Aldh9a1 Cas9-CKO Strategy

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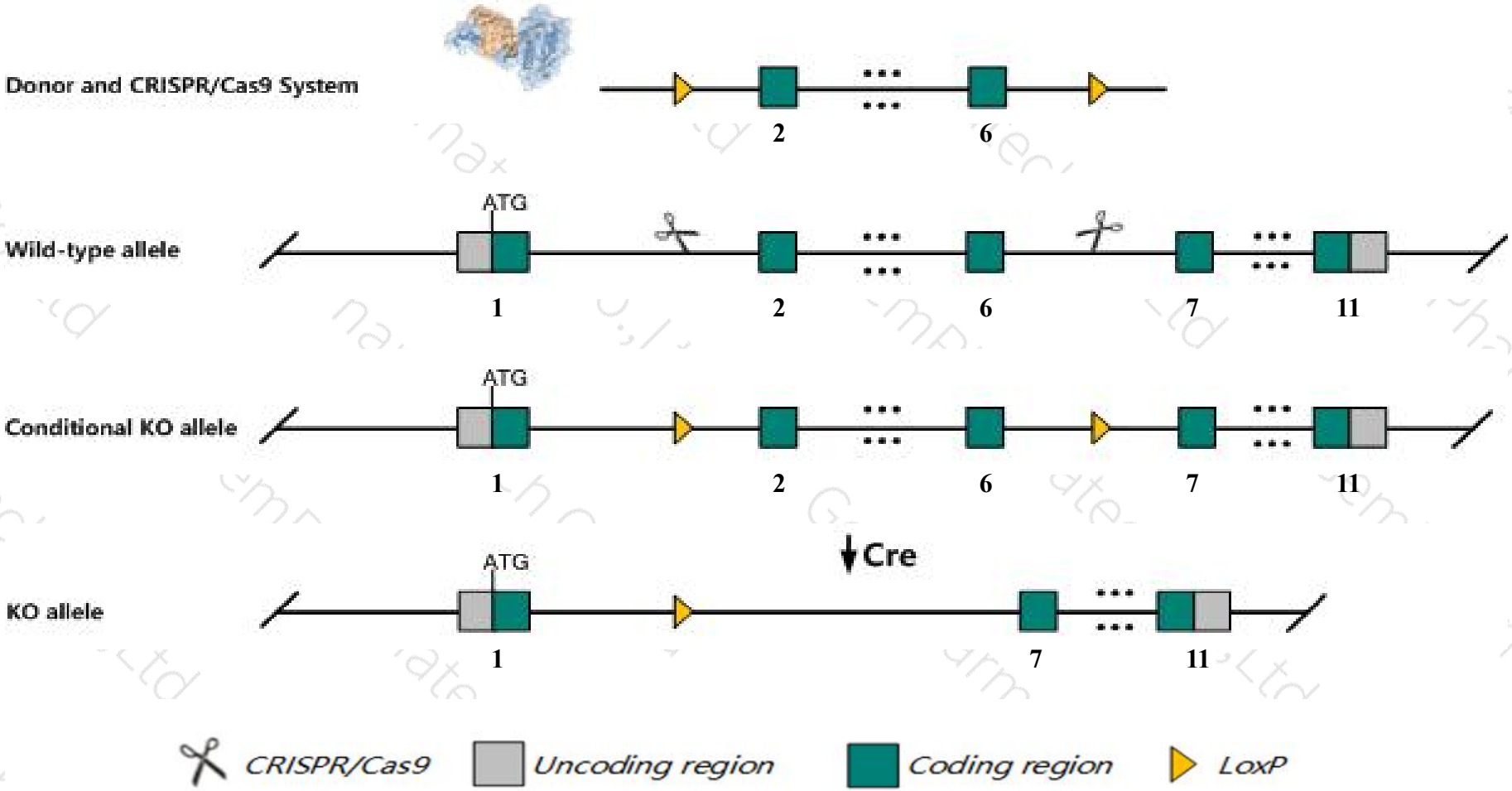
Project Overview

Project Name	***Aldh9a1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Aldh9a1* gene. The schematic diagram is as follows:



Technical routes

- The *Aldh9a1* gene has 4 transcripts. According to the structure of *Aldh9a1* gene, exon2-exon6 of *Aldh9a1-201* (ENSMUST00000028004.10) transcript is recommended as the knockout region.The region contains 749bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Aldh9a1* 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.

Notice

➢ The *Aldh9a1* gene is located on the Chr1. 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）

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Aldh9a1 aldehyde dehydrogenase 9, subfamily A1 [Mus musculus (house mouse)]

Gene ID: 56752, updated on 3-Feb-2019

Summary

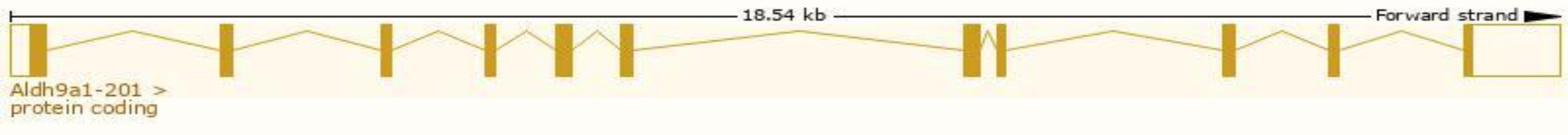
Official Symbol	Aldh9a1 provided by MGI
Official Full Name	aldehyde dehydrogenase 9, subfamily A1 provided byMGI
Primary source	MGI:MGI:1861622
See related	Ensembl:ENSMUSG00000026687
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA139417, Abaldh, ESTM40, TMABA-DH, Tmabadh
Expression	Ubiquitous expression in kidney adult (RPKM 54.7), liver adult (RPKM 50.7) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

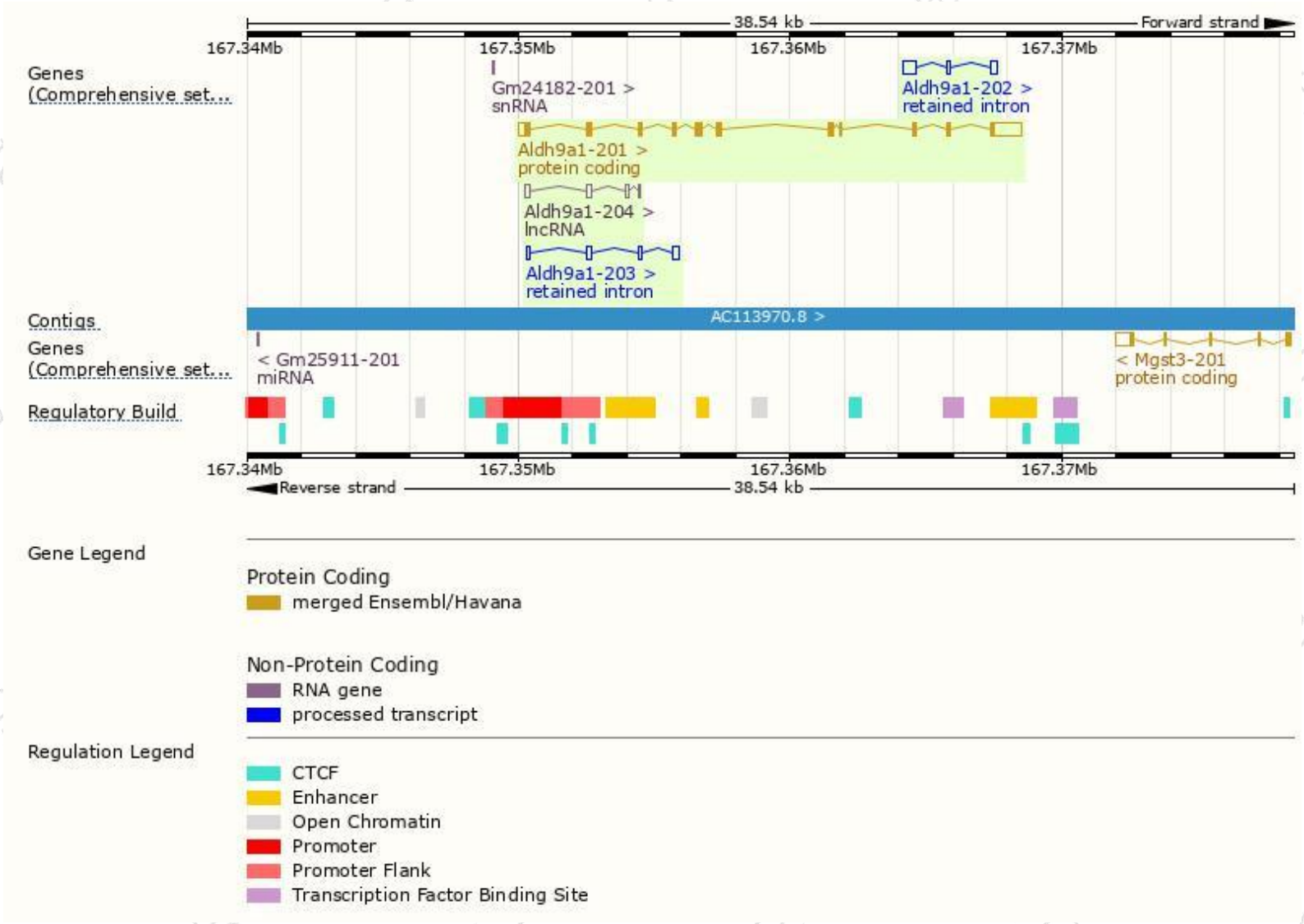
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Aldh9a1-201	ENSMUST00000028004.10	2835	518aa	Protein coding	CCDS35765	Q3U367	TSL:1 GENCODE basic APPRIS P1
Aldh9a1-202	ENSMUST00000191715.1	840	No protein	Retained intron	-	-	TSL:1
Aldh9a1-203	ENSMUST00000193091.1	600	No protein	Retained intron	-	-	TSL:2
Aldh9a1-204	ENSMUST00000194843.5	511	No protein	lncRNA	-	-	TSL:3

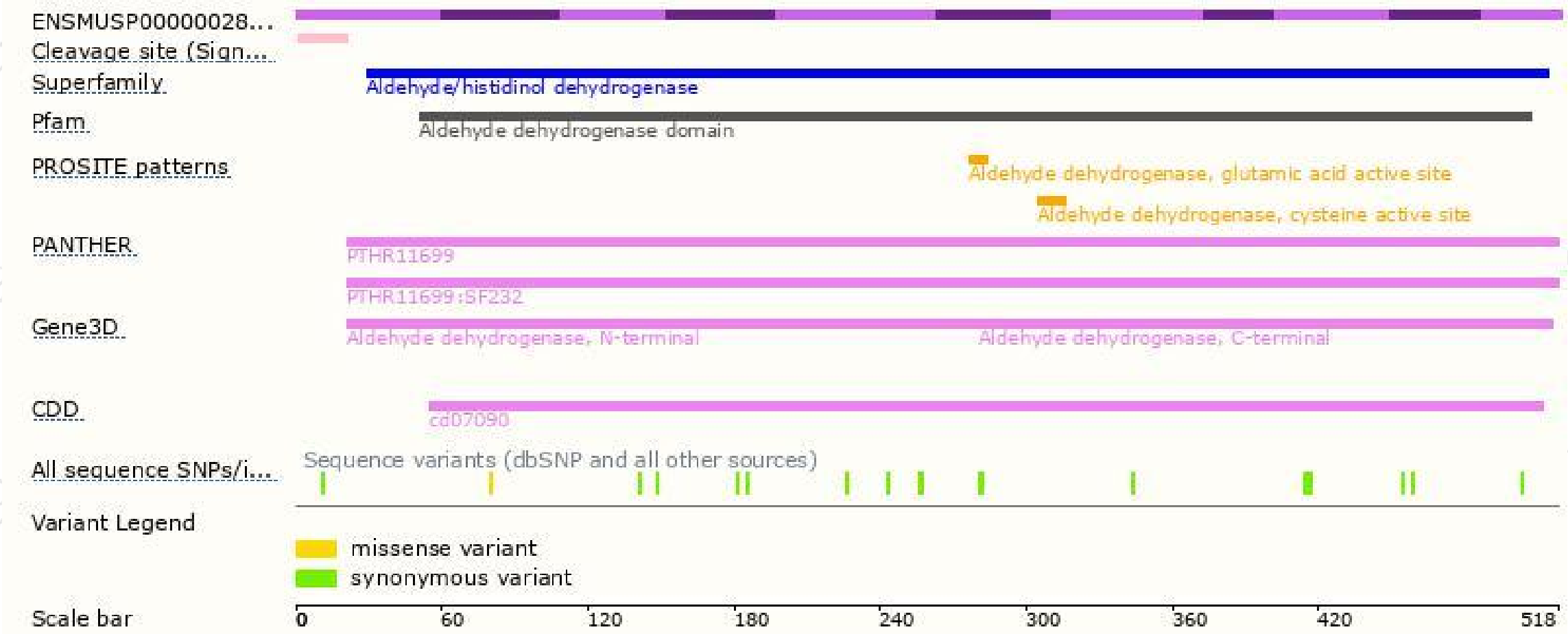
The strategy is based on the design of *Aldh9a1-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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