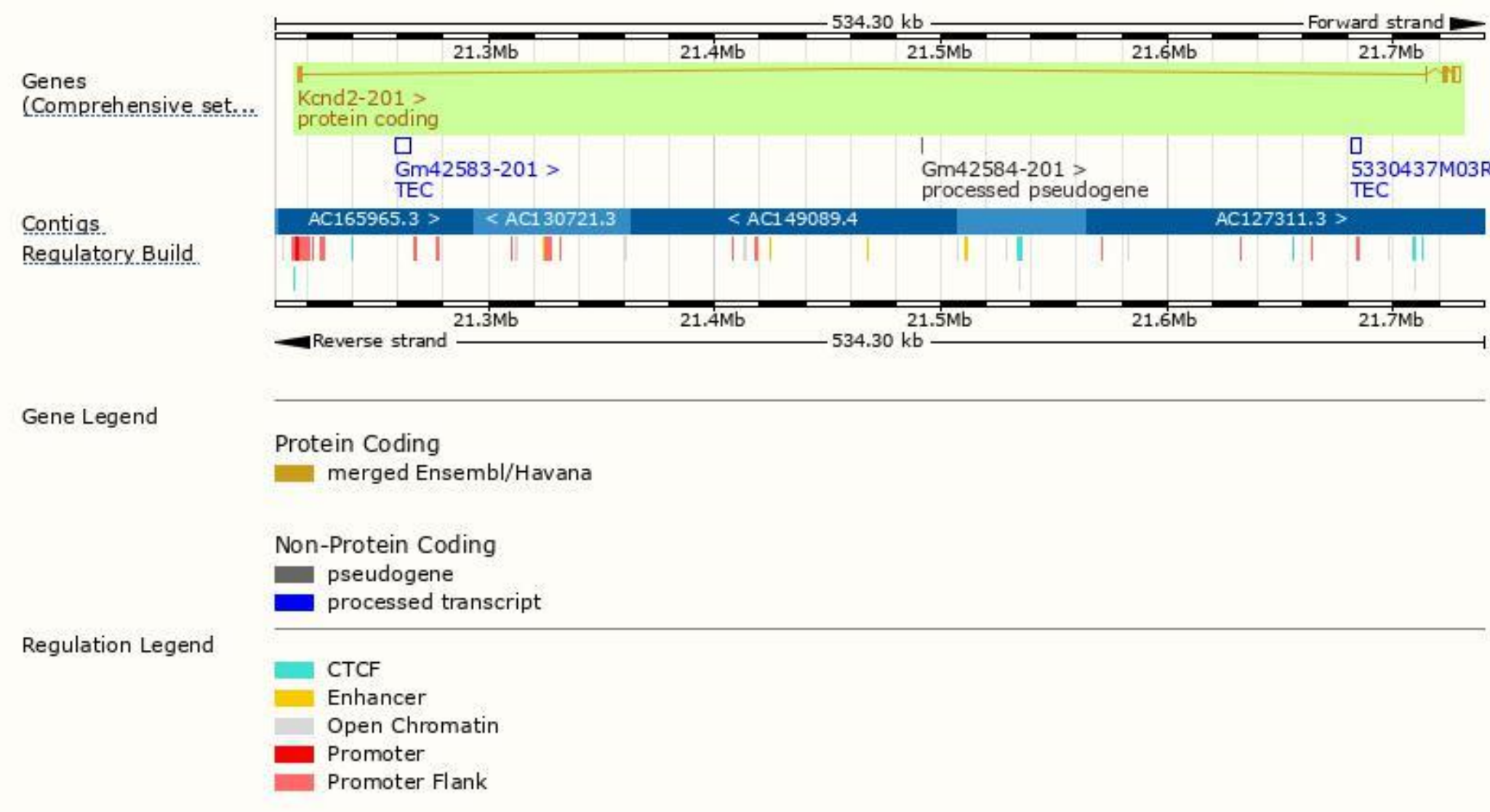
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcnd2-201	ENSMUST00000081542.5	5152	630aa	Protein coding	CCDS19934	Q9Z0V2	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Kcnd2-201* transcript,The transcription is shown below



Genomic location distribution



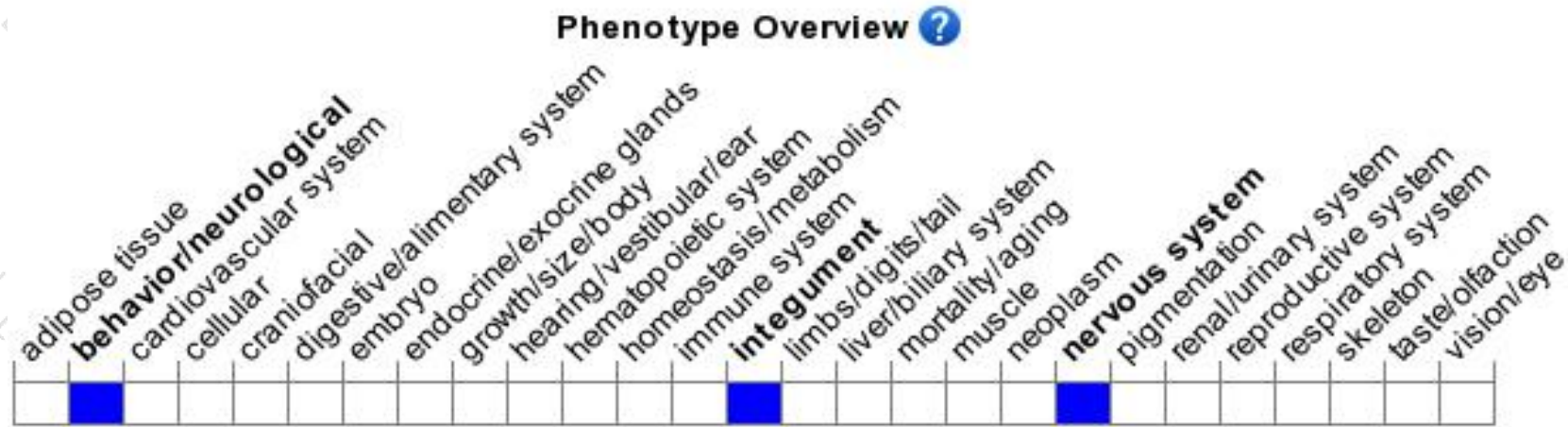
Protein domain



集萃药康
GemPharmatech



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 mutation of this gene reduces A-type currents in spinal cord dorsal horn neurons and increases their excitability, resulting in enhanced sensitivity to tactile and thermal stimuli.

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

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