

***Kcnk4* Cas9-KO Strategy**

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Reviewer:

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Project Overview

Project Name

Kcnk4

Project type

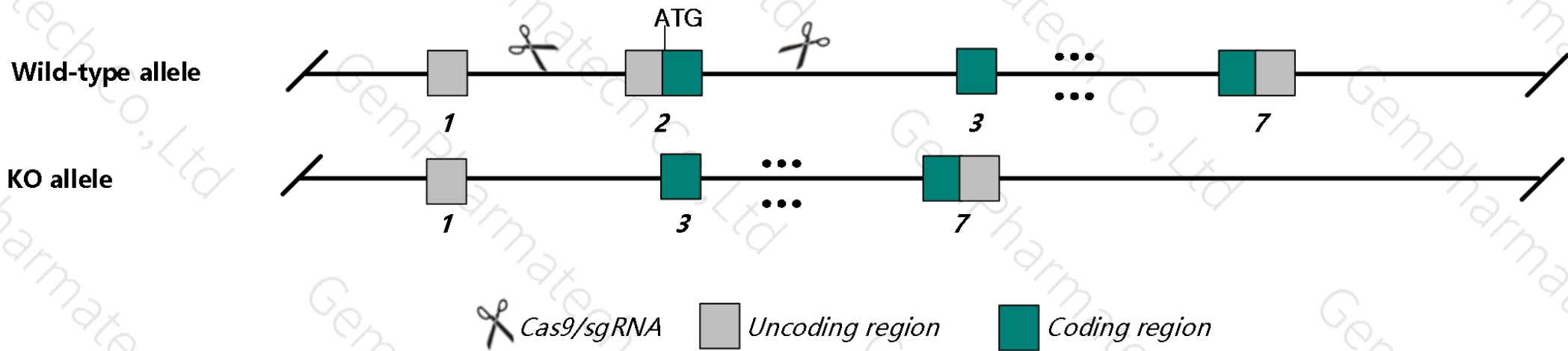
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcnk4* gene. The schematic diagram is as follows:



- The *Kcnk4* gene has 7 transcripts. According to the structure of *Kcnk4* gene, exon2 of *Kcnk4-201* (ENSMUST00000025908.7) 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 *Kcnk4* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a null allele exhibit normal sensitivity to pharmacologically induced seizures.
- The Kcnk4 gene is located on the Chr19. 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)

Kcnk4 potassium channel, subfamily K, member 4 [*Mus musculus* (house mouse)]

Gene ID: 16528, updated on 13-Mar-2020

Summary

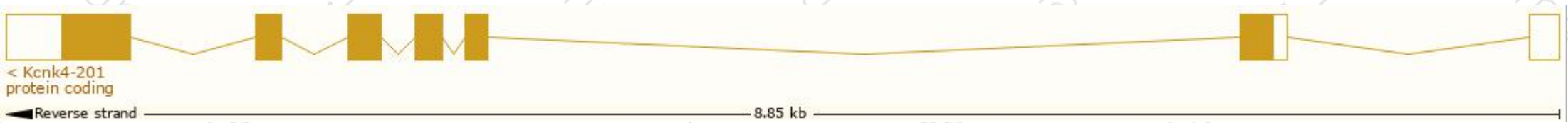
Official Symbol	Kcnk4 provided by MGI
Official Full Name	potassium channel, subfamily K, member 4 provided by MGI
Primary source	MGI:MGI:1298234
See related	Ensembl:ENSMUSG00000024957
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	TRAAK; Tex40; TRAAKt; MLZ-622; Catsperz
Expression	Biased expression in testis adult (RPKM 71.0) and cortex adult (RPKM 5.7) See more
Orthologs	human all

Transcript information (Ensembl)

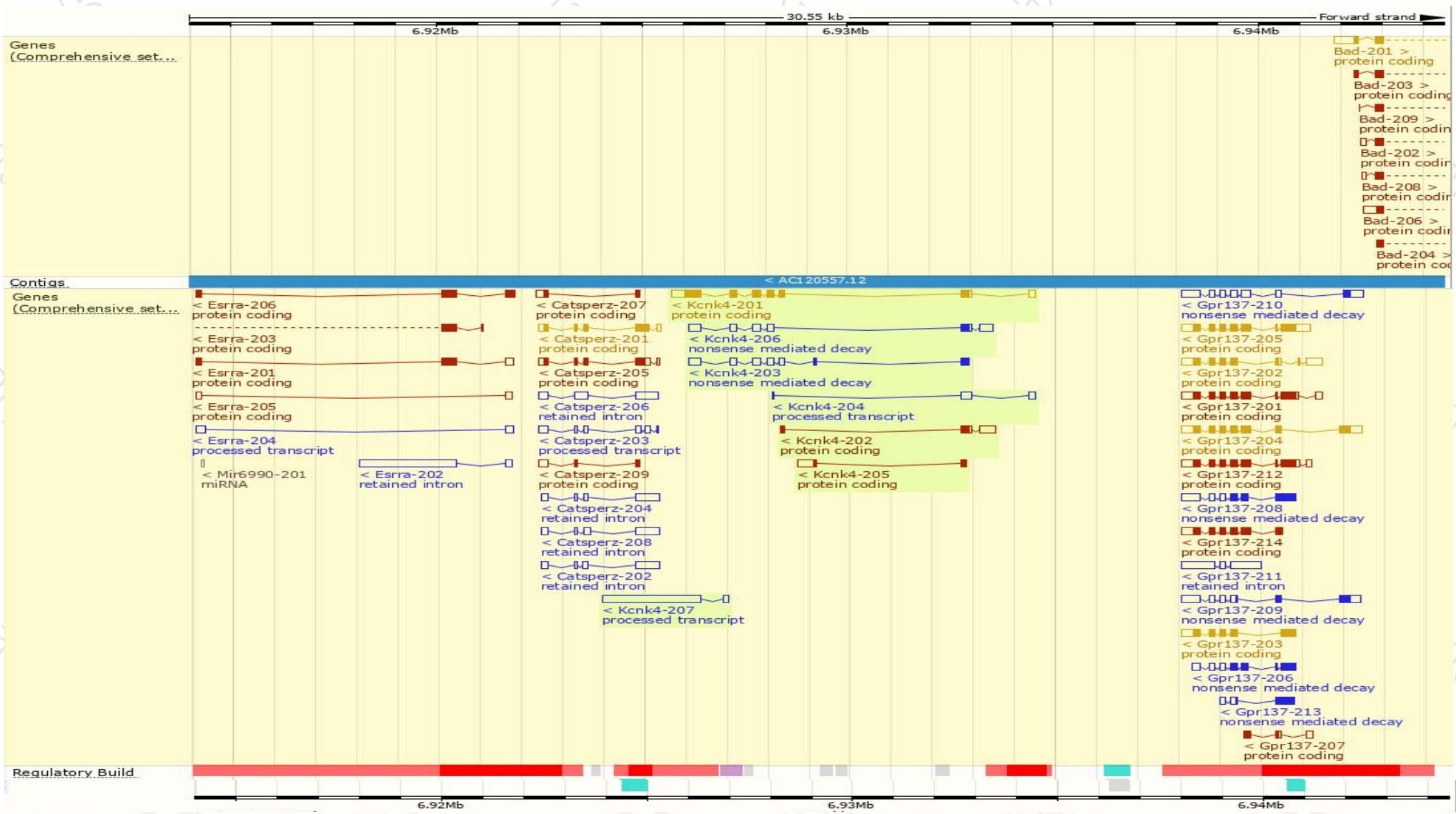
The gene has 7 transcripts, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcnk4-201	ENSMUST00000025908.7	1763	398aa	Protein coding	CCDS29511	O88454 Q0VD85	TSL:1 Gencode basic APPRIS P1
Kcnk4-202	ENSMUST00000235248.1	780	99aa	Protein coding	-	A0A494BA57	CDS 3' incomplete
Kcnk4-205	ENSMUST00000236443.1	600	64aa	Protein coding	-	A0A494B9F1	CDS 5' incomplete
Kcnk4-206	ENSMUST00000237484.1	1387	67aa	Nonsense mediated decay	-	O88454	-
Kcnk4-203	ENSMUST00000235279.1	1175	81aa	Nonsense mediated decay	-	A0A494B9Y6	CDS 5' incomplete
Kcnk4-207	ENSMUST00000237766.1	2537	No protein	Processed transcript	-	-	-
Kcnk4-204	ENSMUST00000235836.1	493	No protein	Processed transcript	-	-	-

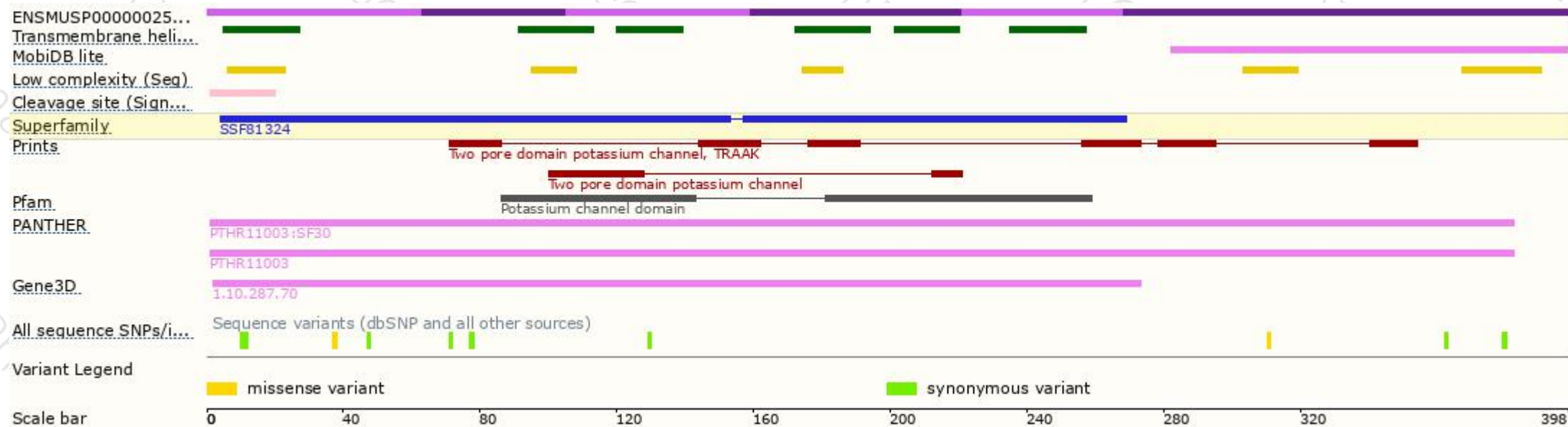
The strategy is based on the design of *Kcnk4-201* transcript, The transcription is shown below



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 null allele exhibit normal sensitivity to pharmacologically induced seizures.

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

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