

Aldh1a2 Cas9-KO Strategy

Designer: Huimin Su

Reviewer: Ruiuri Zhang

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Project Overview

Project Name

Aldh1a2

Project type

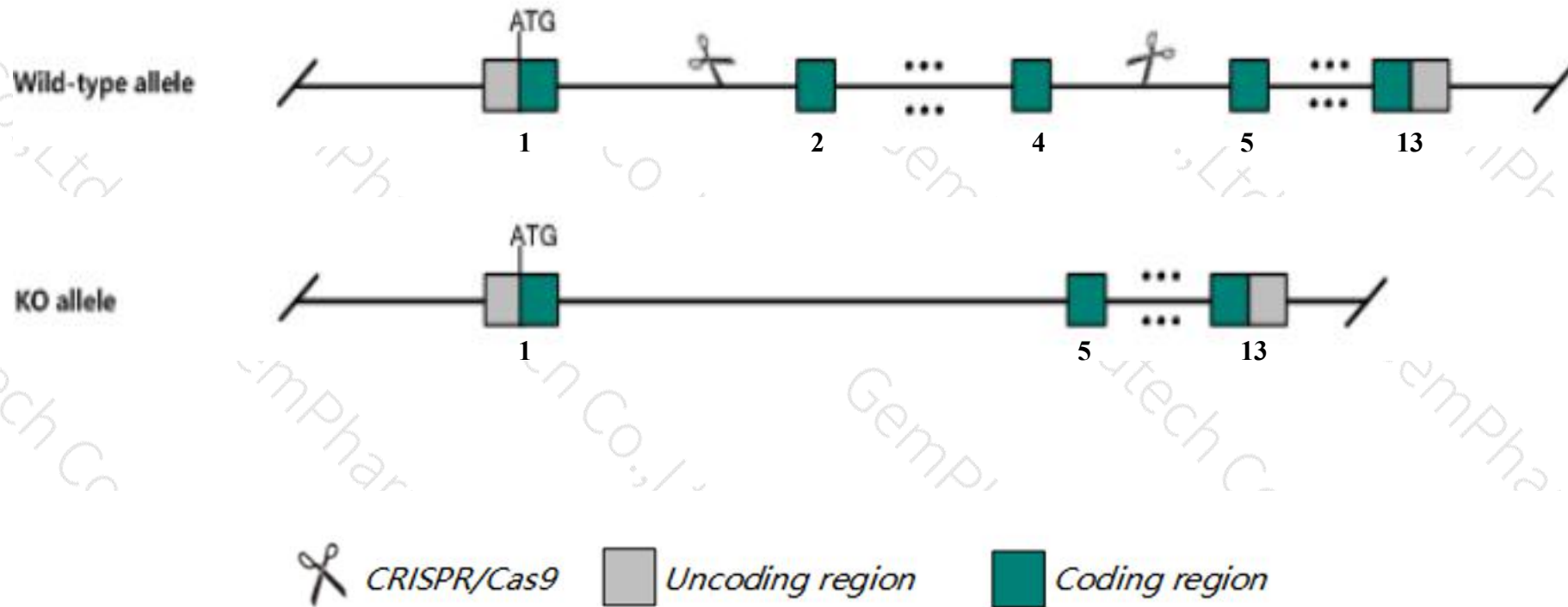
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Aldh1a2* gene. The schematic diagram is as follows:



- The *Aldh1a2* gene has 1 transcript. According to the structure of *Aldh1a2* gene, exon2-exon4 of *Aldh1a2-201* (ENSMUST00000034723.5) transcript is recommended as the knockout region. The region contains 376bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Aldh1a2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, homozygotes for null mutations are largely devoid of retinoic acid and die by embryonic day 10.5 with impaired hindbrain development, failure to turn, lack of limb buds, heart abnormalities, reduced otocysts and a truncated frontonasal region.
- The *Aldh1a2* gene is located on the Chr9. 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)

Aldh1a2 aldehyde dehydrogenase family 1, subfamily A2 [Mus musculus (house mouse)]

Gene ID: 19378, updated on 13-Mar-2020

Summary

Official Symbol Aldh1a2 provided by [MGI](#)

Official Full Name aldehyde dehydrogenase family 1, subfamily A2 provided by [MGI](#)

Primary source [MGI:MGI:107928](#)

See related [Ensembl:ENSMUSG00000013584](#)

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 AV116159, Aldh1a7, Raldh1, Raldh2

Expression Broad expression in testis adult (RPKM 26.6), subcutaneous fat pad adult (RPKM 13.9) and 20 other tissues [See more](#)

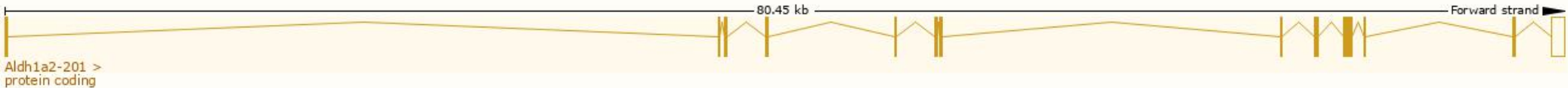
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

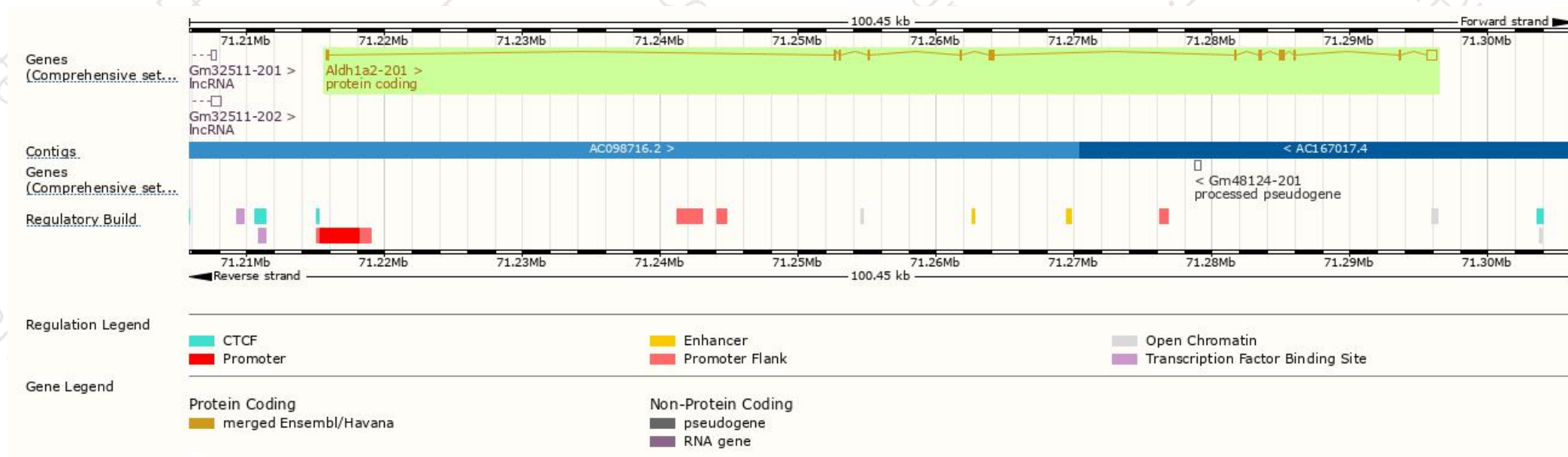
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Aldh1a2-201	ENSMUST00000034723.5	2264	518aa	Protein coding	CCDS52852	Q62148	TSL:1 Gencode basic APPRIS P1

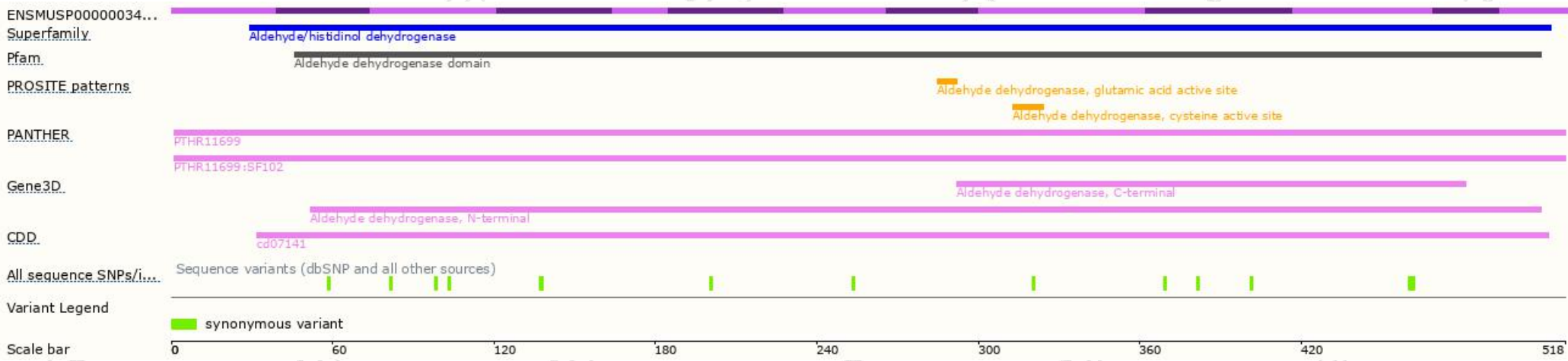
The strategy is based on the design of *Aldh1a2-201* transcript, the transcription is shown below



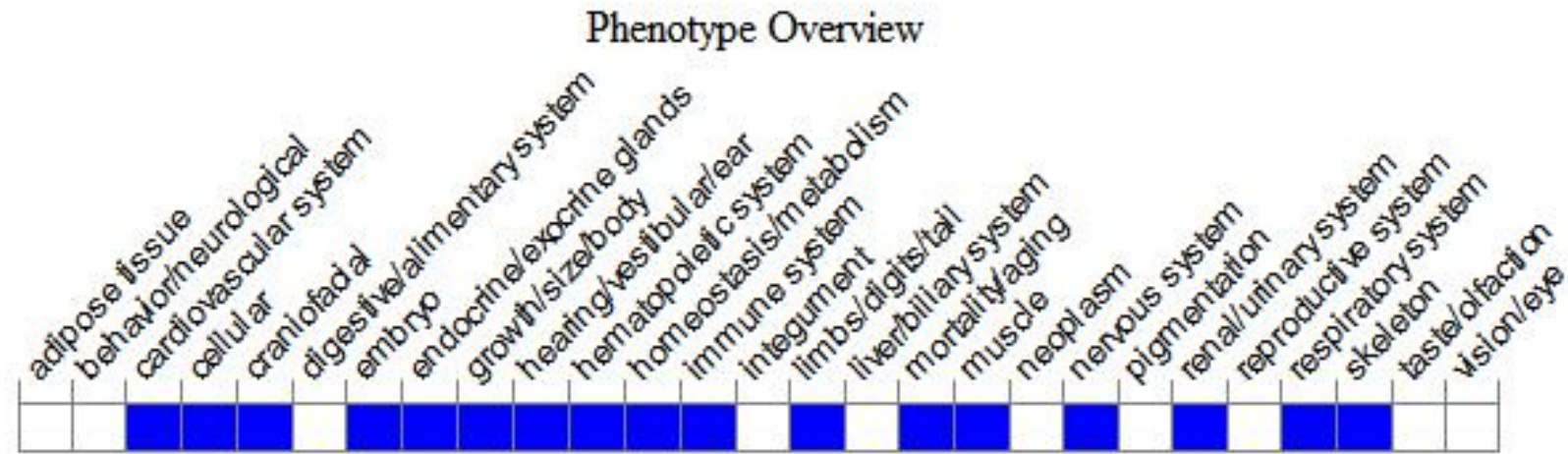
Genomic location distribution



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, homozygotes for null mutations are largely devoid of retinoic acid and die by embryonic day 10.5 with impaired hindbrain development, failure to turn, lack of limb buds, heart abnormalities, reduced otocysts and a truncated frontonasal region.

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

Tel: 400-9660890

