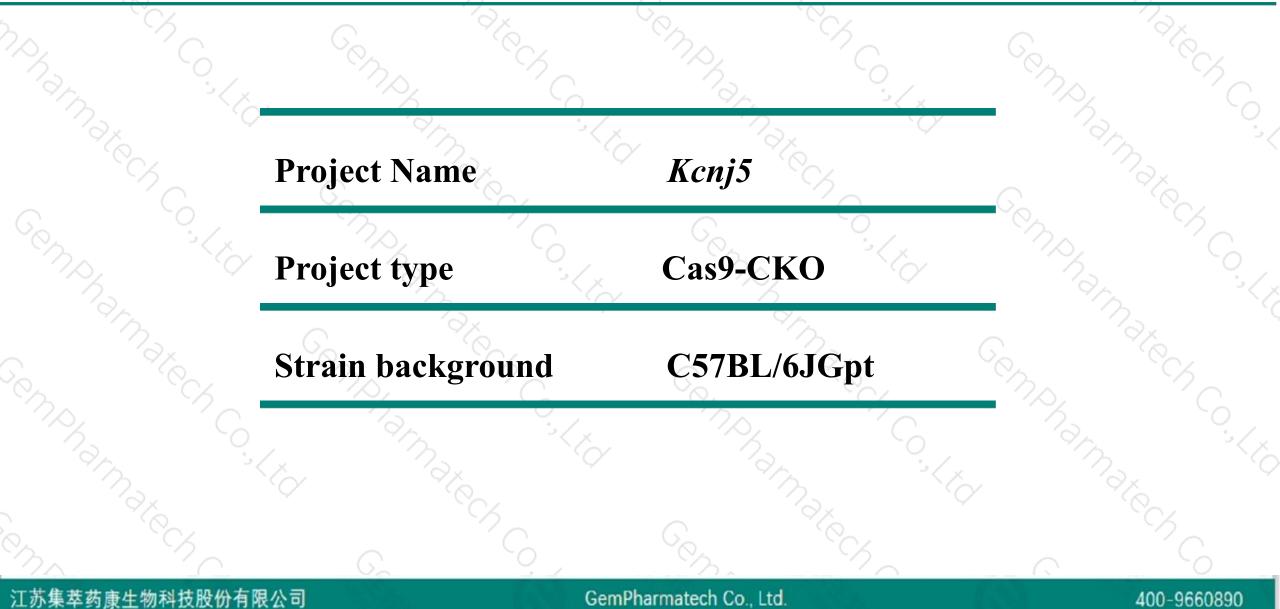


Kcnj5 Cas9-CKO Strategy

Designer: Reviewer: Design Date: Yang Zeng Ruirui Zhang 2019-12-23

Project Overview

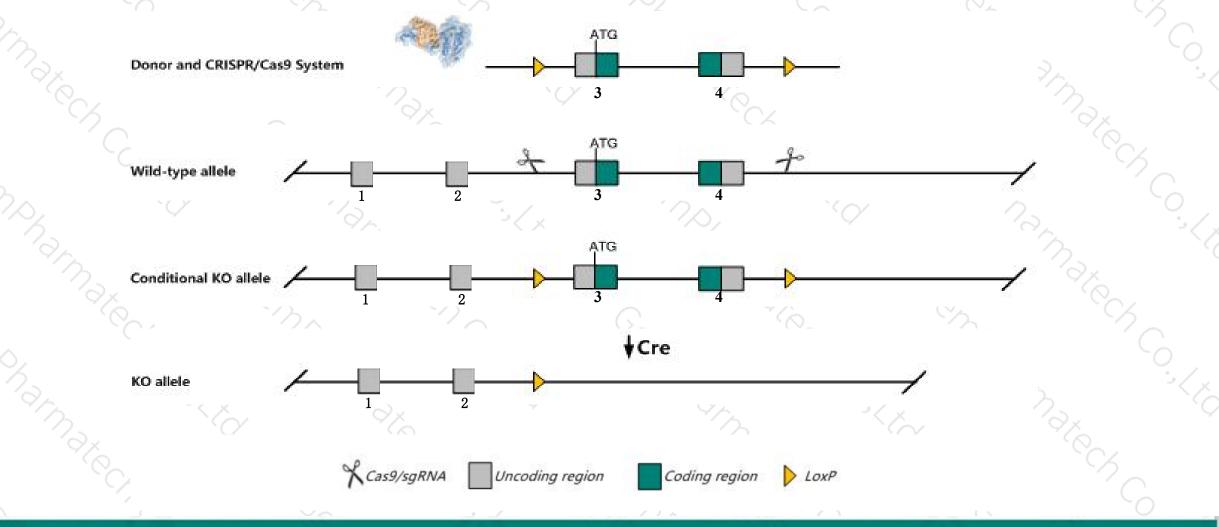




Conditional Knockout strategy



This model will use CRISPR/Cas9 technology to edit the Kcnj5 gene. The schematic diagram is as follows:



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400-9660890



The Kcnj5 gene has 3 transcripts. According to the structure of Kcnj5 gene, exon3-exon4 of Kcnj5-201 (ENSMUST00000034533.6) 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 *Kcnj5* 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.



- According to the existing MGI data, Homozygotes for a targeted null mutation exhibit mild resting tachycardias and reduced muscarinic-gated atrial potassium channel responses to pharmacological stimulation.
- The Kcnj5 gene is located on the Chr9. 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)



☆ ?

Kcnj5 potassium inwardly-rectifying channel, subfamily J, member 5 [Mus musculus (house mouse)]

| Gene ID: 16521 | , updated on | 12-Aug-2019 |
|----------------|--------------|-------------|
|----------------|--------------|-------------|

Summary

Official Symbol Kcnj5 provided by MGI **Official Full Name** potassium inwardly-rectifying channel, subfamily J, member 5 provided by MGI **Primary source** MGI:MGI:104755 See related Ensembl:ENSMUSG0000032034 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 CIR; GIRK4; KATP-1; Kir3.4 Biased expression in heart adult (RPKM 14.0), liver E14 (RPKM 0.9) and 1 other tissue See more Expression Orthologs human all

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Transcript information (Ensembl)



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The gene has 3 transcripts, all transcripts are shown below:

| Name 🖕 | Transcript ID 🖕 | bp 🍦 | Protein 🖕 | Translation ID 🖕 | Biotype 🍦 | CCDS | UniProt 🖕 | Flags | | |
|-----------|----------------------|------|--------------|----------------------|----------------|--------------------|-------------|-------------------------------|--|--|
| Kcnj5-201 | ENSMUST0000034533.6 | 4685 | <u>419aa</u> | ENSMUSP0000034533.5 | Protein coding | <u>CCDS22952</u> ₽ | P48545 | TSL:1 GENCODE basic APPRIS P1 | | |
| Kcnj5-202 | ENSMUST00000214223.1 | 3101 | <u>419aa</u> | ENSMUSP00000149000.1 | Protein coding | <u>CCDS22952</u> & | P48545 | TSL:5 GENCODE basic APPRIS P1 | | |
| Kcnj5-203 | ENSMUST00000216033.1 | 2440 | <u>106aa</u> | ENSMUSP00000149461.1 | Protein coding | | A0A1L1SRH1团 | TSL:1 GENCODE basic | | |

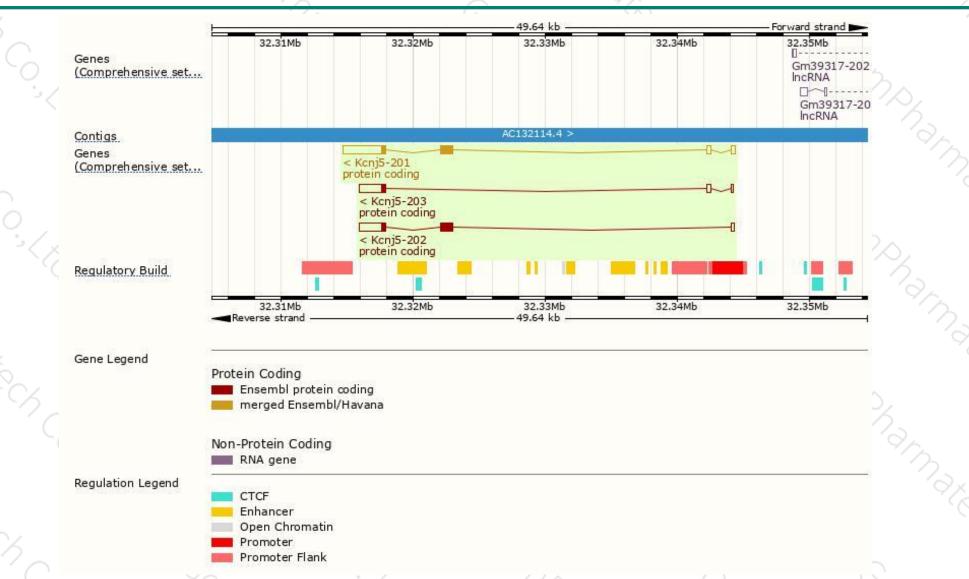
The strategy is based on the design of Kcnj5-201 transcript, The transcription is shown below

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Genomic location distribution





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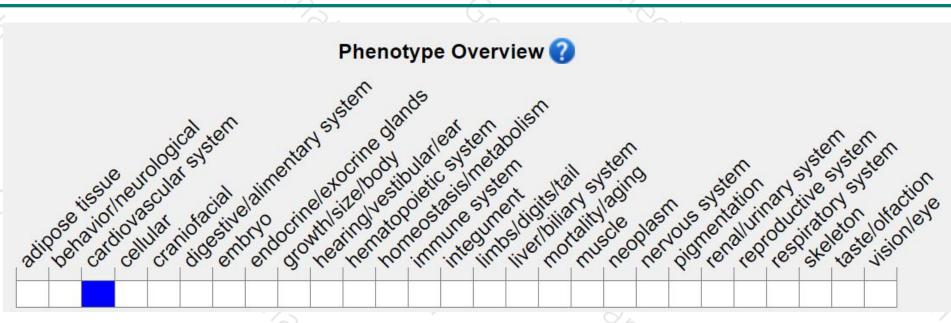
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Protein domain



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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, Homozygotes for a targeted null mutation exhibit mild resting tachycardias and reduced muscarinic-gated atrial potassium channel responses to pharmacological stimulation.



If you have any questions, you are welcome to inquire. Tel: 400-9660890



