Aqp5 Cas9-CKO Strategy

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Project Overview

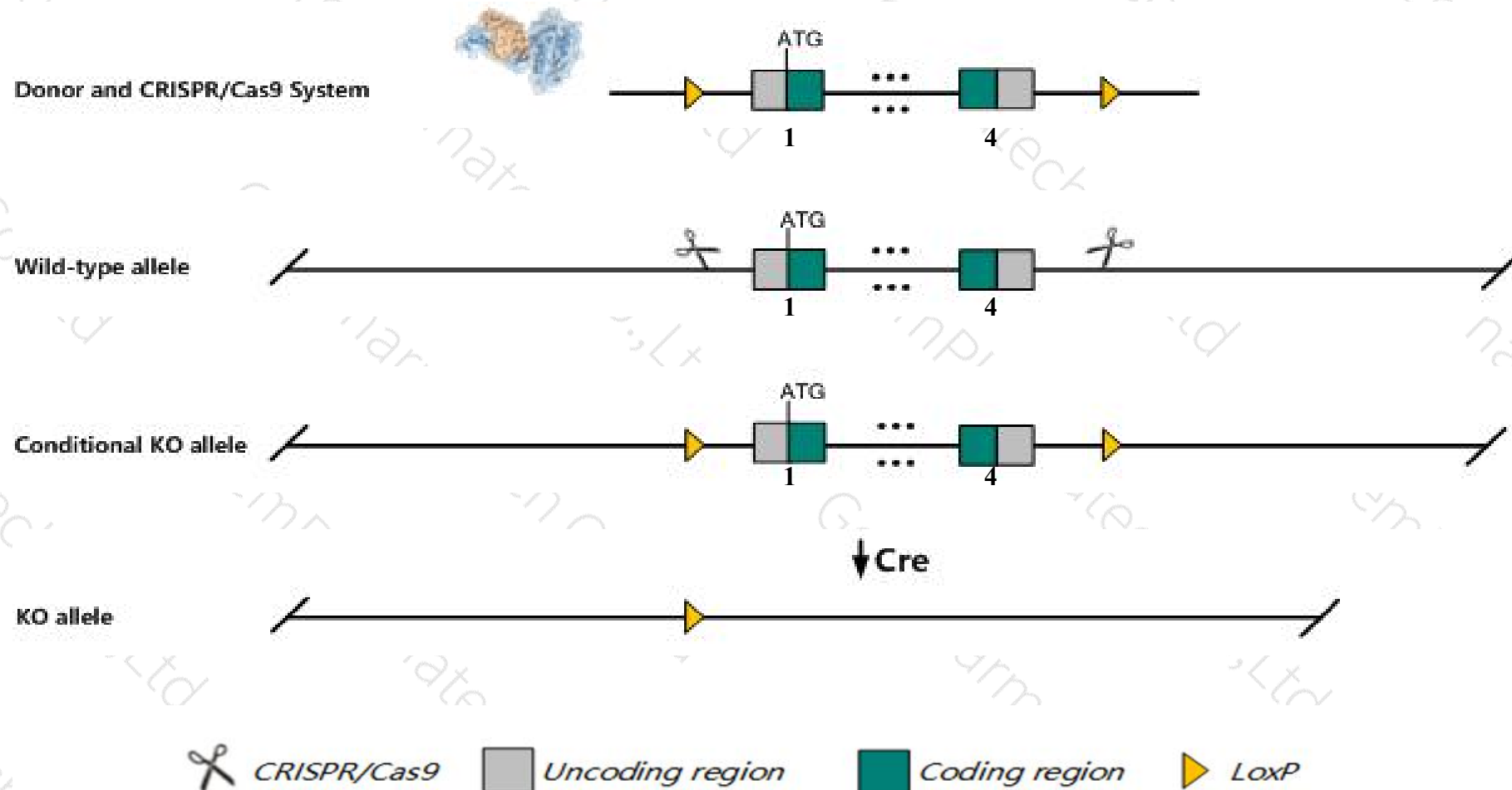|	
Project Name	*Aqp5*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Aqp5* gene. The schematic diagram is as follows:

Technical routes

➤ The *Aqp5* gene has 6 transcripts. According to the structure of *Aqp5* gene, exon1-exon4 of *Aqp5-202* (ENSMUST00000169082.2) 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 *Aqp5* 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 null mutants exhibit reduced growth on solid food and secrete diminished amounts of hypertonic, viscous saliva.

➤ The *Aqp5* gene is located on the Chr15. 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）

Aqp5 aquaporin 5 [Mus musculus (house mouse)]
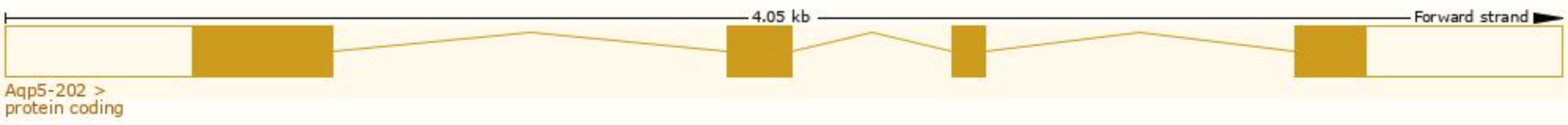
Gene ID: 11830, updated on 5-Mar-2019

Summary

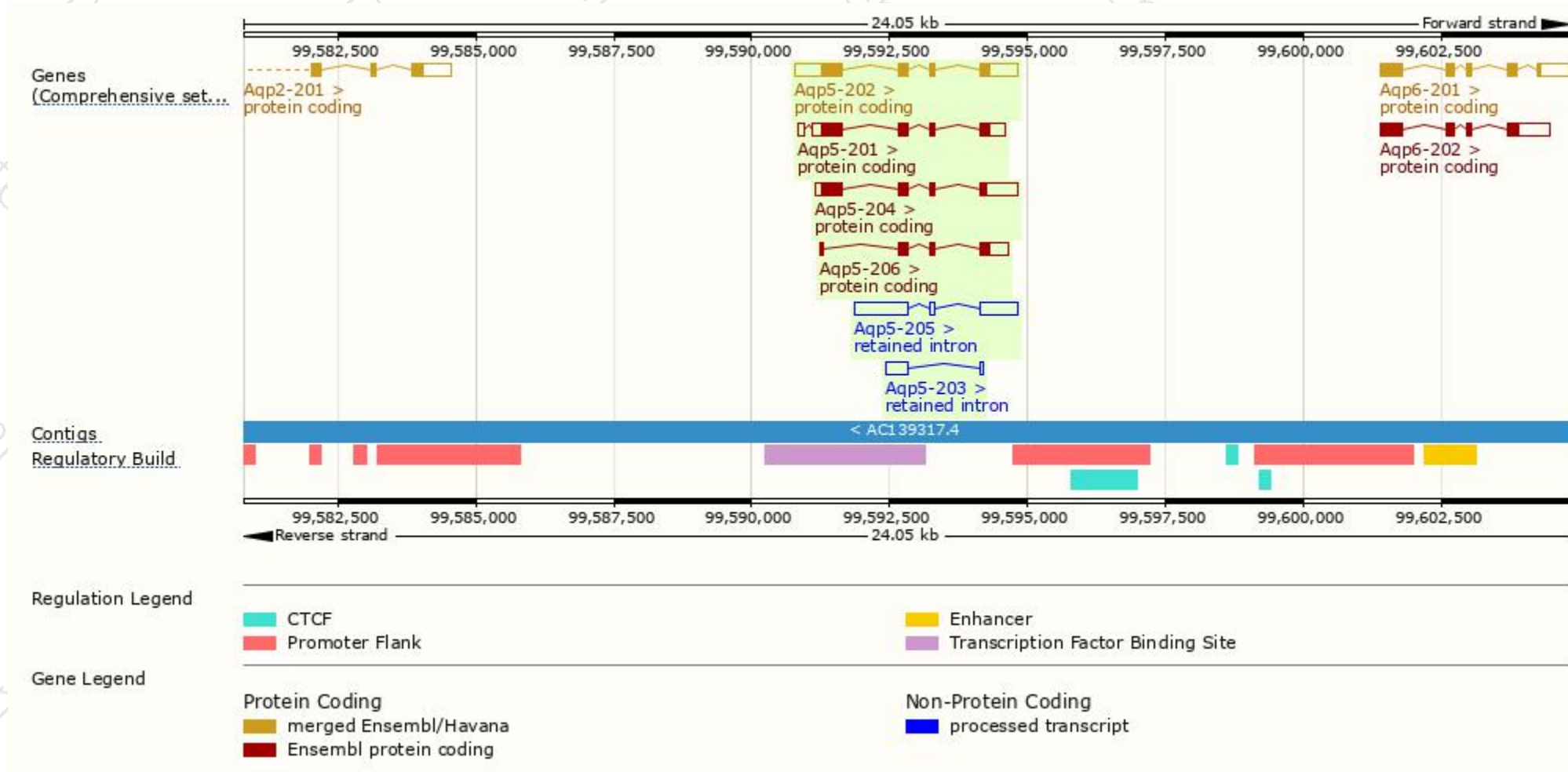|	
Official Symbol	Aqp5 provided by MGI
Official Full Name	aquaporin 5 provided byMGI
Primary source	MGI:MGI:106215
See related	Ensembl:ENSMUSG00000044217
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in lung adult (RPKM 187.0), mammary gland adult (RPKM 72.8) and 4 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 6 transcripts,all transcripts are shown below:

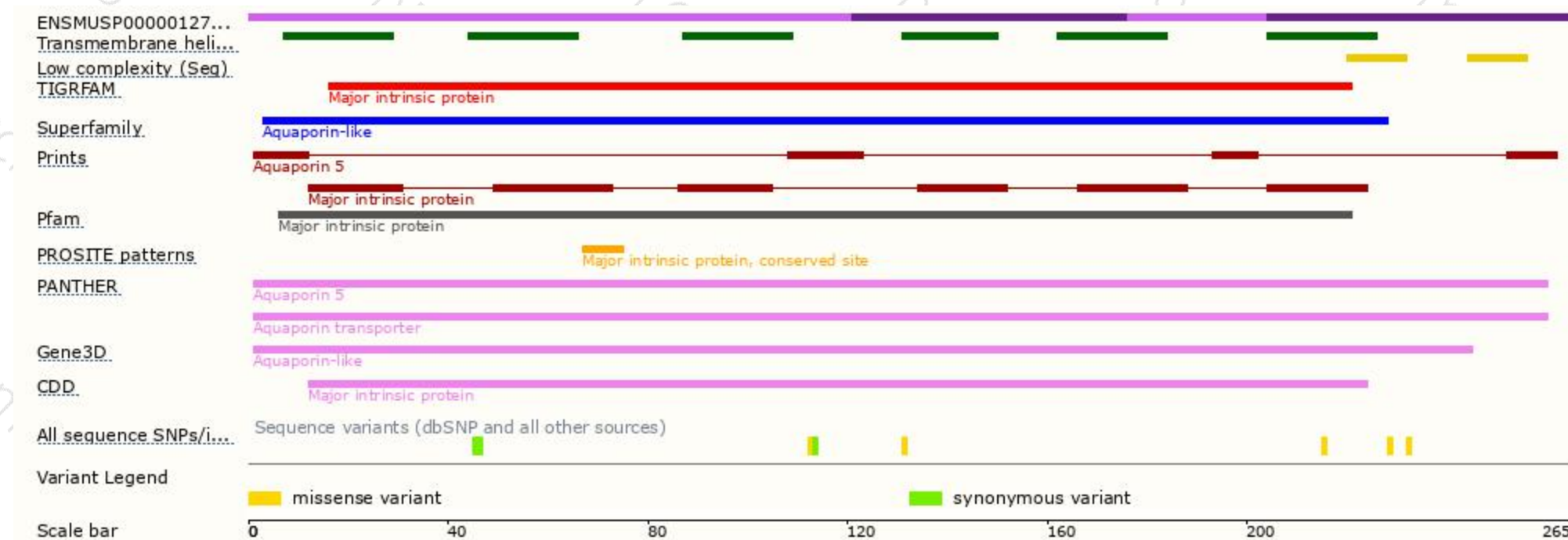| Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags		
Aqp5-202	ENSMUST00000169082.2	1797	265aa	Protein coding	CCDS27823	Q9WTY4	TSL:1	GENCODE basic	APPRIS P1
Aqp5-201	ENSMUST00000088200.12	1376	265aa	Protein coding	CCDS27823	Q9WTY4	TSL:1	GENCODE basic	APPRIS P1
Aqp5-204	ENSMUST00000229728.1	1415	241aa	Protein coding	-	A0A2R8VI16		GENCODE basic	
Aqp5-206	ENSMUST00000231163.1	831	148aa	Protein coding	-	A0A2R8VHL2		GENCODE basic	
Aqp5-205	ENSMUST0000230998.1	1739	No protein	Retained intron	-	-		-	
Aqp5-203	ENSMUST0000229264.1	443	No protein	Retained intron	-	-		-	

The strategy is based on the design of *Aqp5-202* transcript,The transcription is shown below
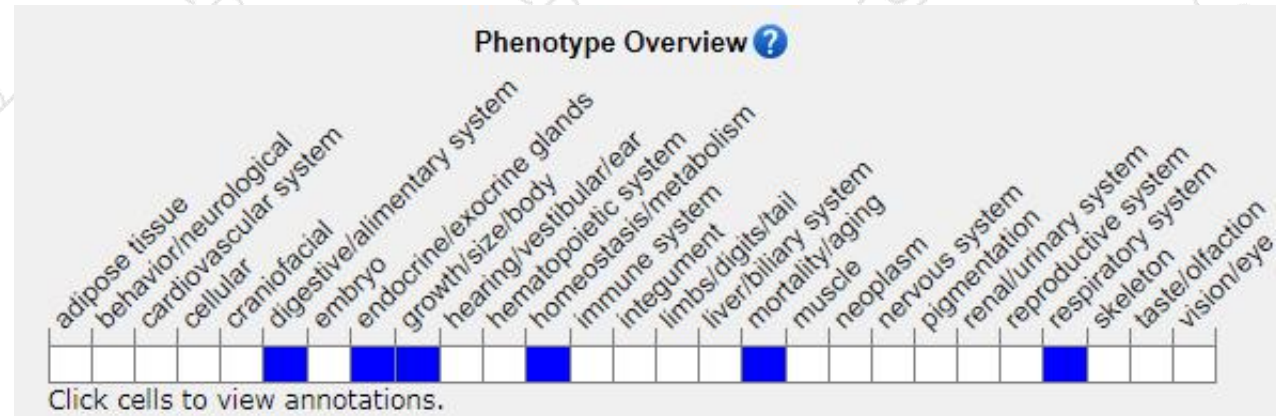
Genomic location distribution

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 null mutants exhibit reduced growth on solid food and secrete diminished amounts of hypertonic, viscous saliva.

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