

# *Kcne3* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

***Kcne3***

**Project type**

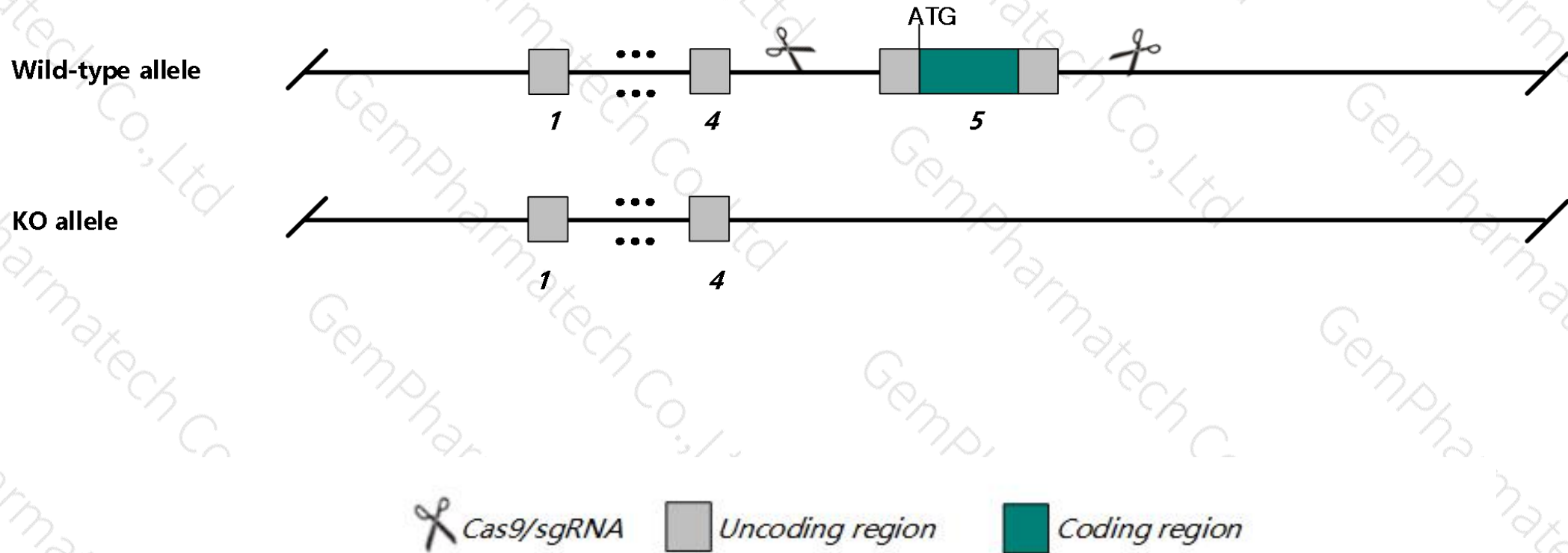
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcne3* gene. The schematic diagram is as follows:



- The *Kcne3* gene has 8 transcripts. According to the structure of *Kcne3* gene, exon5 of *Kcne3-203* (ENSMUST00000178946.8) 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 *Kcne3* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit decreased cAMP-stimulated electrogenic Cl<sup>-</sup> secretion across tracheal and intestinal epithelia. Another knock-out allele shows age-dependent alterations in action potential and firing properties of spiral ganglion neurons in the cochlea.
- The flox region is in the intron of the Gm34821 gene, which may affect the regulation of this gene.
- The *Kcne3* gene is located on the Chr7. 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)

## Kcne3 potassium voltage-gated channel, Isk-related subfamily, gene 3 [ *Mus musculus* (house mouse) ]

Gene ID: 57442, updated on 24-Oct-2019

### Summary

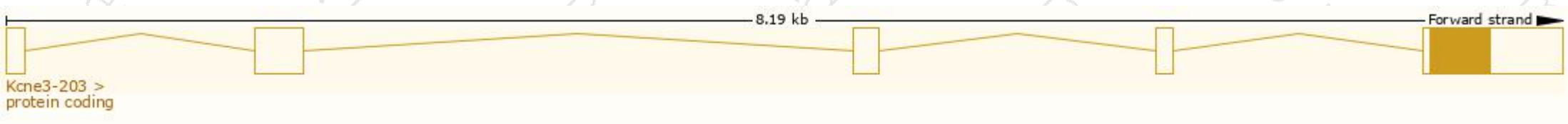
Official Symbol	Kcne3 provided by <a href="#">MGI</a>
Official Full Name	potassium voltage-gated channel, Isk-related subfamily, gene 3 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1891124</a>
See related	<a href="#">Ensembl:ENSMUSG00000035165</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	MiRP2; 2210017H05Rik
Expression	Biased expression in colon adult (RPKM 22.2), testis adult (RPKM 22.1) and 7 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

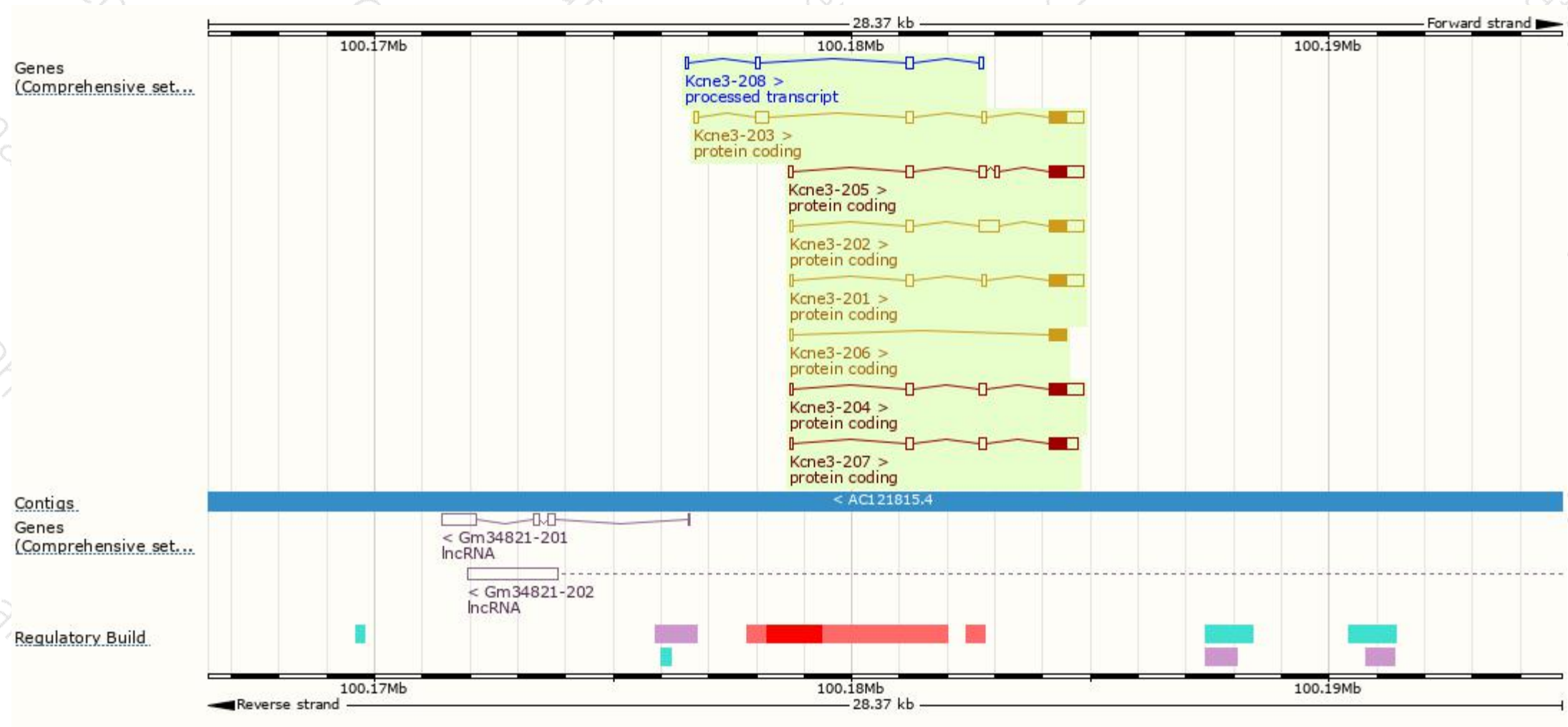
The gene has 8 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcne3-203	<a href="#">ENSMUST00000178946.8</a>	1323	<a href="#">103aa</a>	Protein coding	<a href="#">CCDS21495</a>	<a href="#">Q545H9</a> <a href="#">Q9WTW2</a>	TSL:1 GENCODE basic APPRIS P1
Kcne3-202	<a href="#">ENSMUST00000170954.9</a>	1315	<a href="#">103aa</a>	Protein coding	<a href="#">CCDS21495</a>	<a href="#">Q545H9</a> <a href="#">Q9WTW2</a>	TSL:1 GENCODE basic APPRIS P1
Kcne3-205	<a href="#">ENSMUST00000207358.1</a>	1154	<a href="#">103aa</a>	Protein coding	<a href="#">CCDS21495</a>	<a href="#">Q545H9</a> <a href="#">Q9WTW2</a>	TSL:5 GENCODE basic APPRIS P1
Kcne3-204	<a href="#">ENSMUST00000179842.2</a>	1059	<a href="#">103aa</a>	Protein coding	<a href="#">CCDS21495</a>	<a href="#">Q545H9</a> <a href="#">Q9WTW2</a>	TSL:1 GENCODE basic APPRIS P1
Kcne3-201	<a href="#">ENSMUST00000049333.12</a>	1012	<a href="#">103aa</a>	Protein coding	<a href="#">CCDS21495</a>	<a href="#">Q545H9</a> <a href="#">Q9WTW2</a>	TSL:1 GENCODE basic APPRIS P1
Kcne3-207	<a href="#">ENSMUST00000208260.1</a>	929	<a href="#">103aa</a>	Protein coding	<a href="#">CCDS21495</a>	<a href="#">Q545H9</a> <a href="#">Q9WTW2</a>	TSL:3 GENCODE basic APPRIS P1
Kcne3-206	<a href="#">ENSMUST00000207995.1</a>	439	<a href="#">103aa</a>	Protein coding	<a href="#">CCDS21495</a>	<a href="#">Q545H9</a> <a href="#">Q9WTW2</a>	TSL:2 GENCODE basic APPRIS P1
Kcne3-208	<a href="#">ENSMUST00000208555.1</a>	374	No protein	Processed transcript	-	-	TSL:3

The strategy is based on the design of *Kcne3-203* transcript, The transcription is shown below

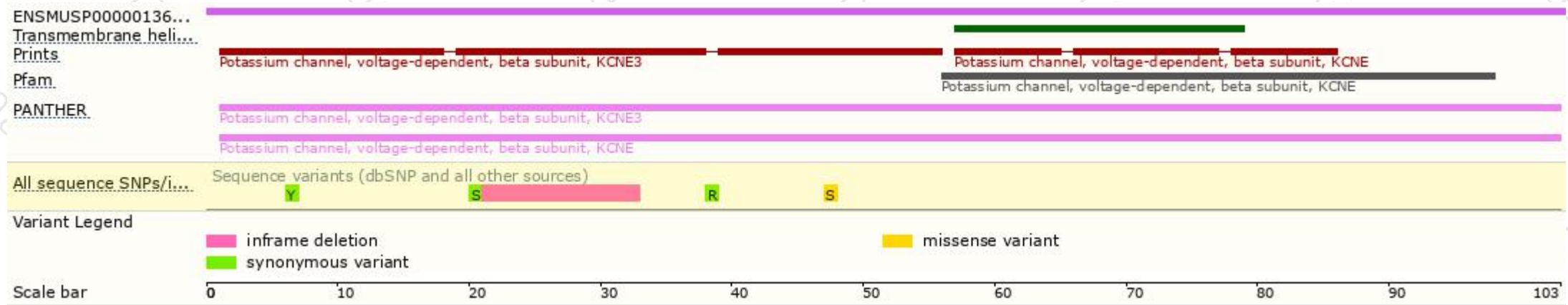


# Genomic location distribution

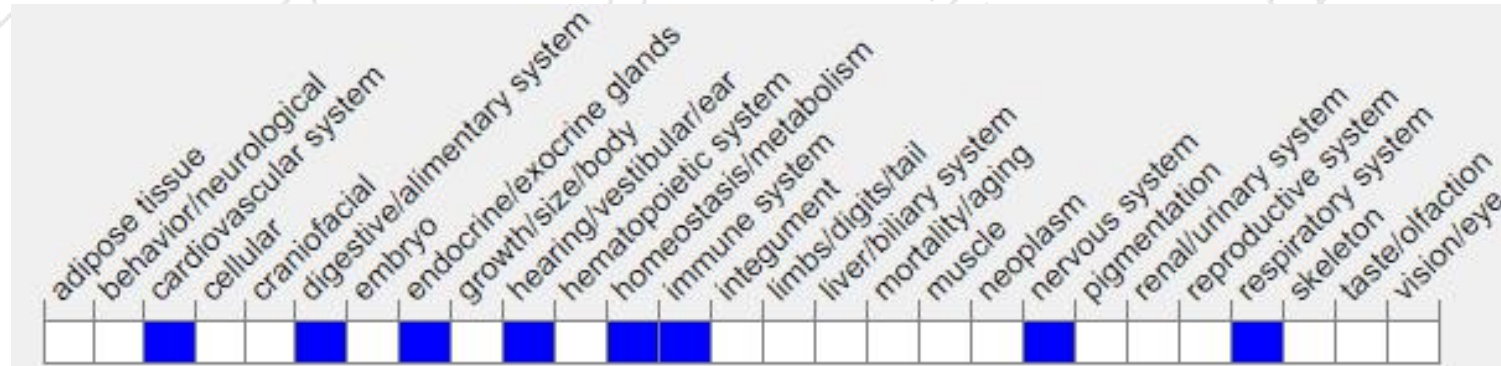




# Protein domain



# 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 knock-out allele exhibit decreased cAMP-stimulated electrogenic Cl<sup>-</sup> secretion across tracheal and intestinal epithelia. Another knock-out allele shows age-dependent alterations in action potential and firing properties of spiral ganglion neurons in the cochlea.

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

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