

Aldh18a1 Cas9-CKO Strategy

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Project Overview

Project Name

Aldh18a1

Project type

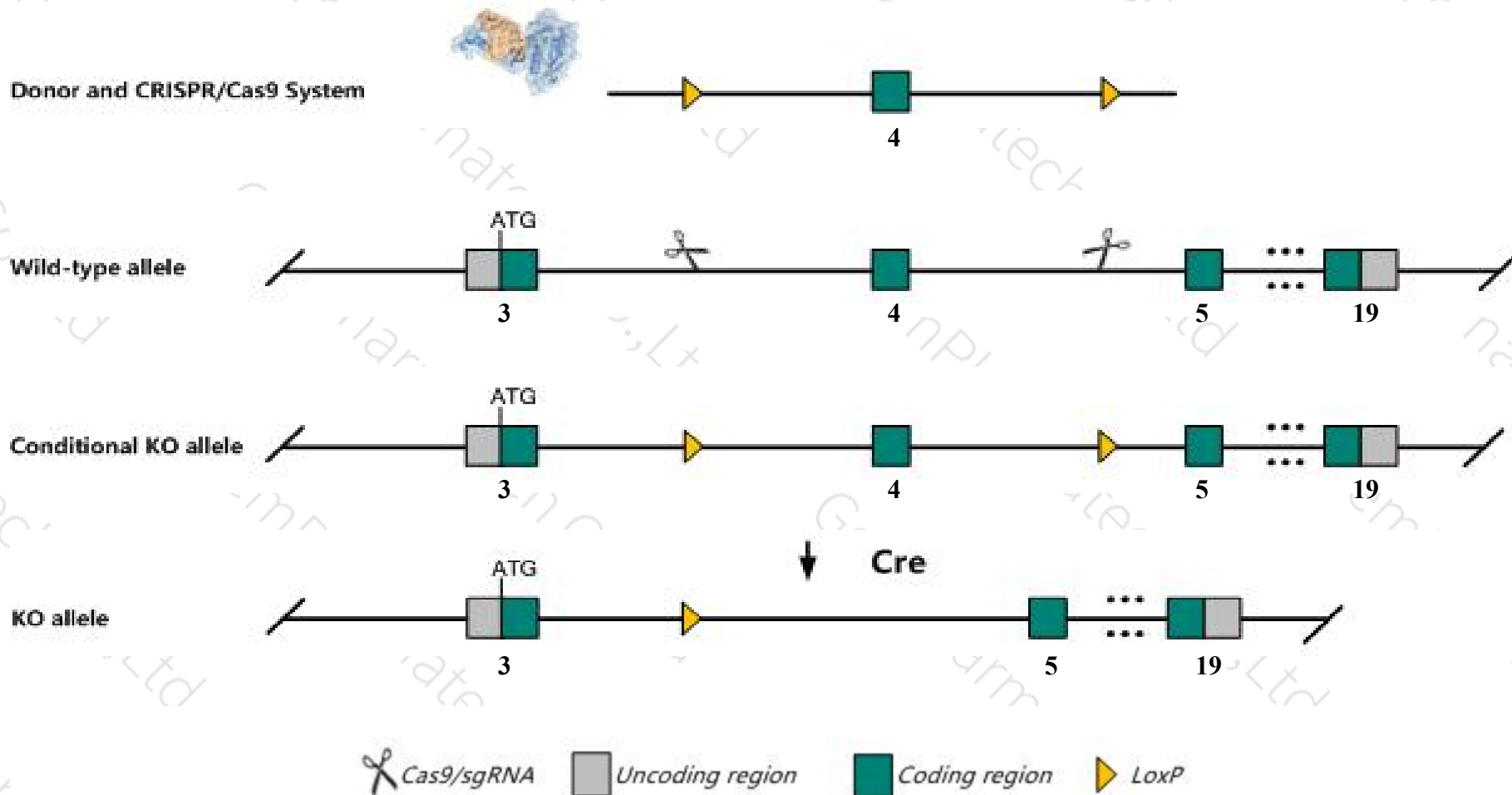
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Aldh18a1* gene. The schematic diagram is as follows:



Technical routes

- The *Aldh18a1* gene has 8 transcripts. According to the structure of *Aldh18a1* gene, exon4 of *Aldh18a1-201* (ENSMUST00000025979.12) transcript is recommended as the knockout region. The region contains 215bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Aldh18a1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- Transcript *Aldh18a1*-204/206/208 may not be affected.
- The *Aldh18a1* gene is located on the Chr19. 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.

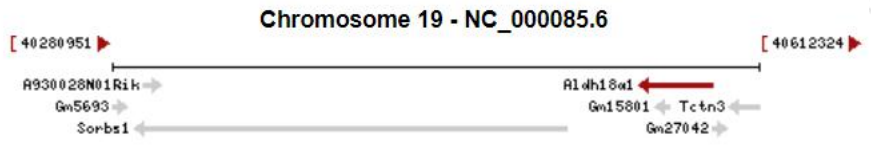
Gene information (NCBI)

Aldh18a1 aldehyde dehydrogenase 18 family, member A1 [*Mus musculus* (house mouse)]

Gene ID: 56454, updated on 10-Oct-2019

Summary

- Official Symbol** Aldh18a1 provided by MGI
- Official Full Name** aldehyde dehydrogenase 18 family, member A1 provided by MGI
- Primary source** [MGI:MGI:1888908](#)
- See related** [Ensembl:ENSMUSG00000025007](#)
- 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** Pycs; AI429789; 2810433K04Rik
- Expression** Ubiquitous expression in large intestine adult (RPKM 35.4), placenta adult (RPKM 35.4) and 25 other tissues [See more](#)
- Orthologs** [human](#) [all](#)



Transcript information (Ensembl)

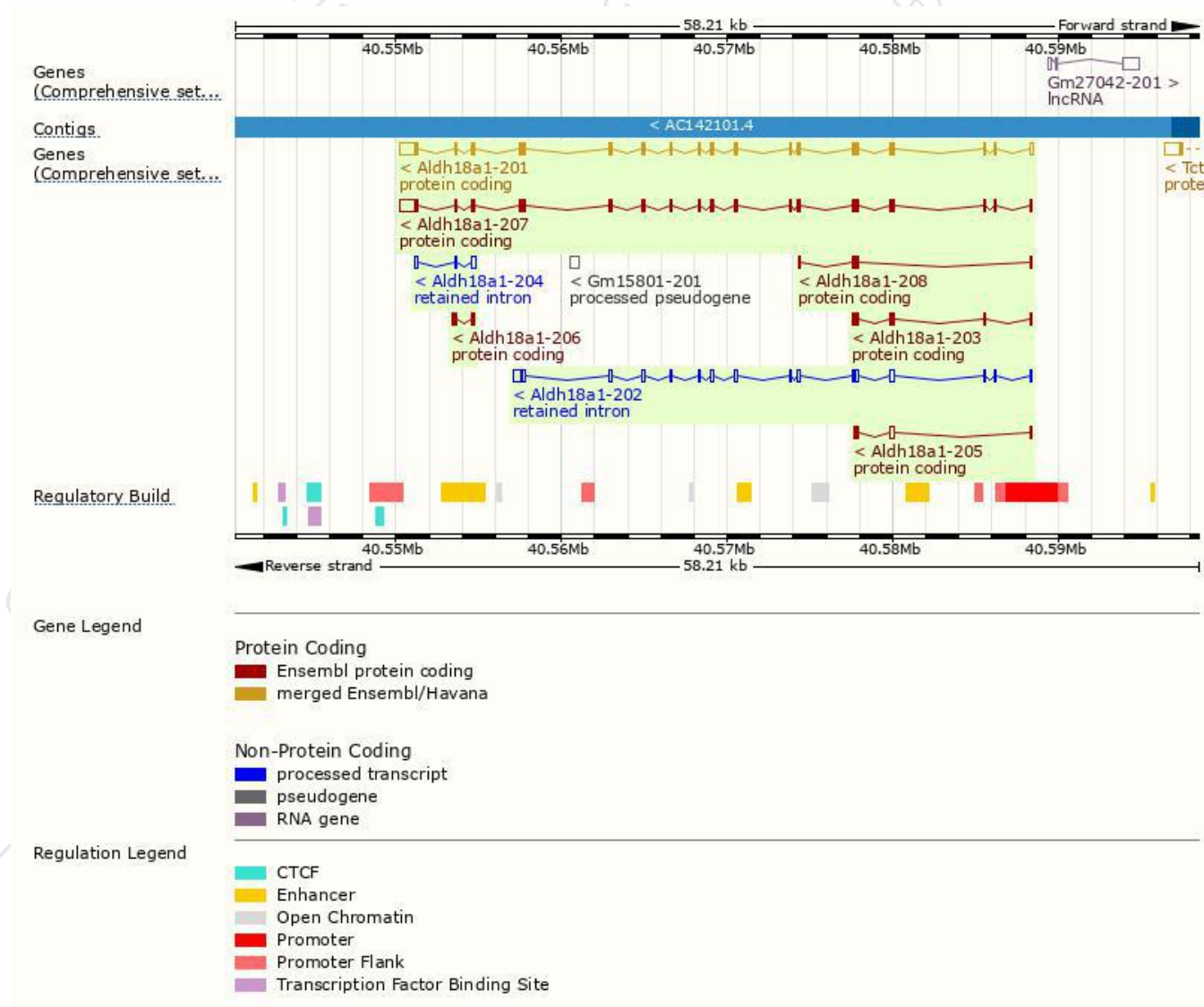
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Aldh18a1-201	ENSMUST00000025979.12	3527	795aa	ENSMUSP00000025979.6	Protein coding	CCDS29803	Q9Z110	TSL:1 GENCODE basic APPRIS P3
Aldh18a1-207	ENSMUST00000176939.7	3427	793aa	ENSMUSP00000135426.1	Protein coding	CCDS57144	Q9Z110	TSL:1 GENCODE basic APPRIS ALT1
Aldh18a1-203	ENSMUST00000149476.2	650	173aa	ENSMUSP00000115429.2	Protein coding	-	D3Z0B4	CDS 3' incomplete TSL:3
Aldh18a1-205	ENSMUST00000175932.1	463	48aa	ENSMUSP00000135417.1	Protein coding	-	H3BKJ8	CDS 3' incomplete TSL:3
Aldh18a1-208	ENSMUST00000176955.7	356	83aa	ENSMUSP00000135759.1	Protein coding	-	H3BLE8	CDS 3' incomplete TSL:3
Aldh18a1-206	ENSMUST00000175967.1	344	100aa	ENSMUSP00000135419.1	Protein coding	-	H3BKK0	CDS 5' incomplete TSL:1
Aldh18a1-202	ENSMUST00000134749.7	2493	No protein	-	Retained intron	-	-	TSL:1
Aldh18a1-204	ENSMUST00000155613.1	548	No protein	-	Retained intron	-	-	TSL:1

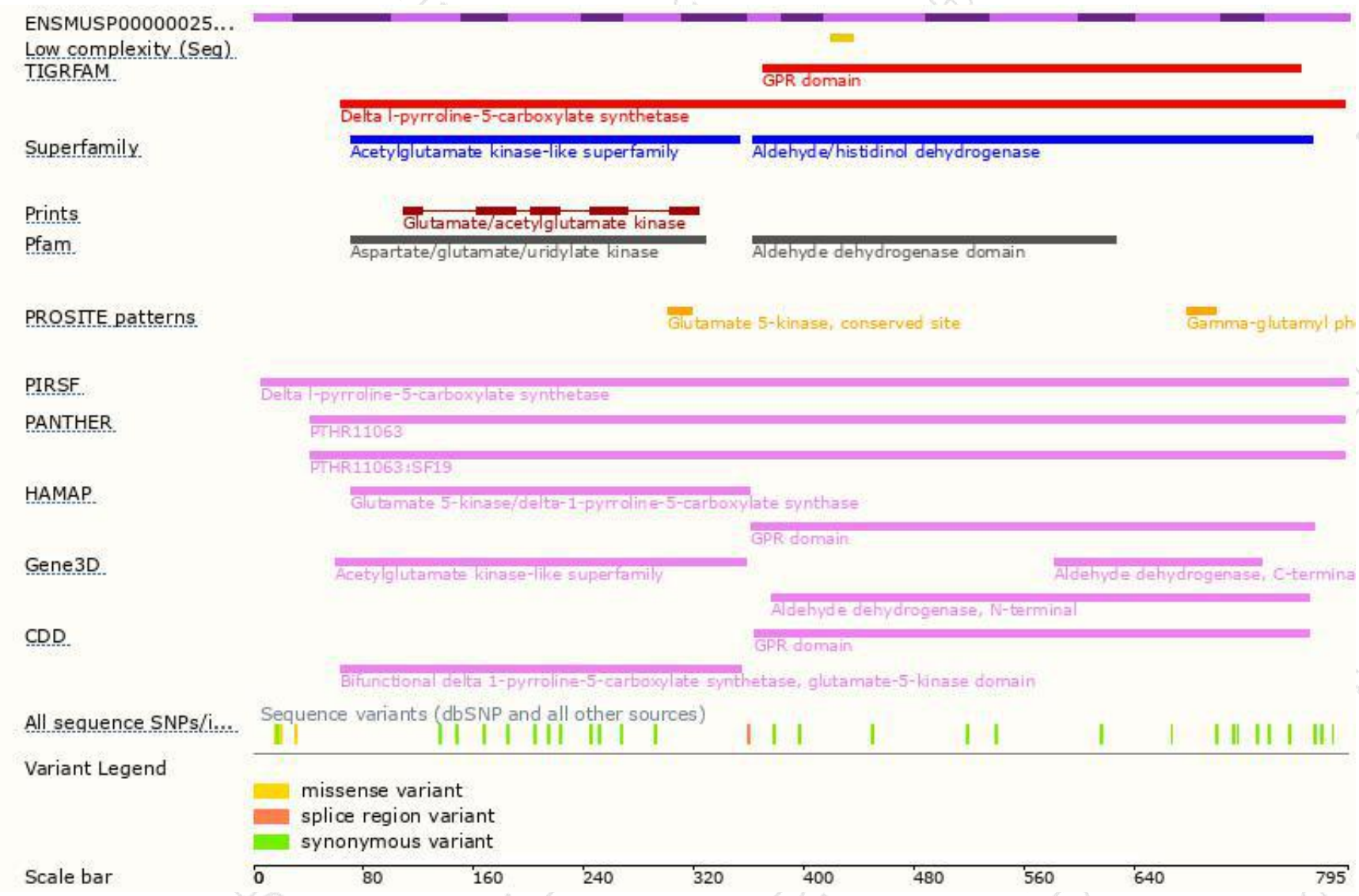
The strategy is based on the design of *Aldh18a1-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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