

***Rdh11* Cas9-CKO Strategy**

Designer:

Huimin Su

Reviewer:

Ruirui Zhang

Design Date:

2020/2/14

Project Overview

Project Name

Rdh11

Project type

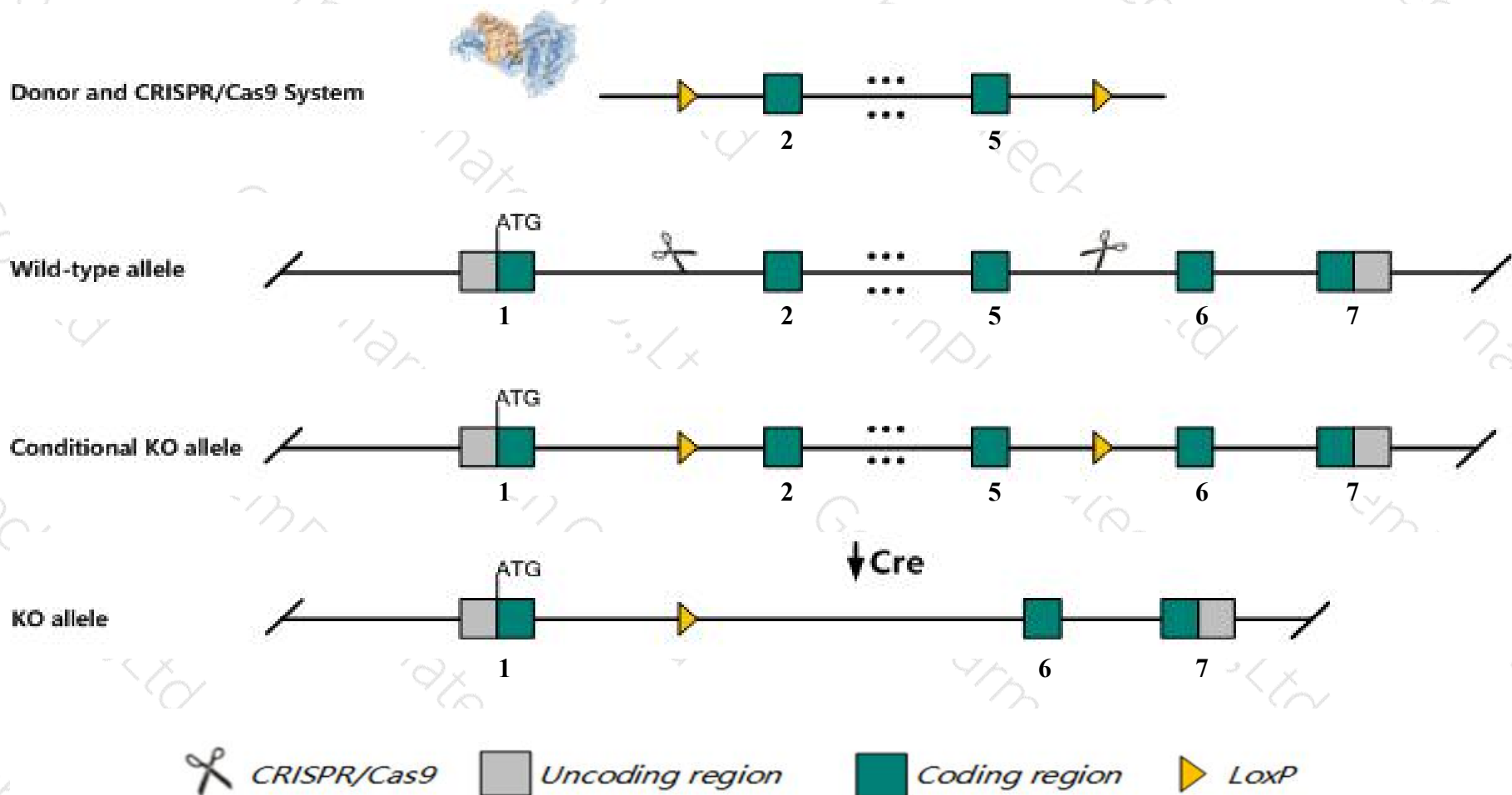
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rdh11* gene. The schematic diagram is as follows:



- The *Rdh11* gene has 3 transcripts. According to the structure of *Rdh11* gene, exon2-exon5 of *Rdh11*-203 (ENSMUST00000161204.7) transcript is recommended as the knockout region. The region contains 590bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rdh11* 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 disruptions in this gene exhibit delayed dark adaptation.
- The *Rdh11* gene is located on the Chr12. 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.

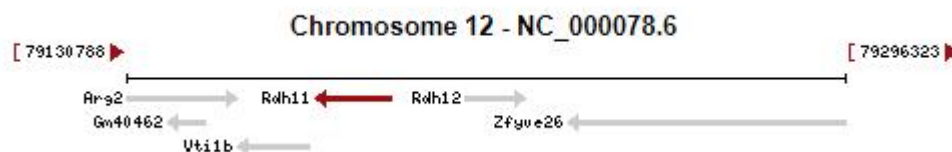
Gene information (NCBI)

Rdh11 retinol dehydrogenase 11 [*Mus musculus* (house mouse)]

Gene ID: 17252, updated on 11-Feb-2020

Summary

Official Symbol	Rdh11 provided by MGI
Official Full Name	retinol dehydrogenase 11 provided by MGI
Primary source	MGI:MGI:102581
See related	Ensembl:ENSMUSG00000066441
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	Mdt1; Psdr1; SCALD; ralR1; ArsdR1; C85936; CGI-82; HCBP12; M42C60; Ube-1c; UBE-1c1; AI428145; AU045252; 2610319N22Rik
Expression	Broad expression in testis adult (RPKM 59.5), liver E18 (RPKM 35.6) and 22 other tissues See more
Orthologs	human all

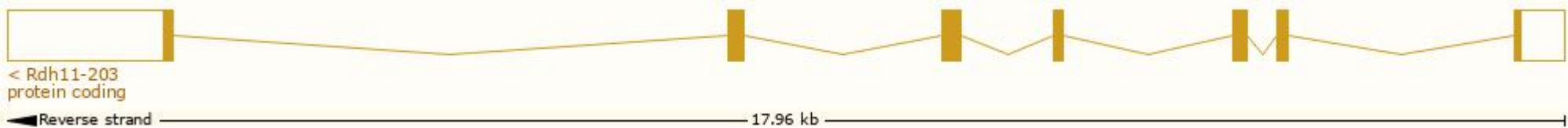


Transcript information (Ensembl)

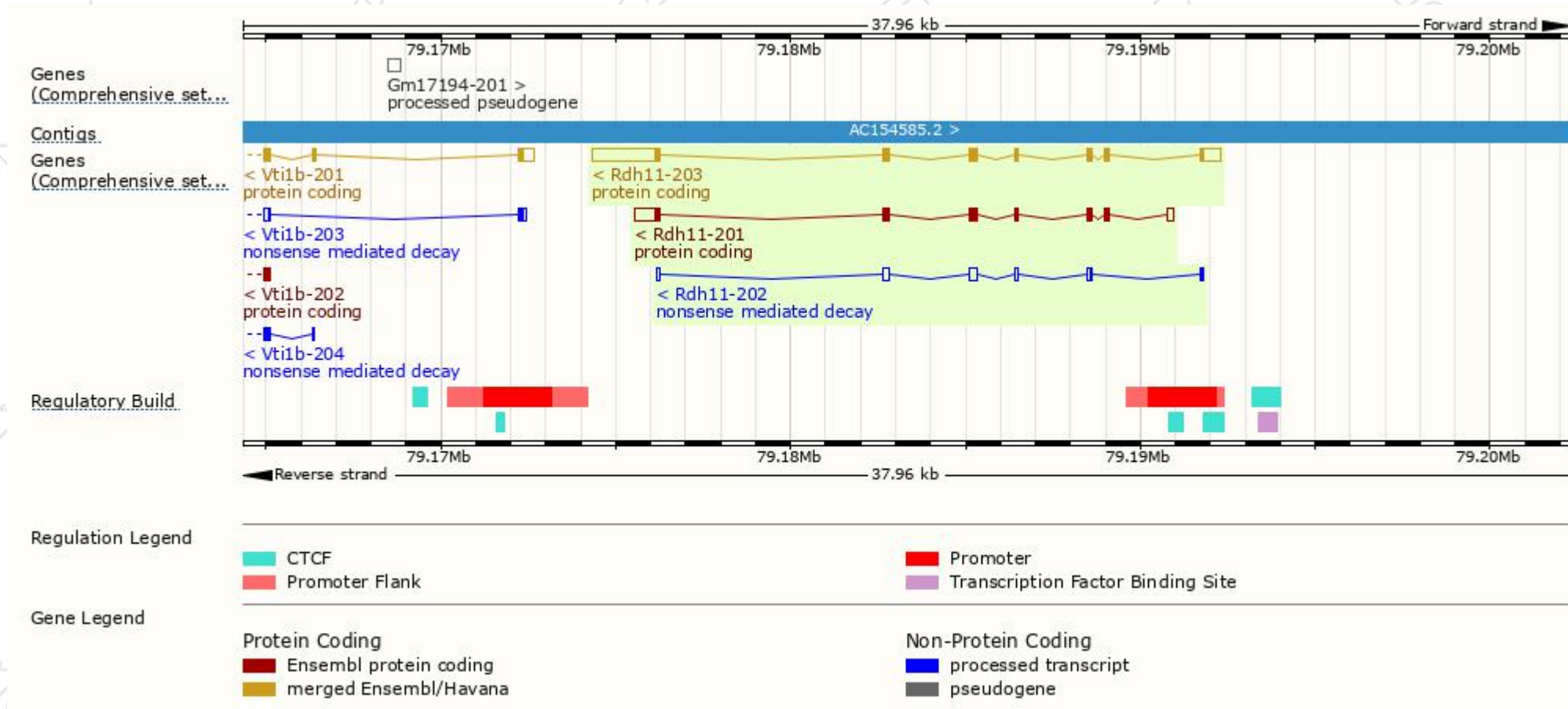
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rdh11-203	ENSMUST00000161204.7	3262	316aa	Protein coding	CCDS36480	Q9QYF1	TSL:1 GENCODE basic APPRIS P2
Rdh11-201	ENSMUST00000085254.6	1673	300aa	Protein coding	-	Q9R1R8	TSL:1 GENCODE basic APPRIS ALT2
Rdh11-202	ENSMUST00000159500.1	815	40aa	Nonsense mediated decay	-	E0CYX0	TSL:3

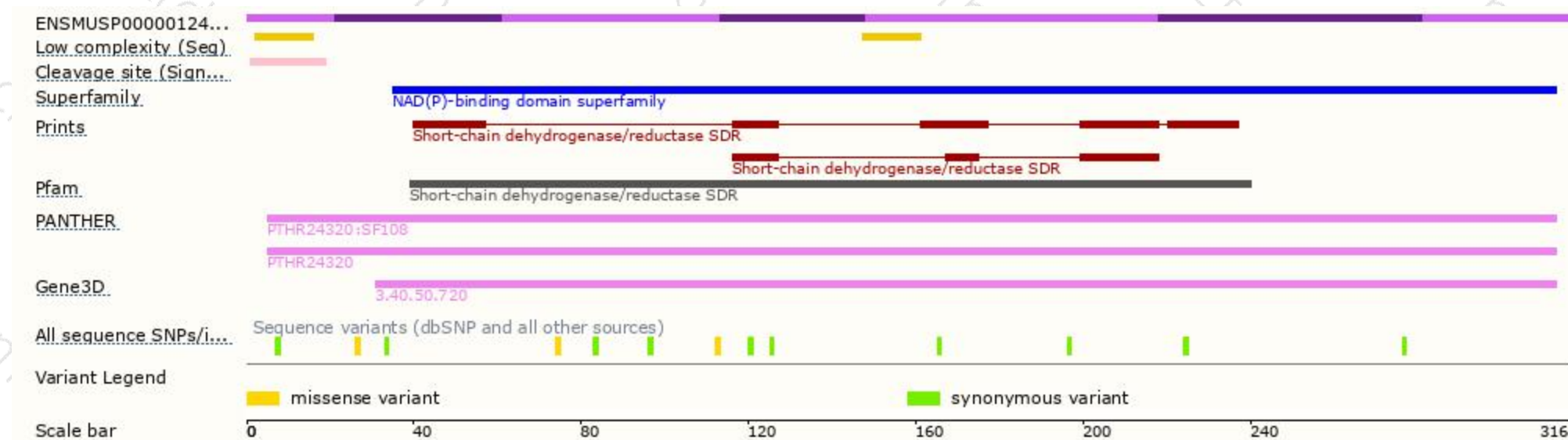
The strategy is based on the design of *Rdh11-203* transcript,The transcription is shown below



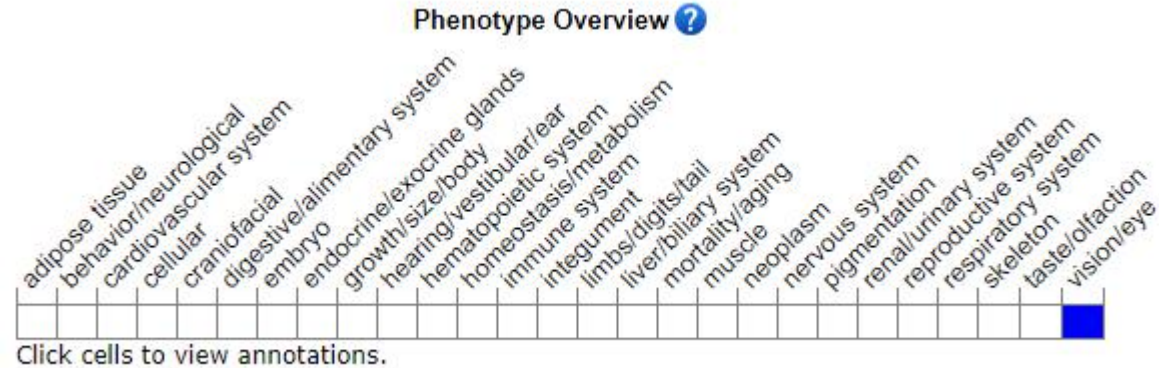
Genomic location distribution



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 disruptions in this gene exhibit delayed dark adaptation.

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

Tel: 400-9660890

