

Cldn1 Cas9-KO Strategy

Designer:

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Project Overview

Project Name

Cldn1

Project type

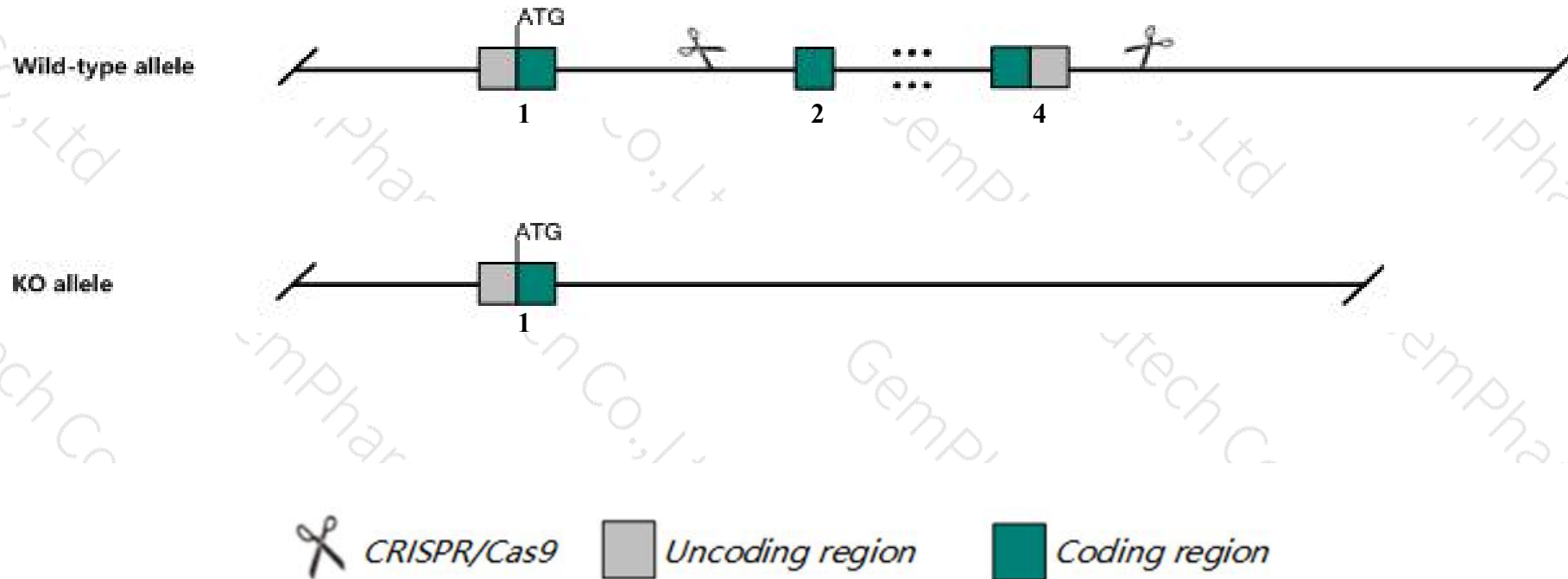
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cldn1* gene. The schematic diagram is as follows:



- The *Cldn1* gene has 2 transcripts. According to the structure of *Cldn1* gene, exon2-exon4 of *Cldn1-201* (ENSMUST00000023154.2) transcript is recommended as the knockout region. The region contains most of coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cldn1* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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.

- According to the existing MGI data, Animals homozygous for a mutation in this gene have wrinkled skin and die within 1 day after birth.
- The *Cldn1* gene is located on the Chr16. 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)

Cldn1 claudin 1 [Mus musculus (house mouse)]

Gene ID: 12737, updated on 5-Feb-2019

Summary



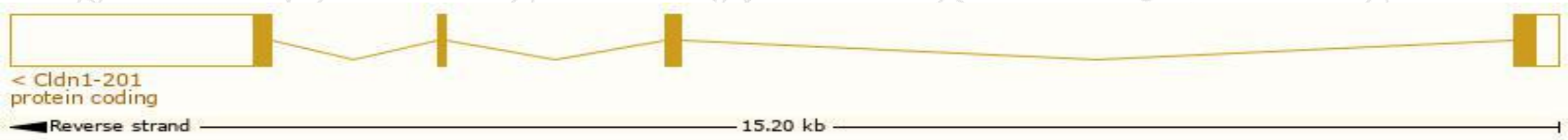
Official Symbol	Cldn1 provided by MGI
Official Full Name	claudin 1 provided by MGI
Primary source	MGI:MGI:1276109
See related	Ensembl:ENSMUSG00000022512
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI596271
Summary	This gene encodes a member of the claudin family. Claudins are integral membrane proteins and components of tight junction strands. Tight junction strands serve as a physical barrier to prevent solutes and water from passing freely through the paracellular space between epithelial or endothelial cell sheets, and also play critical roles in maintaining cell polarity and signal transductions. The knockout mice lacking this gene die soon after birth as a consequence of dehydration from transdermal water loss, indicating that this gene is indispensable for creating and maintaining the epidermal barrier. The protein encoded by this gene also has gastric tumor suppressive activity, and is a key factor for hepatitis C virus (HCV) entry. [provided by RefSeq, Aug 2010]
Expression	Biased expression in liver E18 (RPKM 82.6), liver adult (RPKM 15.9) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

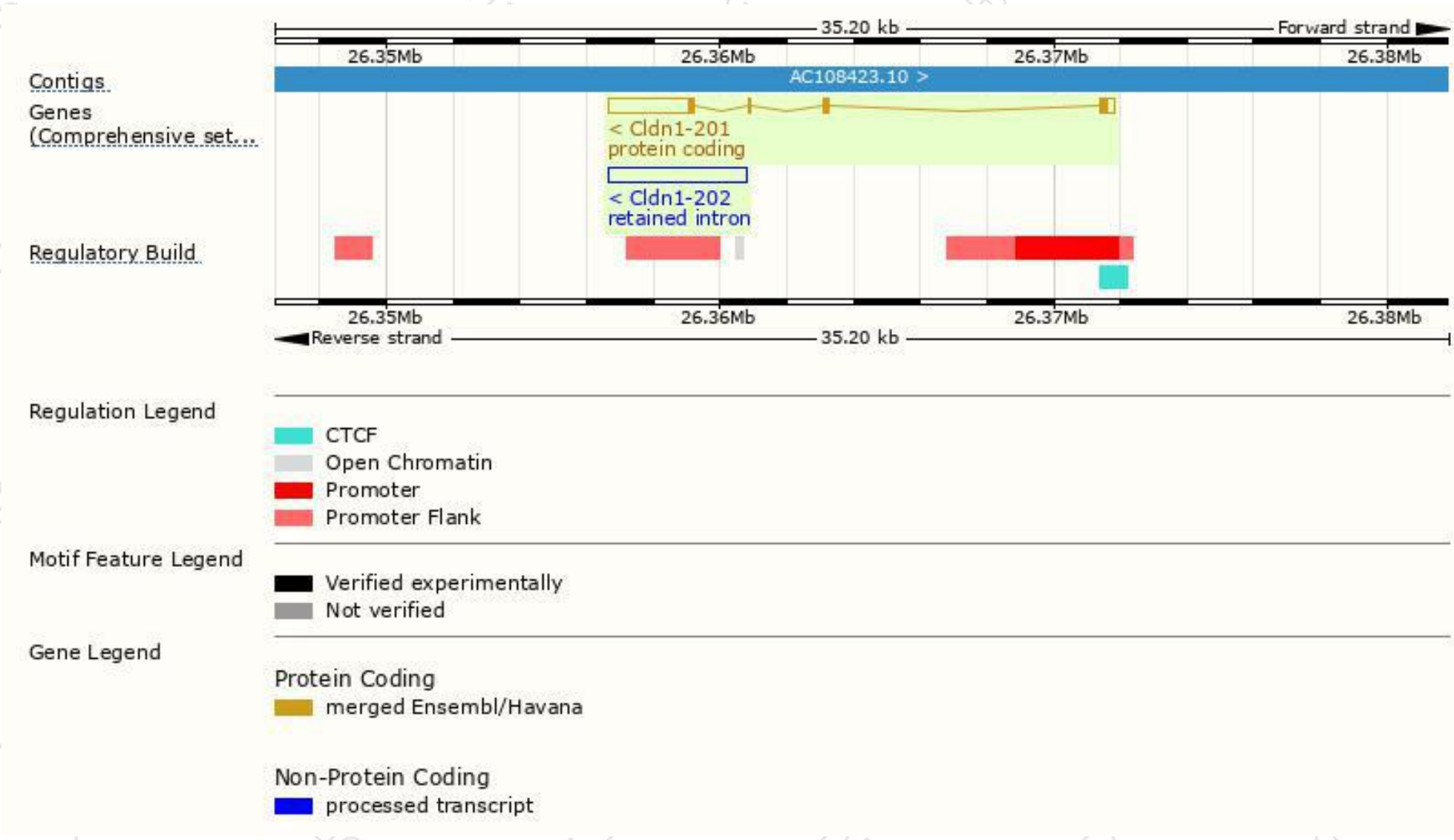
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cldn1-201	ENSMUST00000023154.2	3247	211aa	Protein coding	CCDS28087	Q88551 Q4FJV3	TSL:1 GENCODE basic APPRIS P1
Cldn1-202	ENSMUST00000232215.1	4145	No protein	Retained intron	-	-	

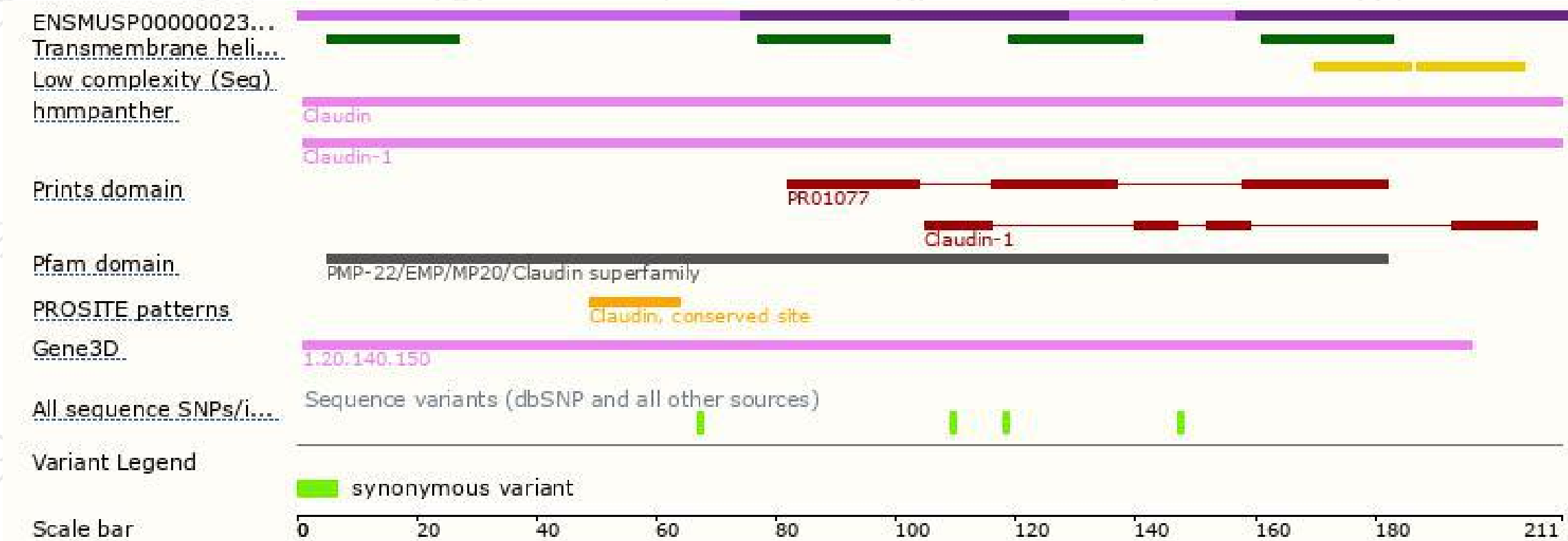
The strategy is based on the design of *Cldn1-201* transcript,The transcription is shown below



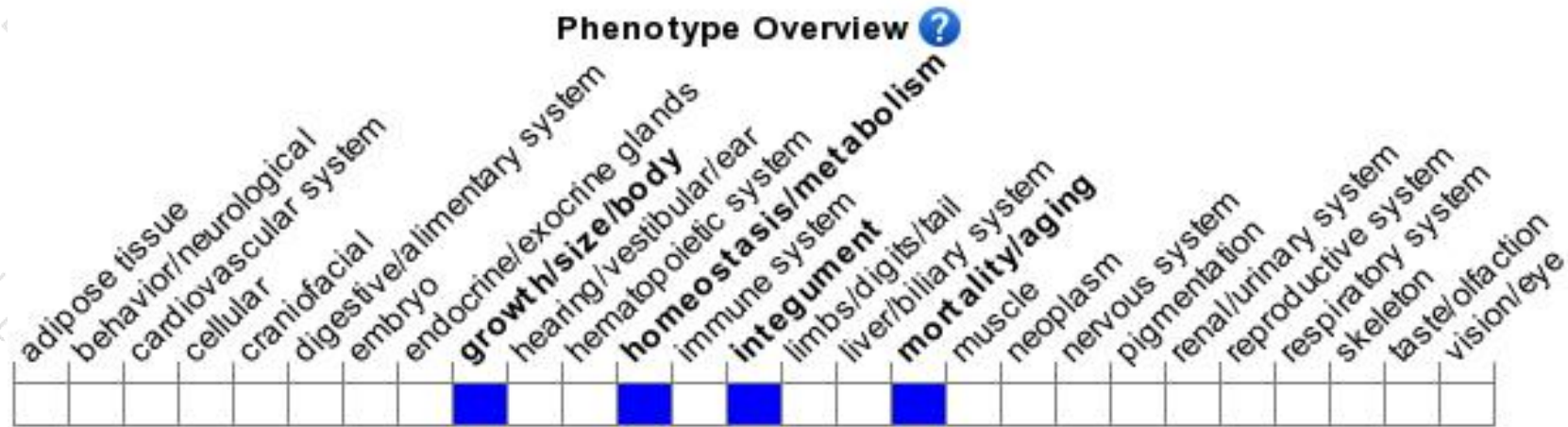
Genomic location distribution



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/>).

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

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