Cdhr5 Cas9-KO Strategy

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Reviewer: Yanhua Shen

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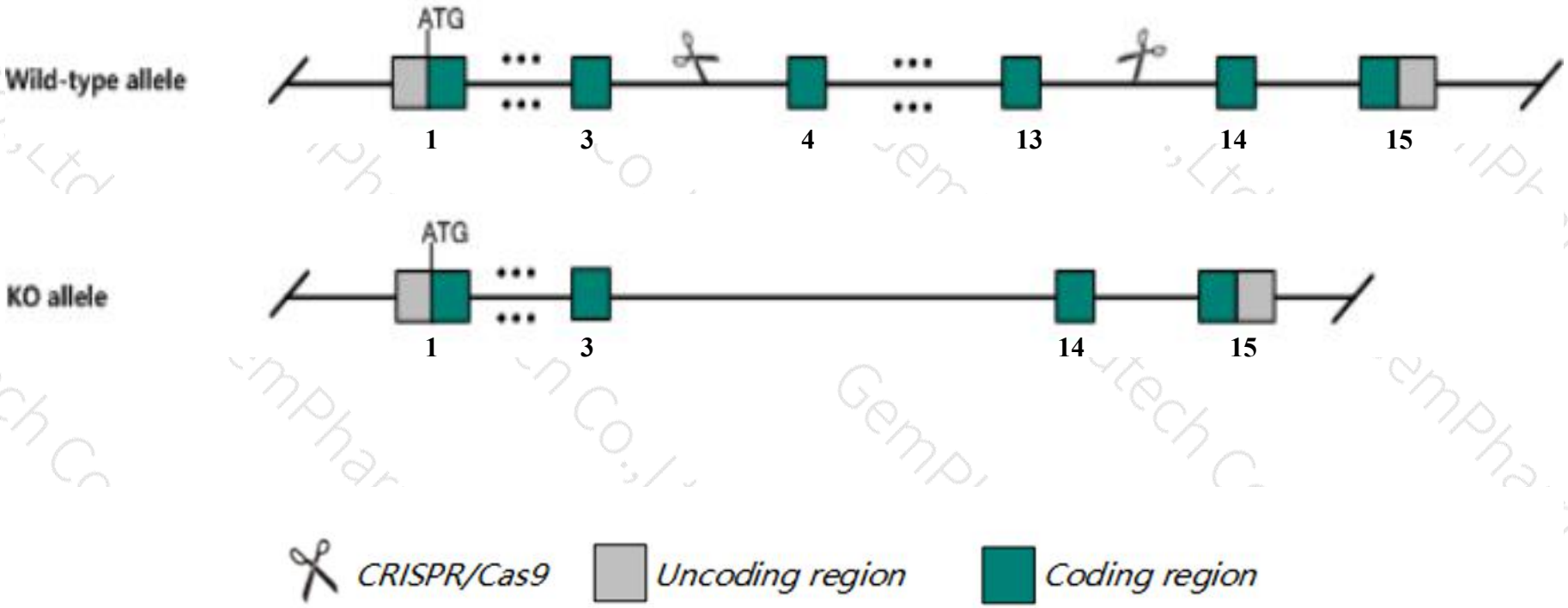
Project Overview

Project Name	***Cdhr5***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdhr5* gene. The schematic diagram is as follows:



Technical routes

➢ The *Cdhr5* gene has 5 transcripts. According to the structure of *Cdhr5* gene, exon4-exon13 of *Cdhr5-202*(ENSMUST00000167263.8) transcript is recommended as the knockout region.The region contains 1552bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cdhr5* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ The KO region is close to *Irf7* gene.Knockout the region may affect the function of *Irf7* gene.

➢ The *Cdhr5* 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）

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Cdhr5 cadherin-related family member 5 [*Mus musculus* (house mouse)]

Gene ID: 72040, updated on 25-Sep-2020

Summary

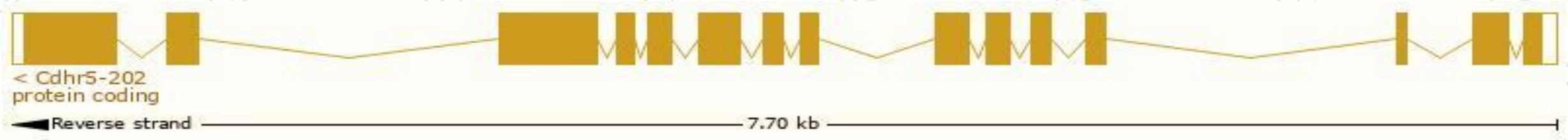
Official Symbol	Cdhr5 provided by MGI
Official Full Name	cadherin-related family member 5 provided by MGI
Primary source	MGI:MGI:1919290
See related	Ensembl:ENSMUSG00000025497
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Mucdh; Mupcd; Mucdhl; Mupcdh; AI481143; 1810074H01Rik
Expression	Biased expression in duodenum adult (RPKM 477.0), small intestine adult (RPKM 353.9) and 3 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

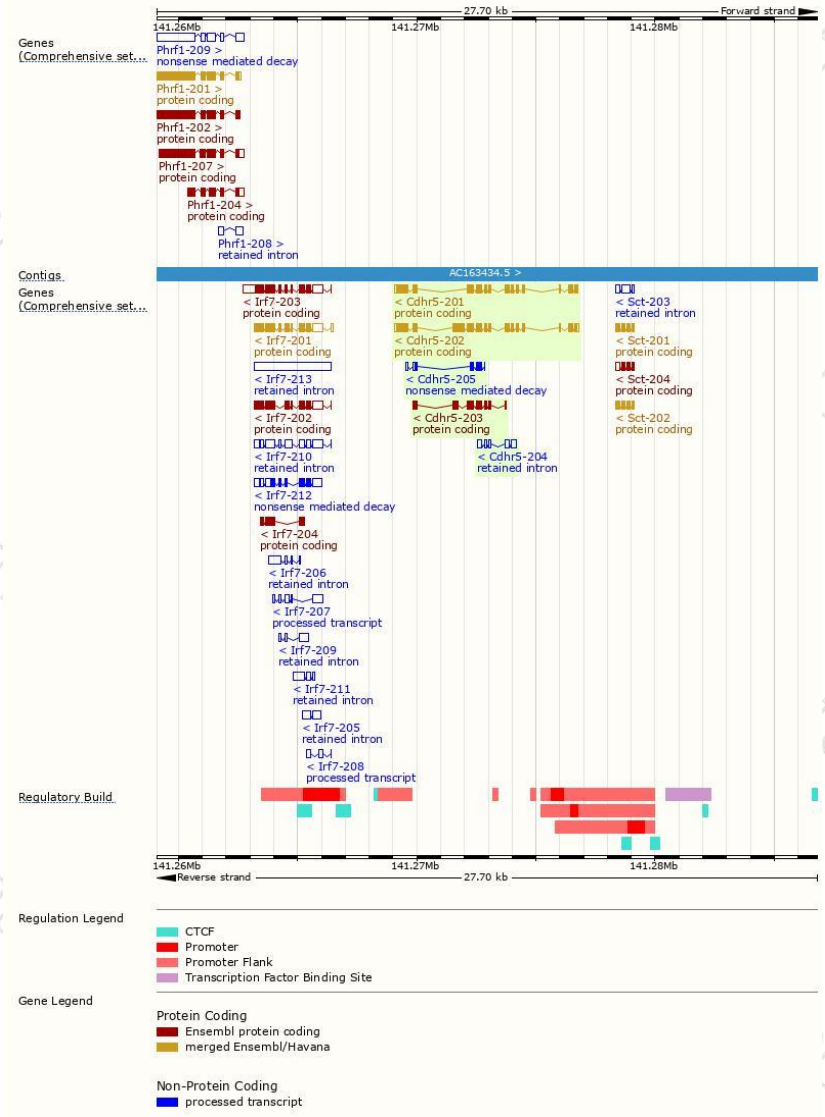
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdhr5-202	ENSMUST00000167263.8	2628	831aa	Protein coding	CCDS52442	A0PJK7	TSL:1 GENCODE basic APPRIS ALT2
Cdhr5-201	ENSMUST00000080654.6	2133	669aa	Protein coding	CCDS22006	Q8VHF2	TSL:1 GENCODE basic APPRIS P3
Cdhr5-203	ENSMUST00000210124.1	1001	333aa	Protein coding	-	A0A1B0GSY5	CDS 5' and 3' incomplete TSL:5
Cdhr5-205	ENSMUST00000210773.1	554	131aa	Nonsense mediated decay	-	A0A1B0GRD3	CDS 5' incomplete TSL:5
Cdhr5-204	ENSMUST00000210386.1	755	No protein	Retained intron	-	-	TSL:3

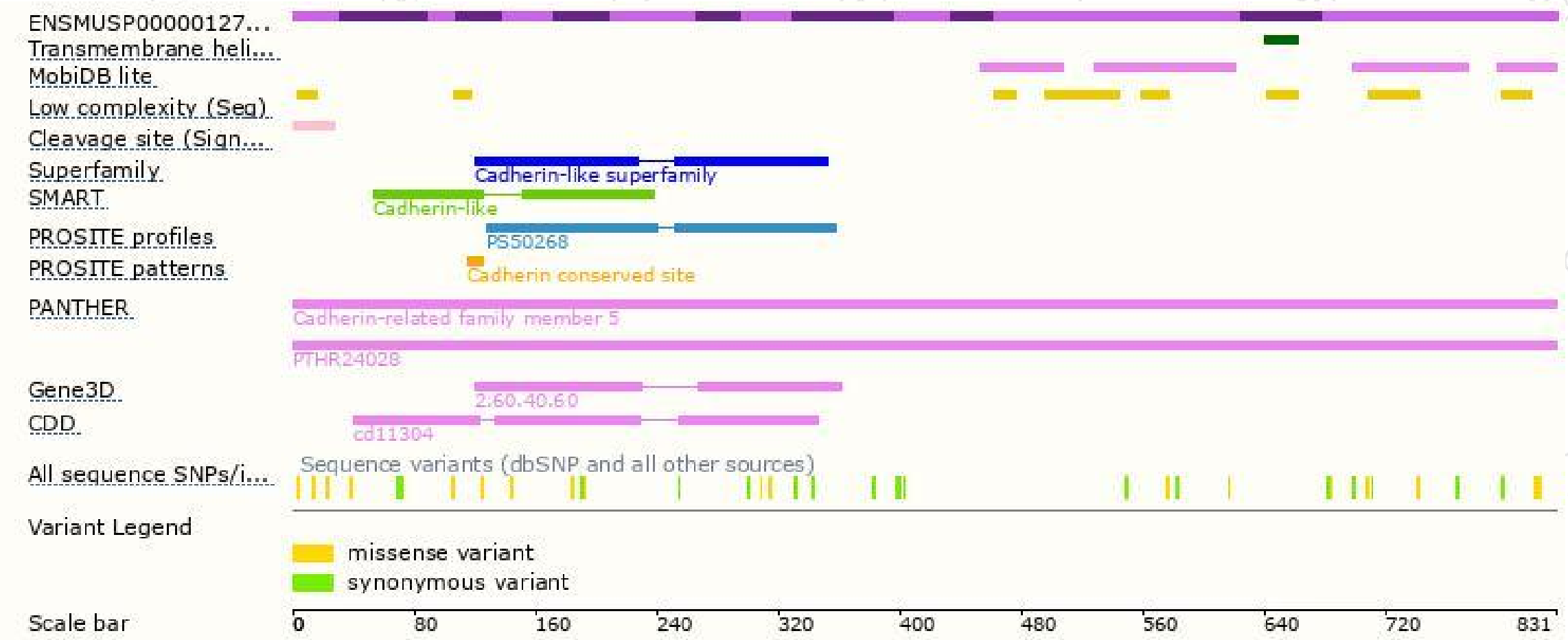
The strategy is based on the design of *Cdhr5-202* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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