Kcnmb4 Cas9-CKO Strategy

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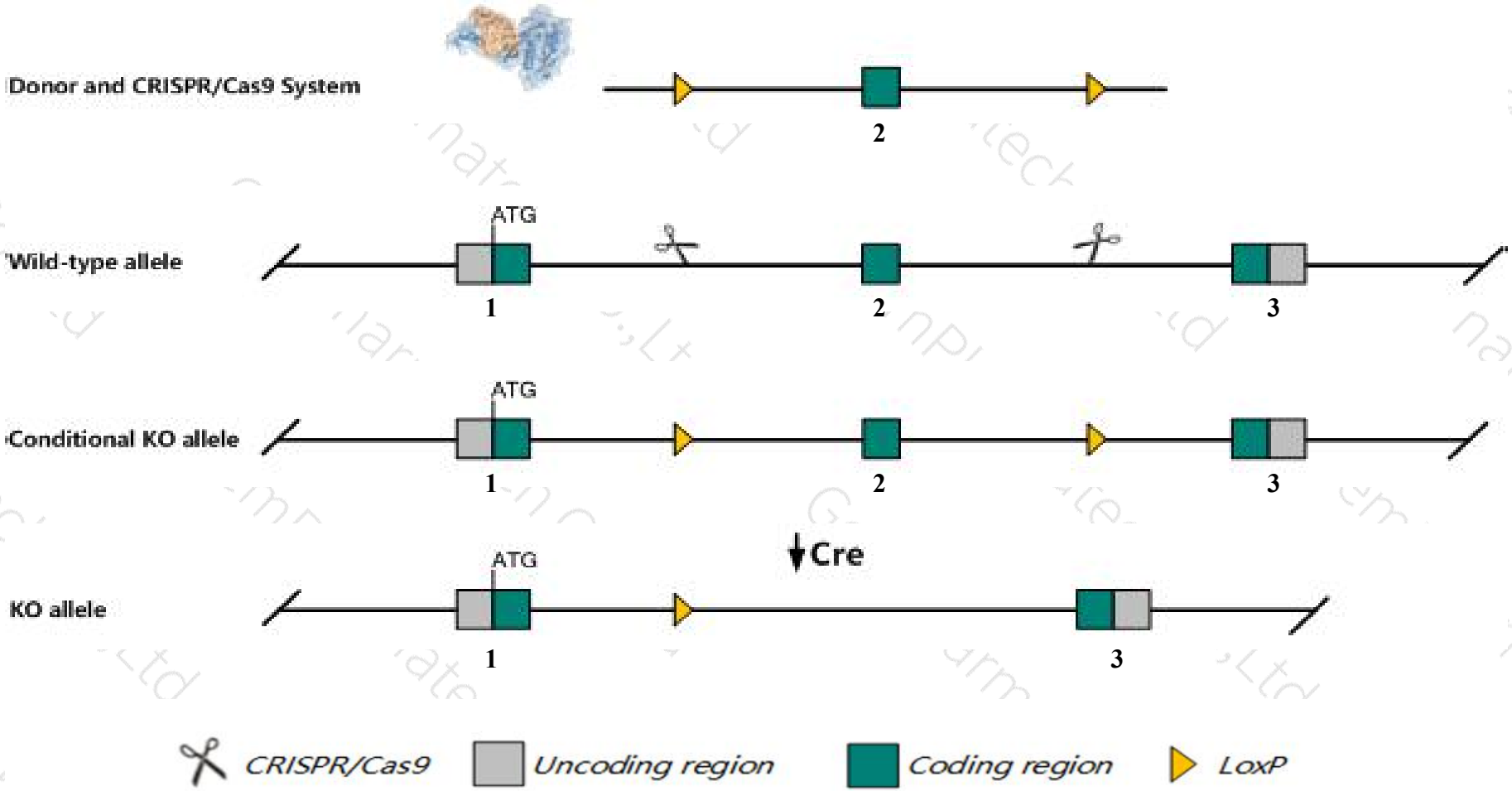
Design Date: 2020-2-10

Project Overview

Project Name	***Kcnmb4***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcnmb4* gene. The schematic diagram is as follows:



Technical routes

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- The *Kcnmb4* gene has 4 transcripts. According to the structure of *Kcnmb4* gene, exon2 of *Kcnmb4-201* (ENSMUST00000068233.10) transcript is recommended as the knockout region.The region contains 128bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Kcnmb4* 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,Homozygous mutation of this gene results in no obvious phenotype.

➢ The *Kcnmb4* gene is located on the Chr10. 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）

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Kcnmb4 potassium large conductance calcium-activated channel, subfamily M, beta member 4 [Mus musculus (house mouse)]

Gene ID: 58802, updated on 19-Feb-2019

Summary

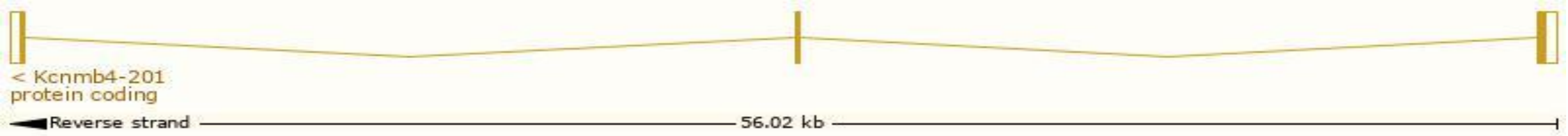
Official Symbol	Kcnmb4 provided by MGI
Official Full Name	potassium large conductance calcium-activated channel, subfamily M, beta member 4 provided by MGI
Primary source	MGI:MGI:1913272
See related	Ensembl:ENSMUSG00000054934
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1700058G18Rik, 2900045G12Rik
Expression	Biased expression in testis adult (RPKM 65.8), cortex adult (RPKM 15.9) and 8 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

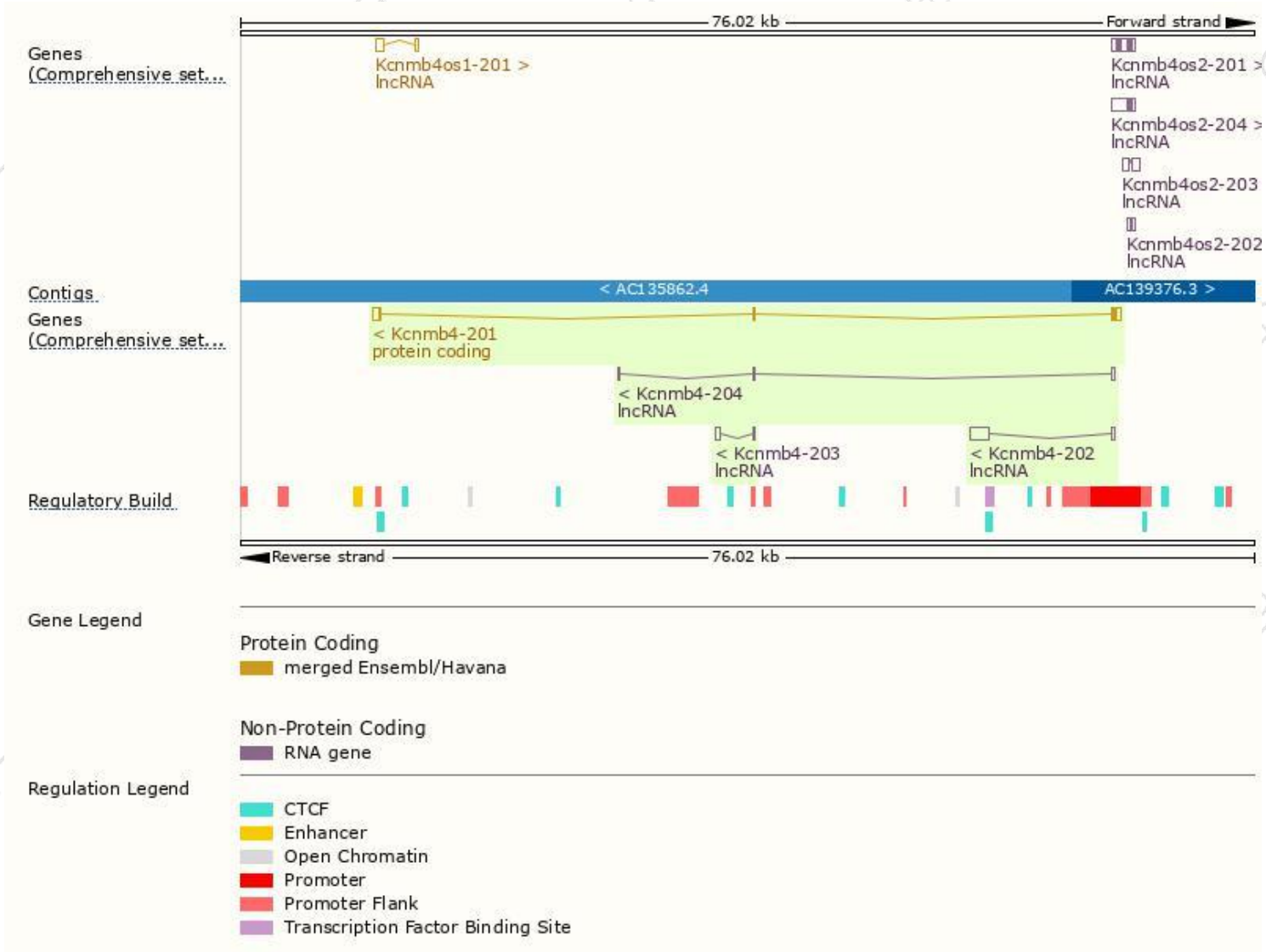
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcnmb4-201	ENSMUST00000068233.10	1367	210aa	Protein coding	CCDS24184	Q9JIN6	TSL:1 GENCODE basic APPRIS P1
Kcnmb4-202	ENSMUST00000087965.4	1626	No protein	lncRNA	-	-	TSL:1
Kcnmb4-204	ENSMUST00000164271.1	517	No protein	lncRNA	-	-	TSL:3
Kcnmb4-203	ENSMUST00000091477.3	511	No protein	lncRNA	-	-	TSL:3

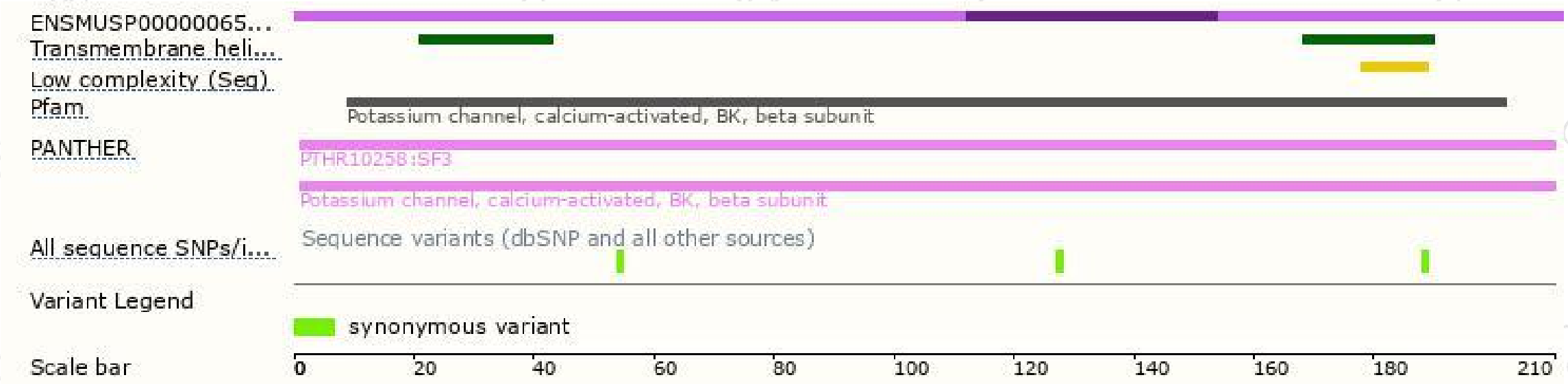
The strategy is based on the design of *Kcnmb4-201* transcript,The transcription is shown below



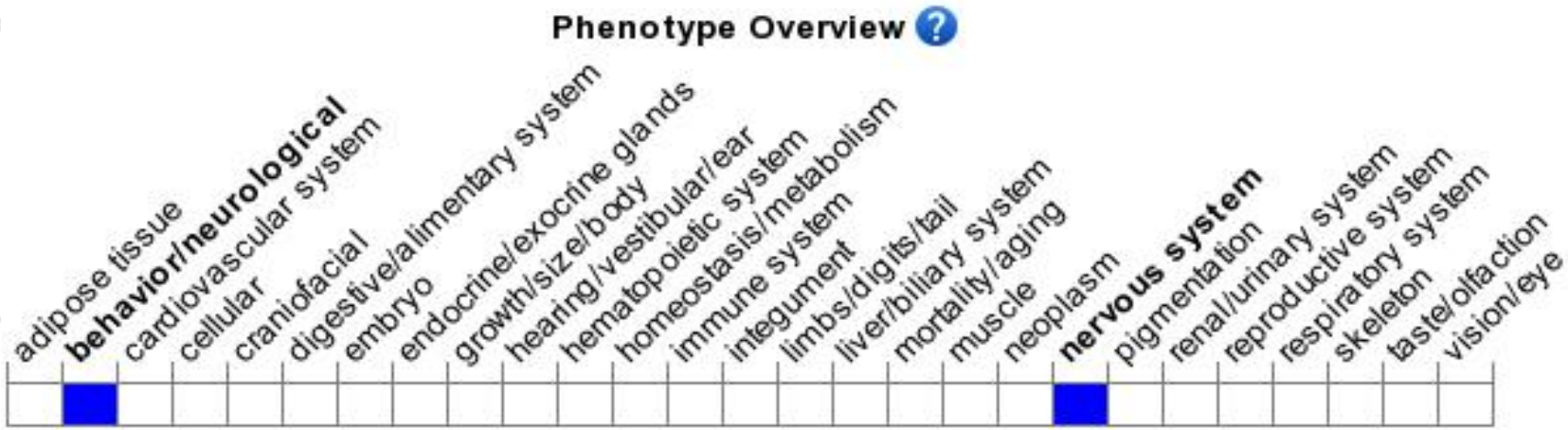
Genomic location distribution



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,Homozygous mutation of this gene results in no obvious phenotype.

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

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