

Cdhr1 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2020-2-25

Project Overview

Project Name

Cdhr1

Project type

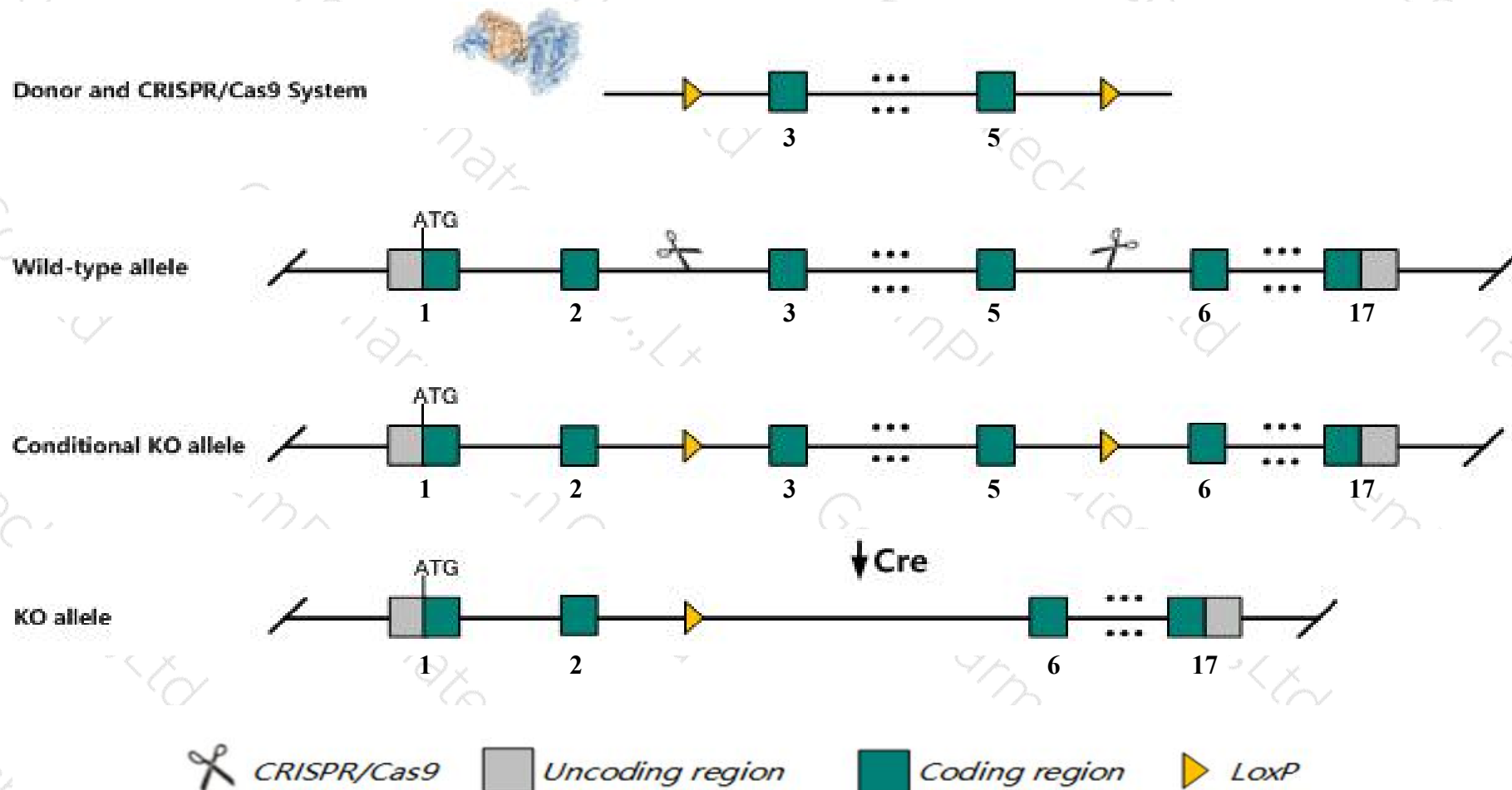
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdhr1* gene. The schematic diagram is as follows:



Technical routes

- The *Cdhr1* gene has 1 transcript. According to the structure of *Cdhr1* gene, exon3-exon5 of *Cdhr1-201* (ENSMUST00000022337.10) transcript is recommended as the knockout region. The region contains 287bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cdhr1* 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.

- According to the existing MGI data, mice homozygous for a targeted null mutation exhibit progressive degeneration of retinal photoreceptor cells and a slight reduction in light responses.
- The *Cdhr1* gene is located on the Chr14. 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)

Cdhr1 cadherin-related family member 1 [*Mus musculus* (house mouse)]

Gene ID: 170677, updated on 11-Sep-2019

Summary

Official Symbol Cdhr1 provided by [MGI](#)
Official Full Name cadherin-related family member 1 provided by [MGI](#)
Primary source [MGI:MGI:2157782](#)
See related [Ensembl:ENSMUSG00000021803](#)
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 Prcad; Pcdh21; mKIAA1775
Expression Biased expression in frontal lobe adult (RPKM 31.5), CNS E18 (RPKM 5.0) and 2 other tissues [See more](#)
Orthologs [human](#) [all](#)

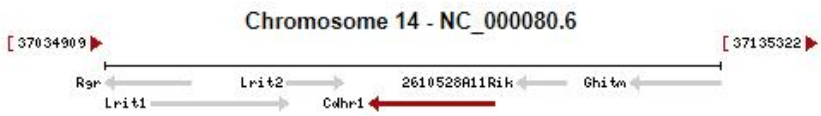
Genomic context

Location: 14; 14 B

See Cdhr1 in [Genome Data Viewer](#)

Exon count: 17

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	14	NC_000080.6 (37077849..37098347, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	14	NC_000080.5 (37891035..37911497, complement)

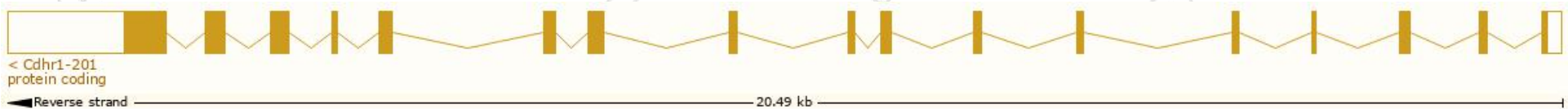


Transcript information (Ensembl)

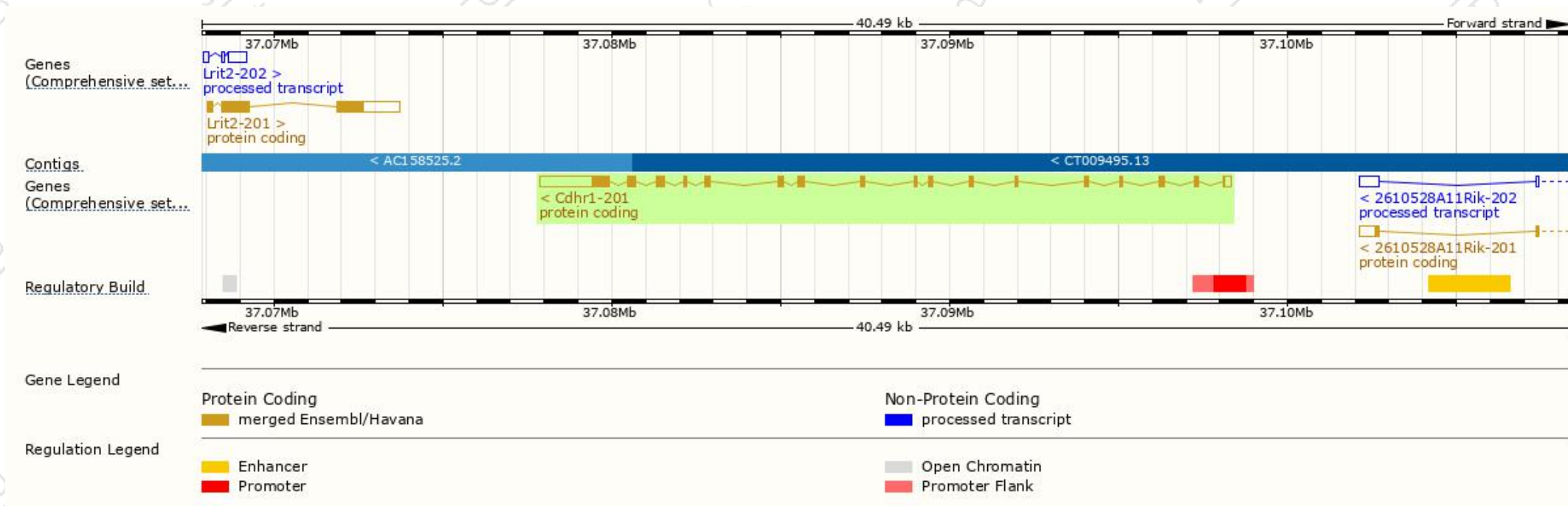
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdhr1-201	ENSMUST00000022337.10	4332	859aa	Protein coding	CCDS26952	Q8VHP6	TSL:1 GENCODE basic APPRIS P1

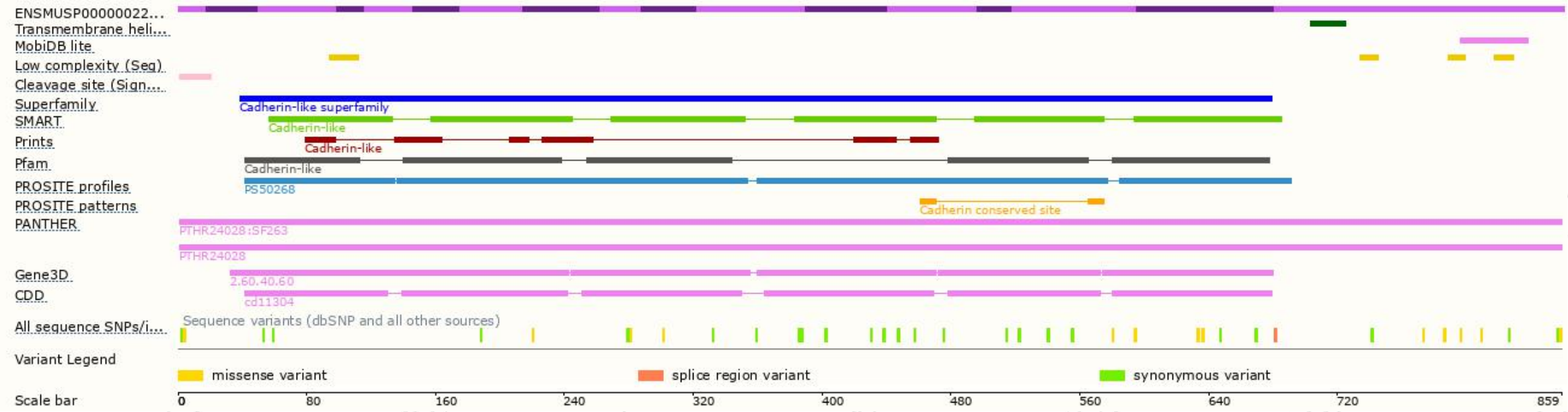
The strategy is based on the design of *Cdhr1-201* transcript, the transcription is shown below:



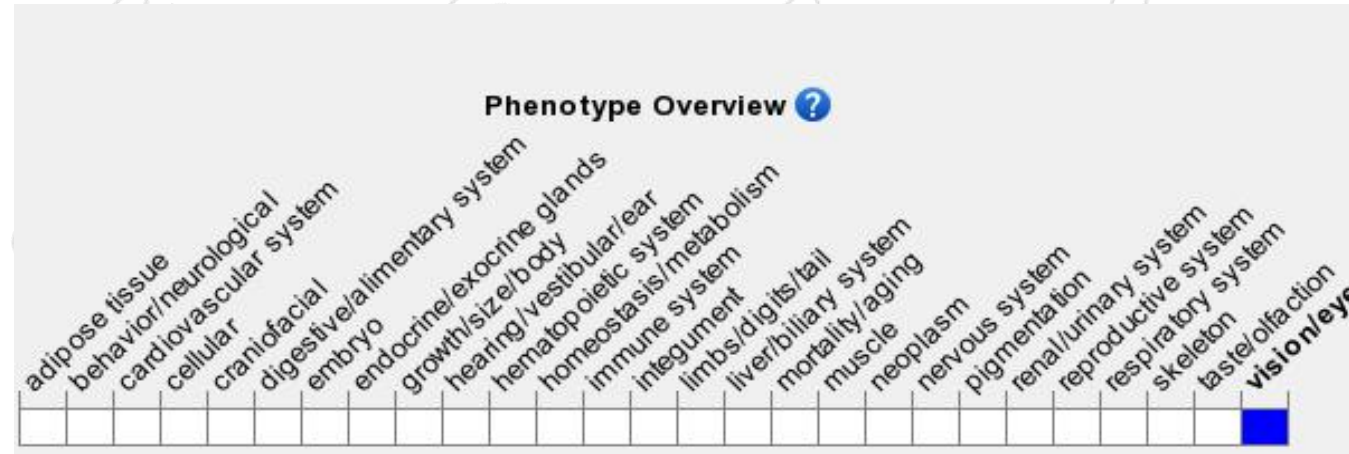
Genomic location distribution



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/>).

According to the existing MGI data, mice homozygous for a targeted null mutation exhibit progressive degeneration of retinal photoreceptor cells and a slight reduction in light responses.

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

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