

***Kcna10* Cas9-CKO Strategy**

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Design Date: 2019-9-16
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Project Overview

Project Name

Kcna10

Project type

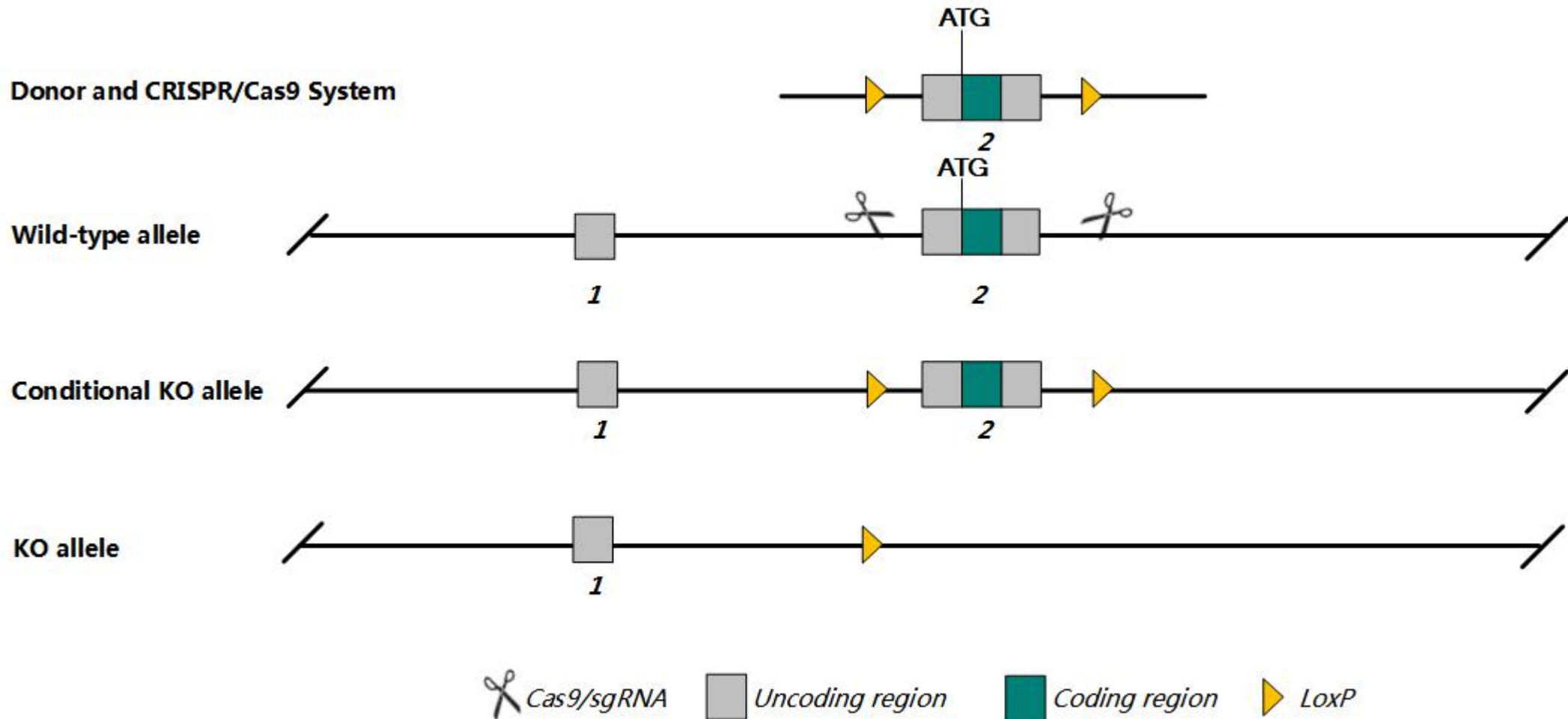
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcna10* gene. The schematic diagram is as follows:



- The *Kcna10* gene has 2 transcripts. According to the structure of *Kcna10* gene, exon2 of *Kcna10*-201 (ENSMUST00000055064.7) transcript is recommended as the knockout region. The region contains all coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kcna10* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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, Mice homozygous for a knock-out allele exhibit significant vestibular and mild hearing dysfunction.
- The *Kcna10* gene is located on the Chr3. 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)

Kcna10 potassium voltage-gated channel, shaker-related subfamily, member 10 [*Mus musculus* (house mouse)]

Gene ID: 242151, updated on 12-Aug-2019

Summary



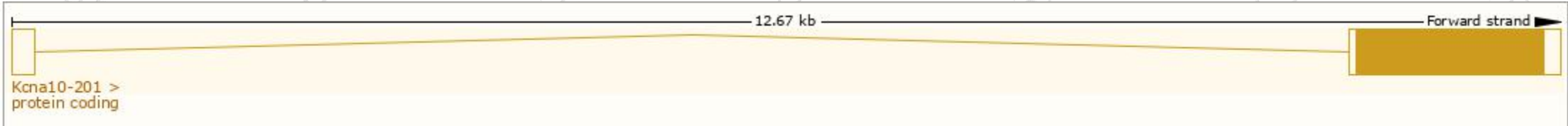
Official Symbol	Kcna10 provided by MGI
Official Full Name	potassium voltage-gated channel, shaker-related subfamily, member 10 provided by MGI
Primary source	MGI:MGI:3037820
See related	Ensembl:ENSMUSG00000042861
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Kcna8; Kv1.8; Gm1962
Expression	Low expression observed in reference dataset See more
Orthologs	human all

Transcript information (Ensembl)

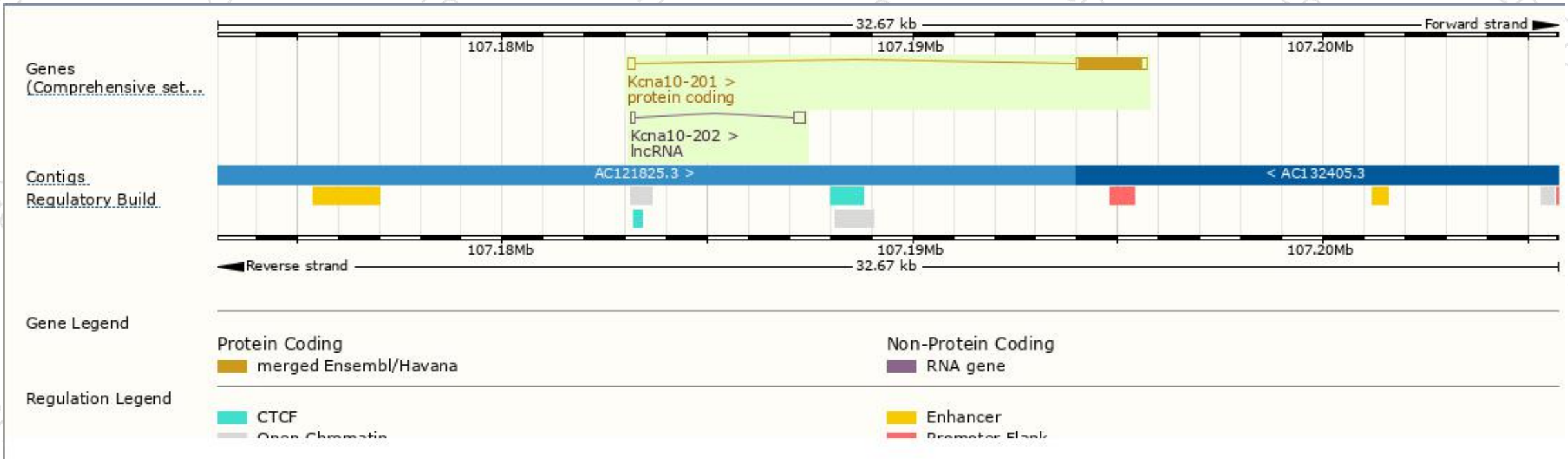
The gene has 2 transcripts,all transcripts are shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Kcna10-201	ENSMUST00000055064.7	1913	511aa	Protein coding	CCDS38587	B2RQA1	TSL:1 GENCODE basic APPRIS P1
Kcna10-202	ENSMUST00000169751.1	357	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Kcna10-201* transcript,The transcription is shown below



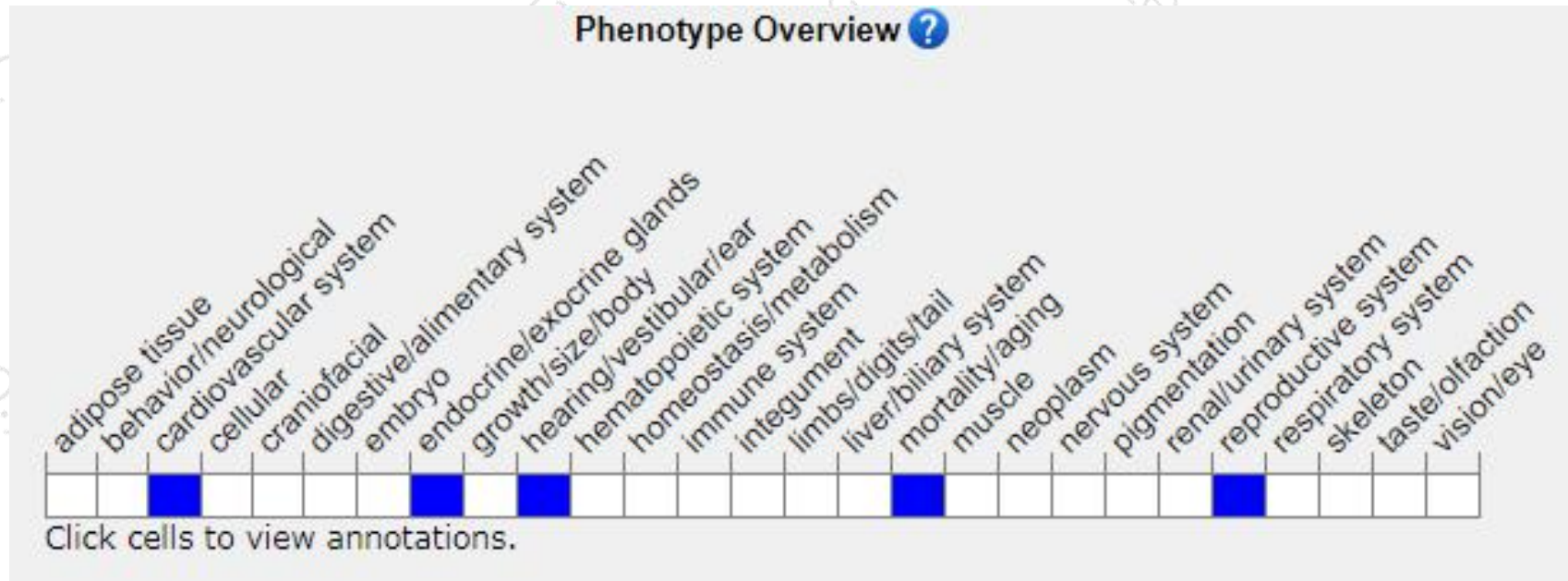
Genomic location distribution



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/>).

Mice homozygous for a knock-out allele exhibit significant vestibular and mild hearing dysfunction.

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

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