Kcnj2 Cas9-CKO Strategy

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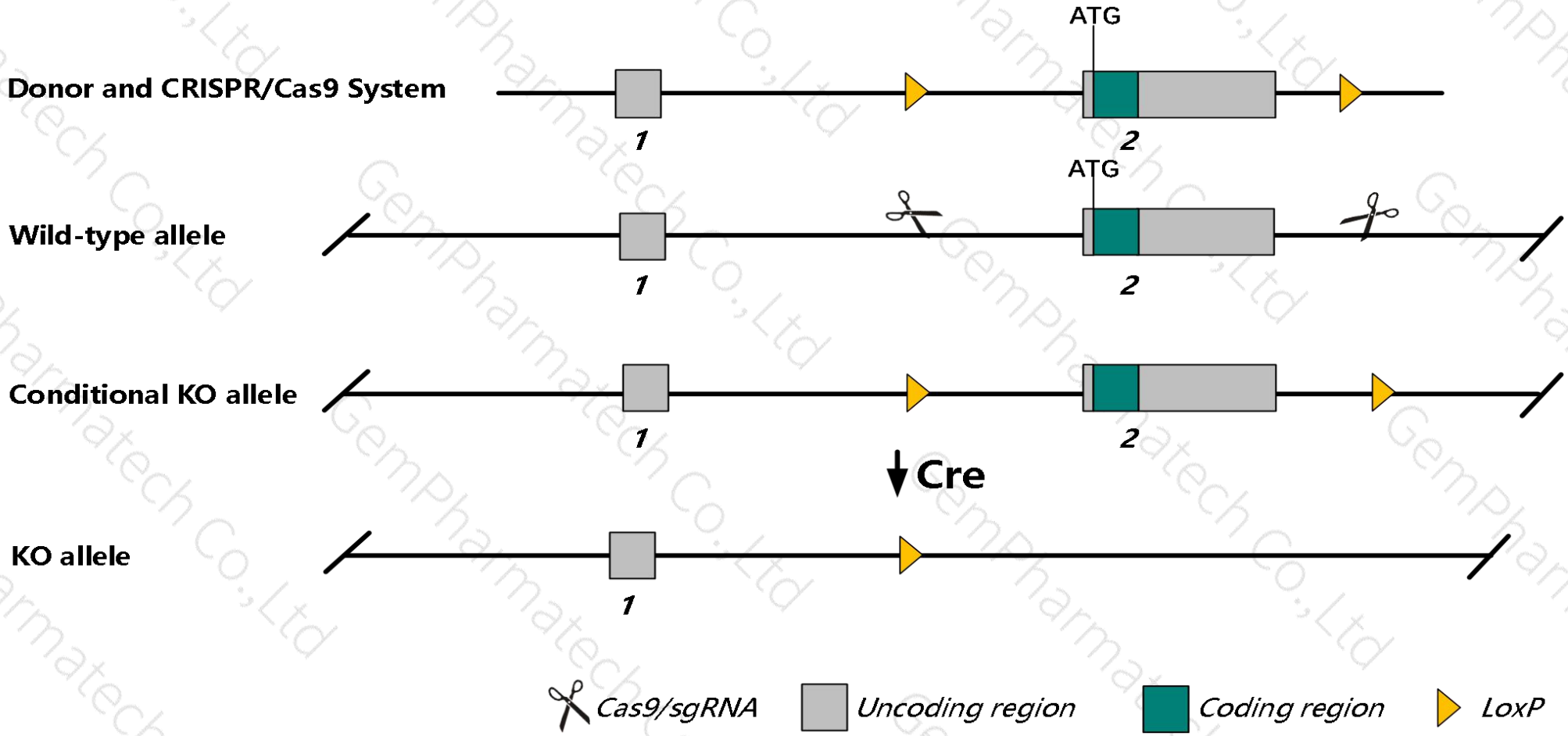
Project Overview

Project Name	***Kcnj2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcnj2* gene. The schematic diagram is as follows:



Technical routes

- The *Kcnj2* gene has 1 transcript. According to the structure of *Kcnj2* gene, exon2 of *Kcnj2-201* (ENSMUST00000042970.2) 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 *Kcnj2* 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.

Notice

➢ According to the existing MGI data,Mice homozygous for a targeted null mutation die within 8-12 hours after birth, displaying cyanosis and respiratory distress, as well as complete cleft of the secondary palate, and loss of K+-mediated vasodilatation in cerebral arteries.

➢ The *Kcnj2* gene is located on the Chr11. 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）

集萃药康 GemPharmatech

Kcnj2 potassium inwardly-rectifying channel, subfamily J, member 2 [Mus musculus (house mouse)]

Gene ID: 16518, updated on 9-Apr-2019

Summary

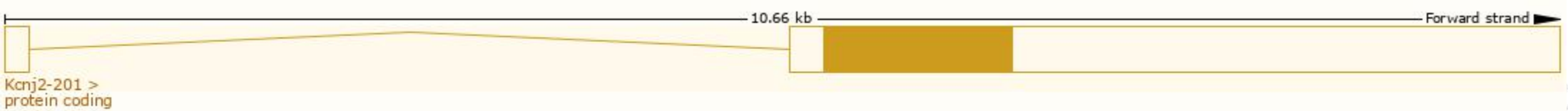
Official Symbol	Kcnj2 provided by MGI
Official Full Name	potassium inwardly-rectifying channel, subfamily J, member 2 provided by MGI
Primary source	MGI:MGI:104744
See related	Ensembl:ENSMUSG00000041695
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	IRK1, Kcnf1, Kir2.1
Expression	Broad expression in heart adult (RPKM 5.9), cortex adult (RPKM 2.9) and 18 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

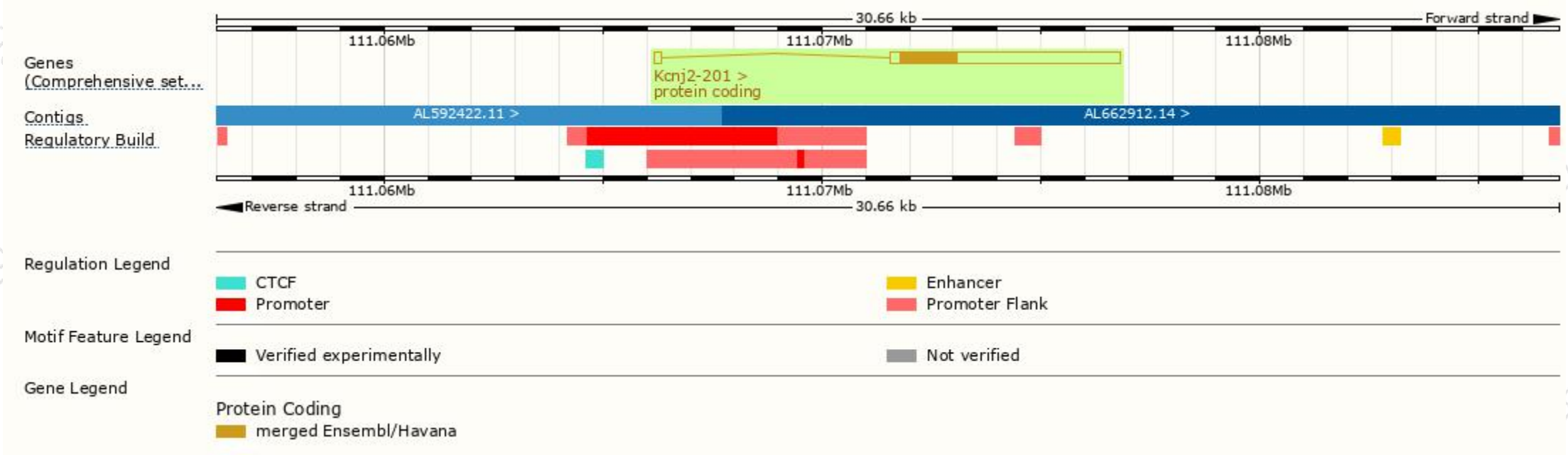
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Kcnj2-201	ENSMUST00000042970.2	5444	428aa	Protein coding	CCDS25594	P35561 Q543W5	NM_008425 NP_032451	TSL:1 GENCODE basic APPRIS P1

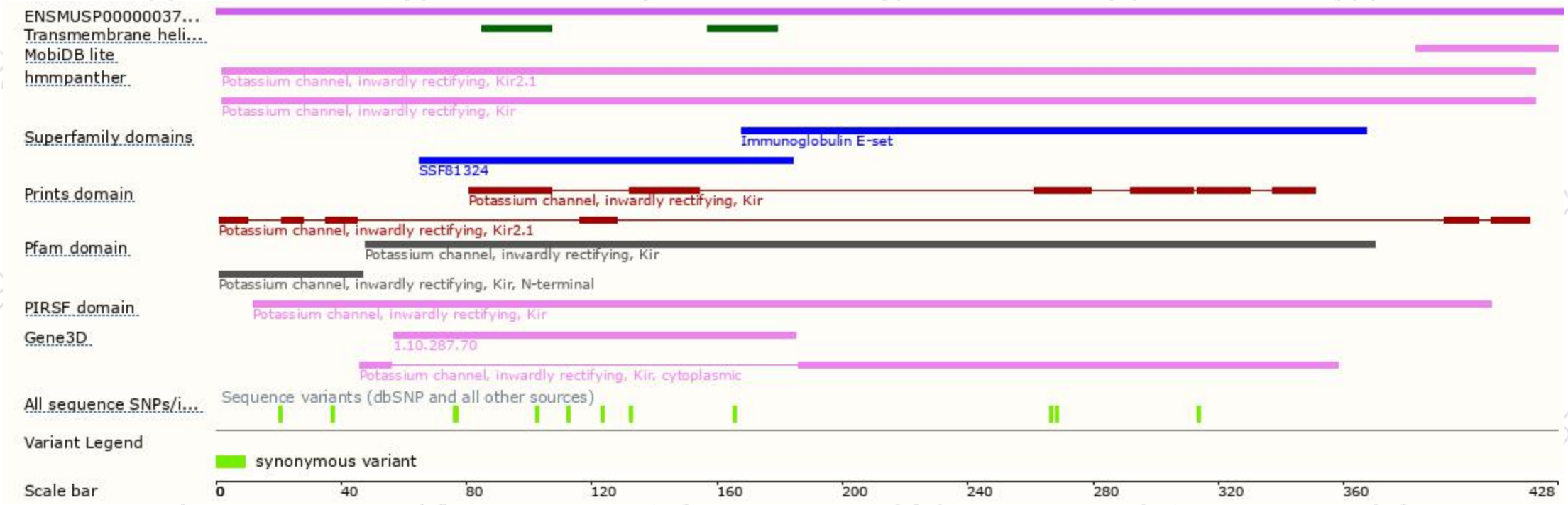
The strategy is based on the design of *Kcnj2-201* transcript,The transcription is shown below



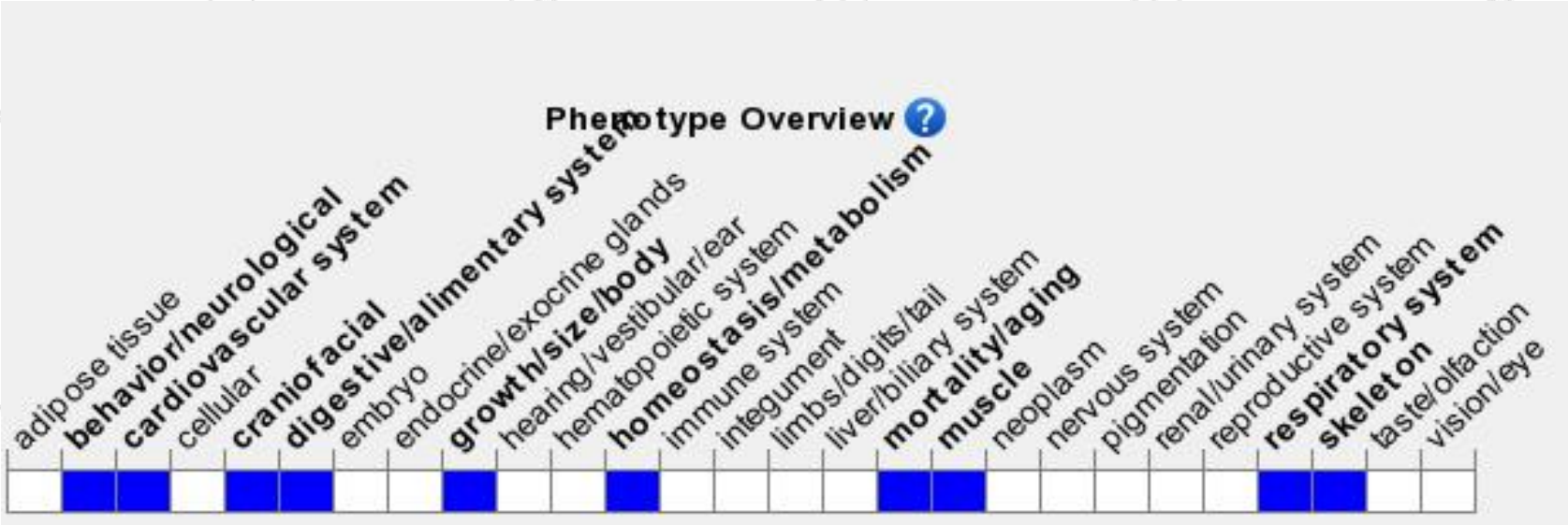
Genomic location distribution



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/).

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

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