GemPharmatech™

Aqp8 Cas9-CKO Strategy

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Design Date: 2023-3-26

Overview

Target Gene Name

- Aqp8

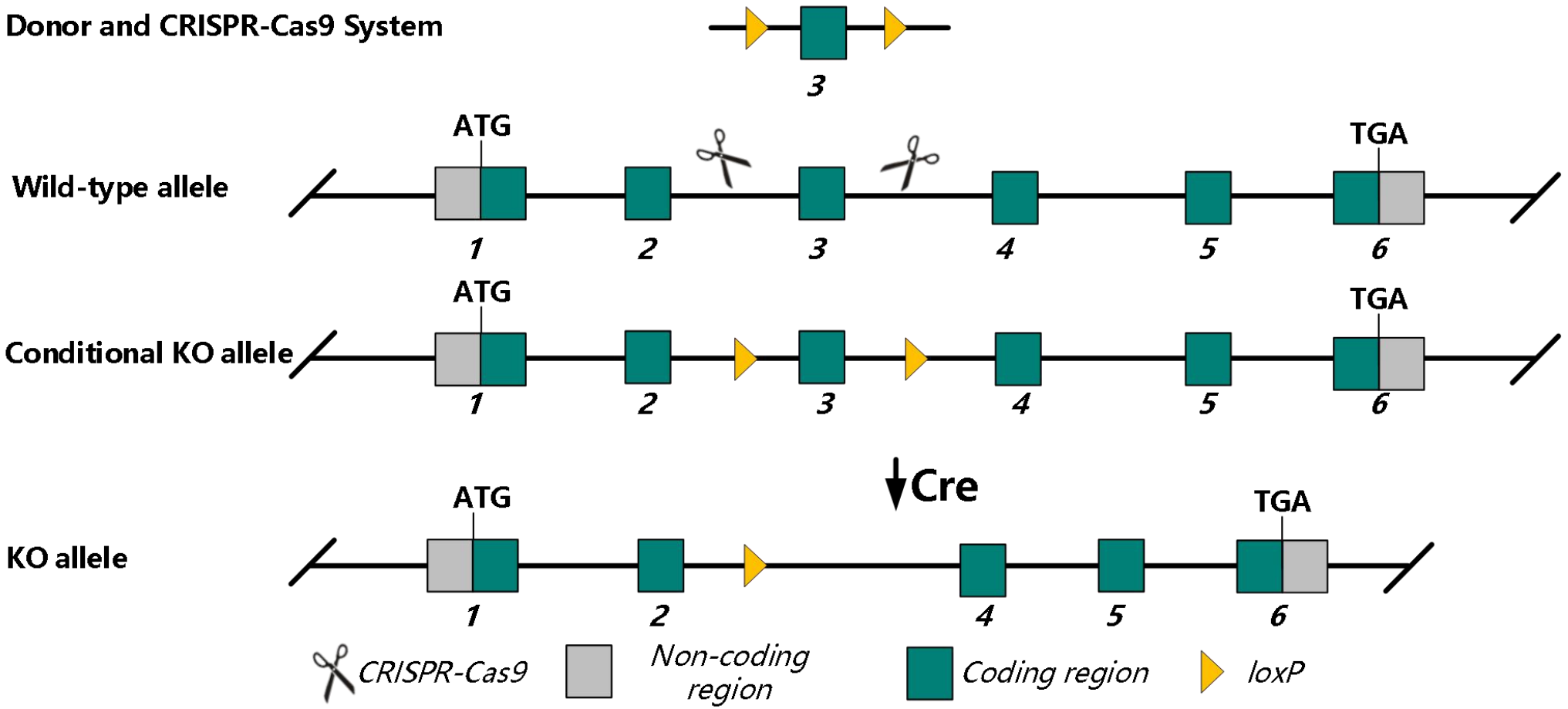
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Aqp8* gene.

Technical Information

- The *Aqp8* gene has 3 transcripts. According to the structure of *Aqp8* gene, exon 3 of *Aqp8*-202 (ENSMUST00000098056.6) transcript is recommended as the knockout region. The region contains 127 bp of coding sequences. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Aqp8* 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- 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.

Gene Information

Aqp8 aquaporin 8 [*Mus musculus* (house mouse)]

Download Datasets

Gene ID: 11833, updated on 9-Mar-2023

Summary

Official Symbol	Aqp8 provided by MGI
Official Full Name	aquaporin 8 provided by MGI
Primary source	MGI:MGI:1195271
See related	Ensembl:ENSMUSG00000030762 AllianceGenome:MGI:1195271
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	AQP-8
Summary	Predicted to enable water channel activity. Acts upstream of or within water transport. Predicted to be located in intracellular canaliculus and intracellular membrane-bounded organelle. Is expressed in several structures, including alimentary system; diaphragm; early conceptus; genitourinary system; and spleen. Orthologous to human AQP8 (aquaporin 8). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Biased expression in colon adult (RPKM 230.0), liver E18 (RPKM 138.5) and 3 other tissues See more
Orthologs	human all

NEW Try the new Gene table

Try the new Transcript table

Genomic context

Location: 7 F3; 7 67.42 cM

See Aqp8 in Genome Data Viewer

Exon count: 6

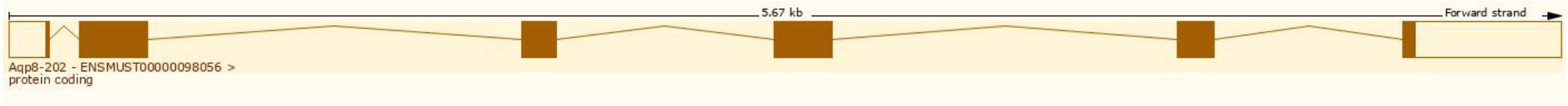
Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

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

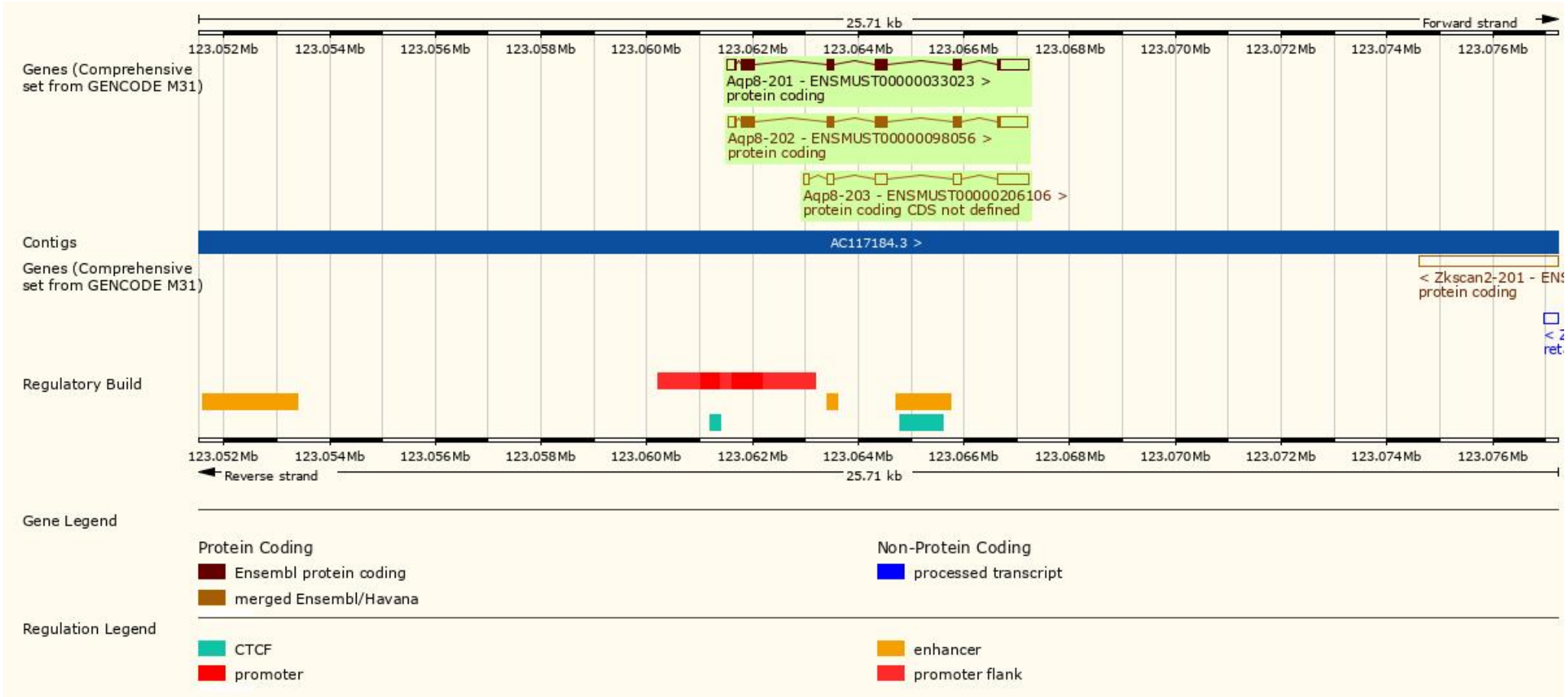
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000206106.2	Aqp8-203	1159	No protein	Protein coding CDS not defined		-	TSL:1
ENSMUST00000098056.6	Aqp8-202	1451	261aa	Protein coding	CCDS72038	P56404	Ensembl Canonical GENCODE basic APPRIS P4 TSL:1
ENSMUST00000033023.10	Aqp8-201	1487	260aa	Protein coding	CCDS85406	A0A0X1KG59	GENCODE basic APPRIS ALT1 TSL:1

The strategy is based on the design of *Aqp8*-202 transcript, the transcription is shown below:



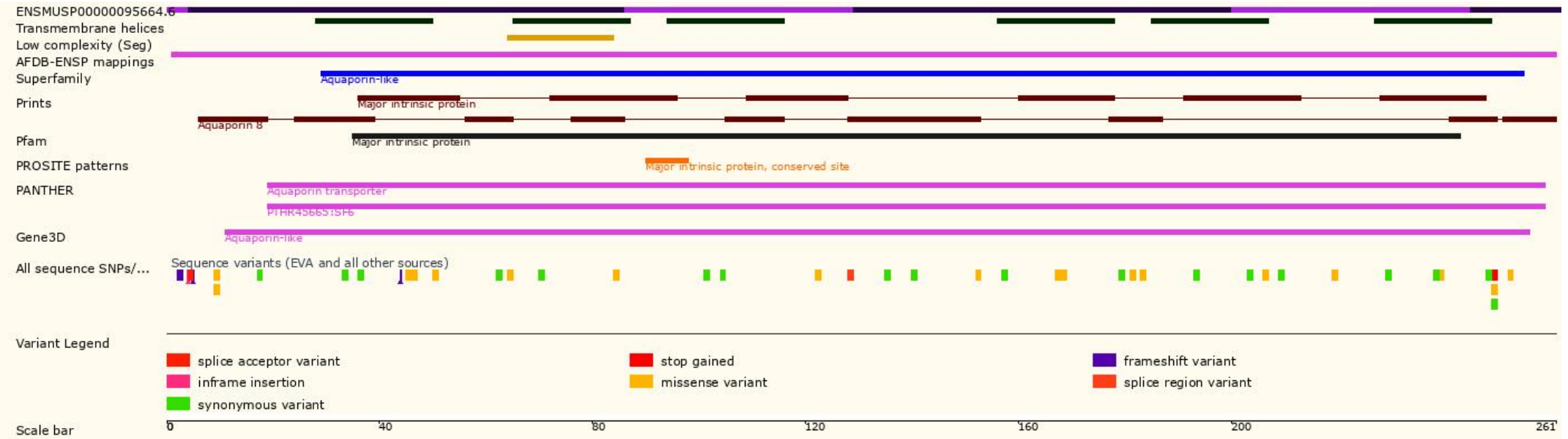
Source: https://www.ensembl.org

Genomic Information



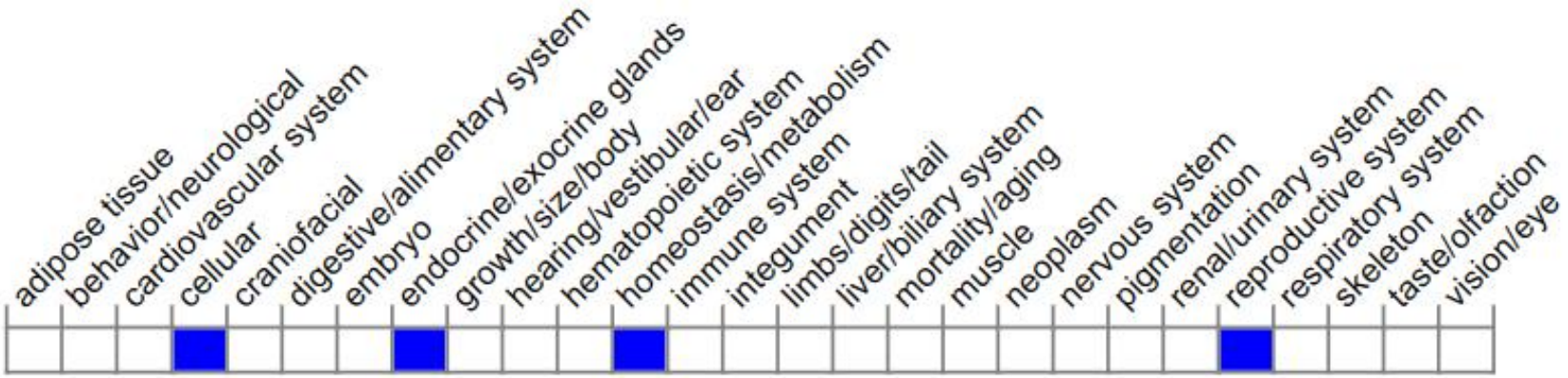
Source: : https://www.ensembl.org

Protein Information



Source: : https://www.ensembl.org

Mouse Phenotype Information (MGI)



Males homozygous for a null allele are fertile but show enlarged testes and reduced water permeability in testis plasma membranes. Females show increased ovulation, corpora lutea number and fertility, and a decrease in the plasma membrane water permeability and apoptosis rate of granulosa cells.

Source: https://www.informatics.jax.org

Important Information

- Males homozygous for a null allele are fertile but show enlarged testes and reduced water permeability in testis plasma membranes. Females show increased ovulation, corpora lutea number and fertility, and a decrease in the plasma membrane water permeability and apoptosis rate of granulosa cells.
- Intron 3-4 (793 bp) of *Aqp8* are small and loxp insertion may interfere with normal splicing.
- *Aqp8* is located on Chr 7. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 the existing technology level.