

Aldh1b1 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Aldh1b1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Aldh1b1* gene. The schematic diagram is as follows:



- The *Aldh1b1* gene has 2 transcripts. According to the structure of *Aldh1b1* gene, exon2 of *Aldh1b1-201* (ENSMUST00000044384.4) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Aldh1b1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit increased fasting circulating glucose levels and decreased blood acetaldehyde clearance. Mice homozygous for a different knock-out allele display defects in beta cell development and functionality, and develop glucose intolerance, age-dependent hyperglycemia, and insulin resistance.
- The *Aldh1b1* gene is located on the Chr4. 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)

Aldh1b1 aldehyde dehydrogenase 1 family, member B1 [Mus musculus (house mouse)]

Gene ID: 72535, updated on 19-Mar-2019

Summary



Official Symbol	Aldh1b1 provided by MGI
Official Full Name	aldehyde dehydrogenase 1 family, member B1 provided by MGI
Primary source	MGI:MGI:1919785
See related	Ensembl:ENSMUSG00000035561
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	2700007F14Rik
Expression	Biased expression in large intestine adult (RPKM 182.6), duodenum adult (RPKM 64.0) and 9 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

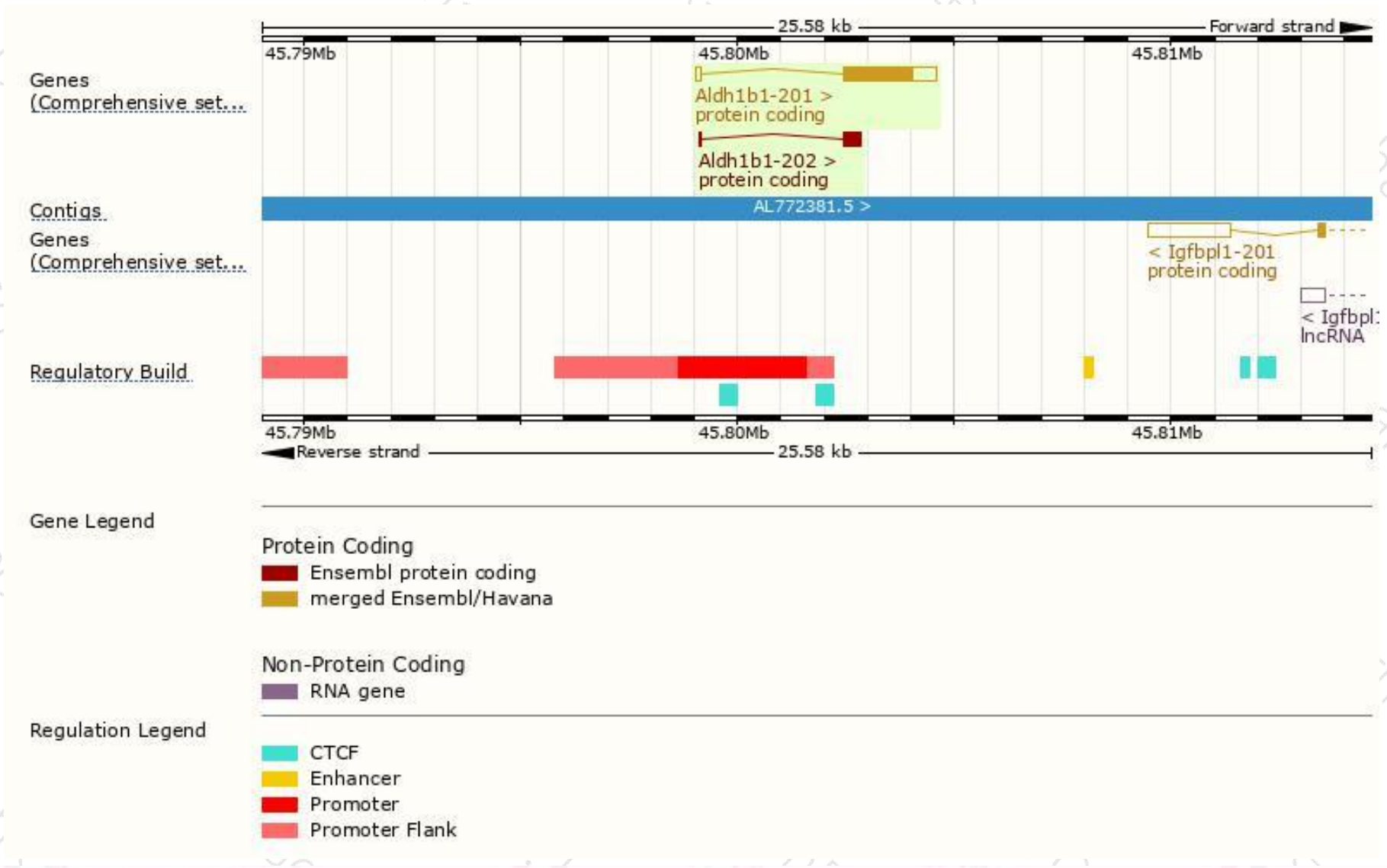
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Aldh1b1-201	ENSMUST00000044384.4	2298	519aa	Protein coding	CCDS18139	Q9CZS1	TSL:1 GENCODE basic APPRIS P1
Aldh1b1-202	ENSMUST00000172750.1	445	131aa	Protein coding	-	G3UYH1	CDS 3' incomplete TSL:2

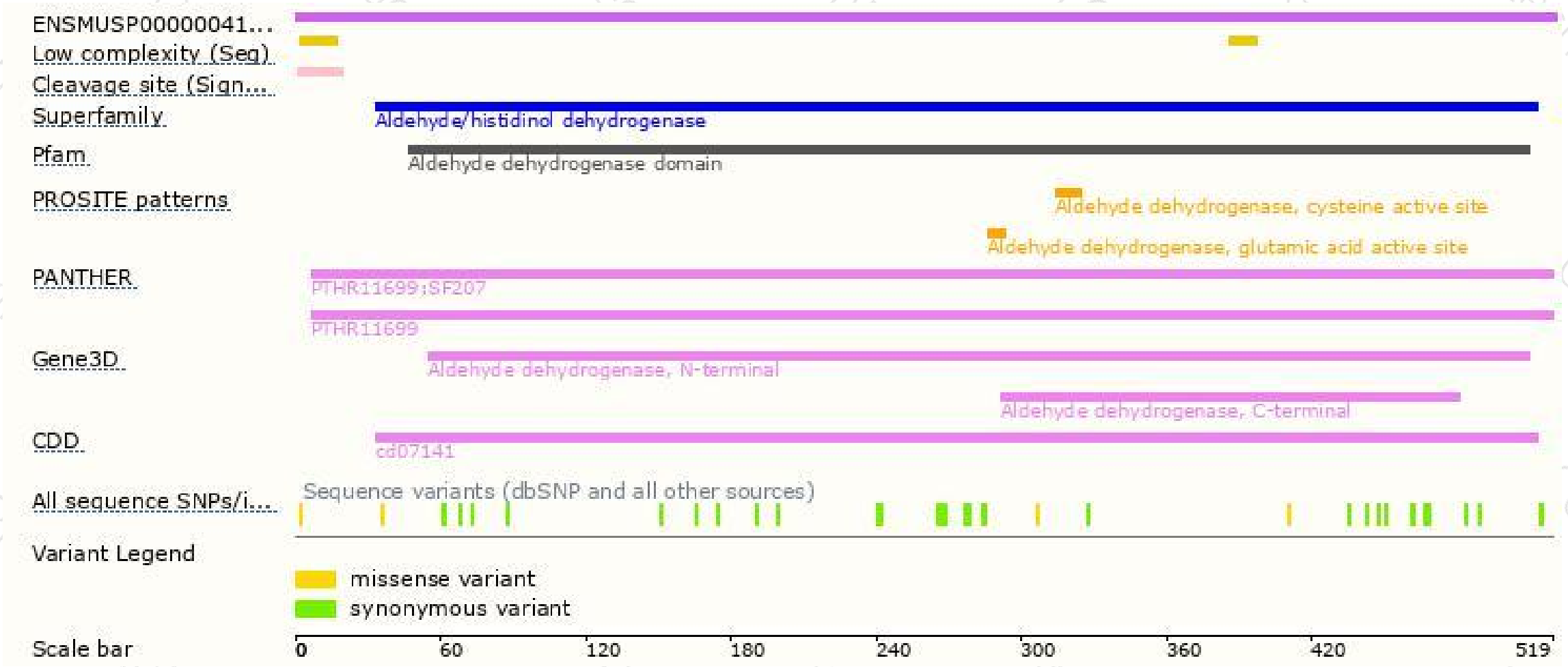
The strategy is based on the design of *Aldh1b1-201* transcript,The transcription is shown below



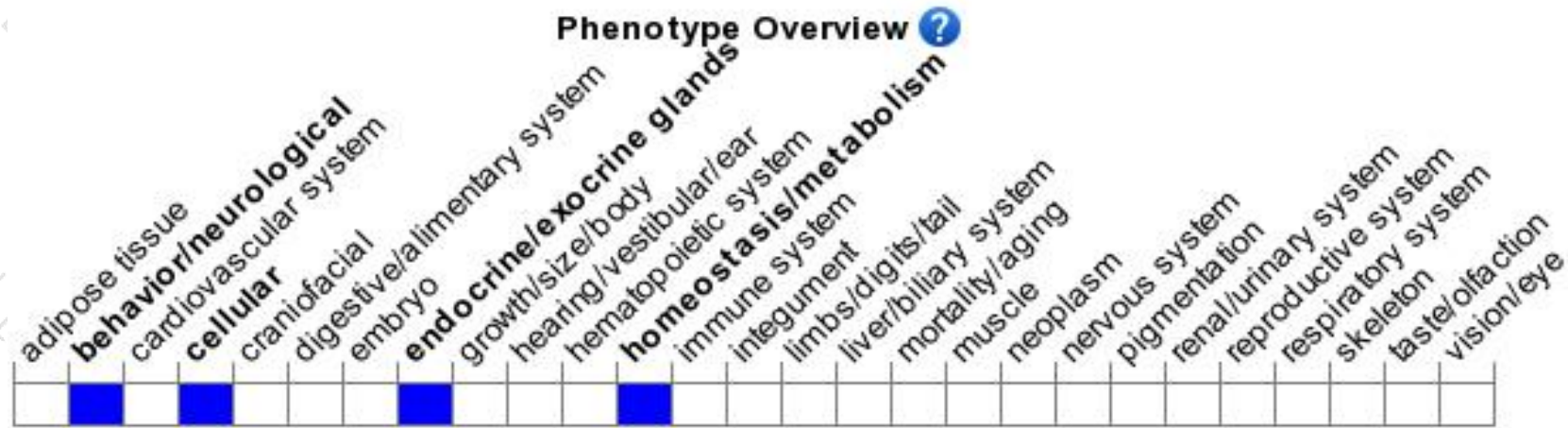
Genomic location distribution



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 knock-out allele exhibit increased fasting circulating glucose levels and decreased blood acetaldehyde clearance. Mice homozygous for a different knock-out allele display defects in beta cell development and functionality, and develop glucose intolerance, age-dependent hyperglycemia, and insulin resistance.

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

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