

Aldoa Cas9-KO Strategy

Designer: Xiangli Bian

Reviewer: Yao Yu

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Overview

Target Gene Name

- *Aldoa*

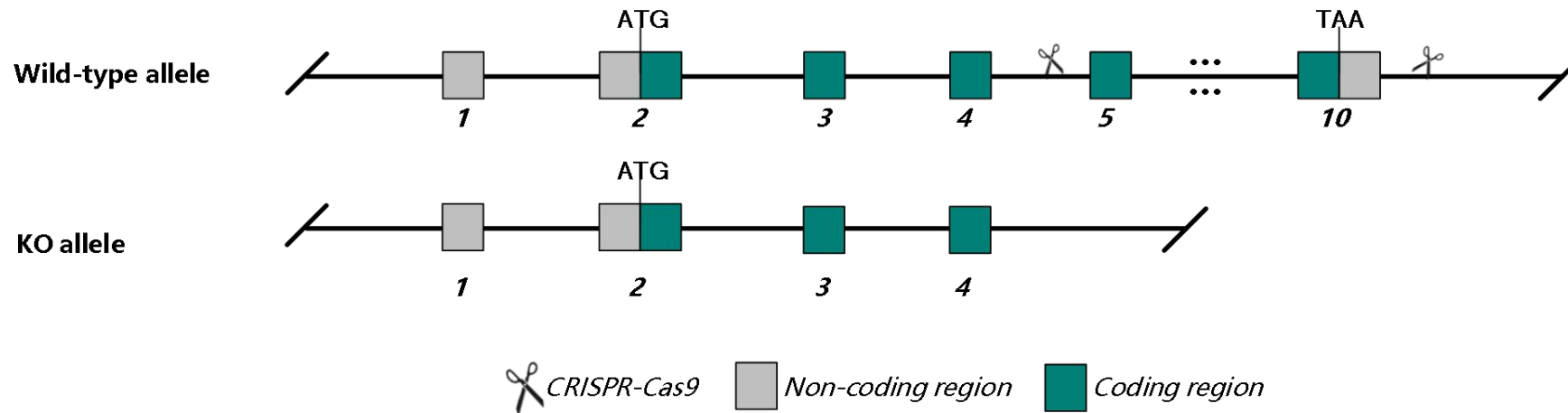
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Aldoa* gene.

Technical Information

- The *Aldoa* gene has 12 transcripts. According to the structure of *Aldoa* gene, exon 5-10 of *Aldoa*-202 (ENSMUST00000087566.11) is recommended as the knockout region. The region contains 771 bp of coding sequence. Knocking out the region will result in disruption of gene function.
- In this project we use CRISPR-Cas9 technology to modify *Aldoa* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.

Gene Information

Aldoa aldolase A, fructose-bisphosphate [*Mus musculus* (house mouse)]

[Download Datasets](#)

Gene ID: 11674, updated on 18-Aug-2023

Summary

Official Symbol	Aldoa provided by MGI
Official Full Name	aldolase A, fructose-bisphosphate provided by MGI
Primary source	MGI:MGI:87994
See related	Ensembl:ENSMUSG00000030695 AllianceGenome:MGI:87994
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	Aldo1; Aldo-1
Summary	Enables fructose-bisphosphate aldolase activity and protease binding activity. Involved in positive regulation of cell migration. Located in Z disc; plasma membrane; and sperm fibrous sheath. Part of protein-containing complex. Is expressed in several structures, including alimentary system; cardiovascular system; genitourinary system; nervous system; and sensory organ. Orthologous to human ALDOA (aldolase, fructose-bisphosphate A). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Broad expression in mammary gland adult (RPKM 794.0), subcutaneous fat pad adult (RPKM 494.9) and 27 other tissues See more
Orthologs	human all
NEW	Try the new Gene table Try the new Transcript table

Genomic context

Location: 7 F3; 7 69.25 cM

Exon count: 12

See Aldoa in [Genome Data Viewer](#)

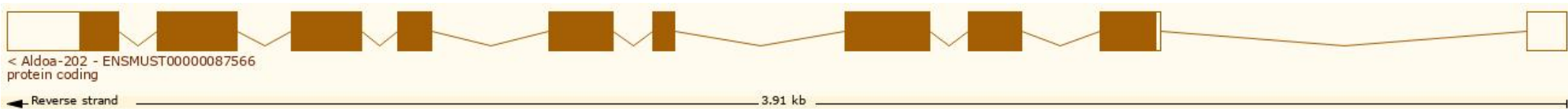
<https://www.ncbi.nlm.nih.gov/gene/11674>

Transcript Information

The gene has 12 transcripts, all transcripts are shown below:

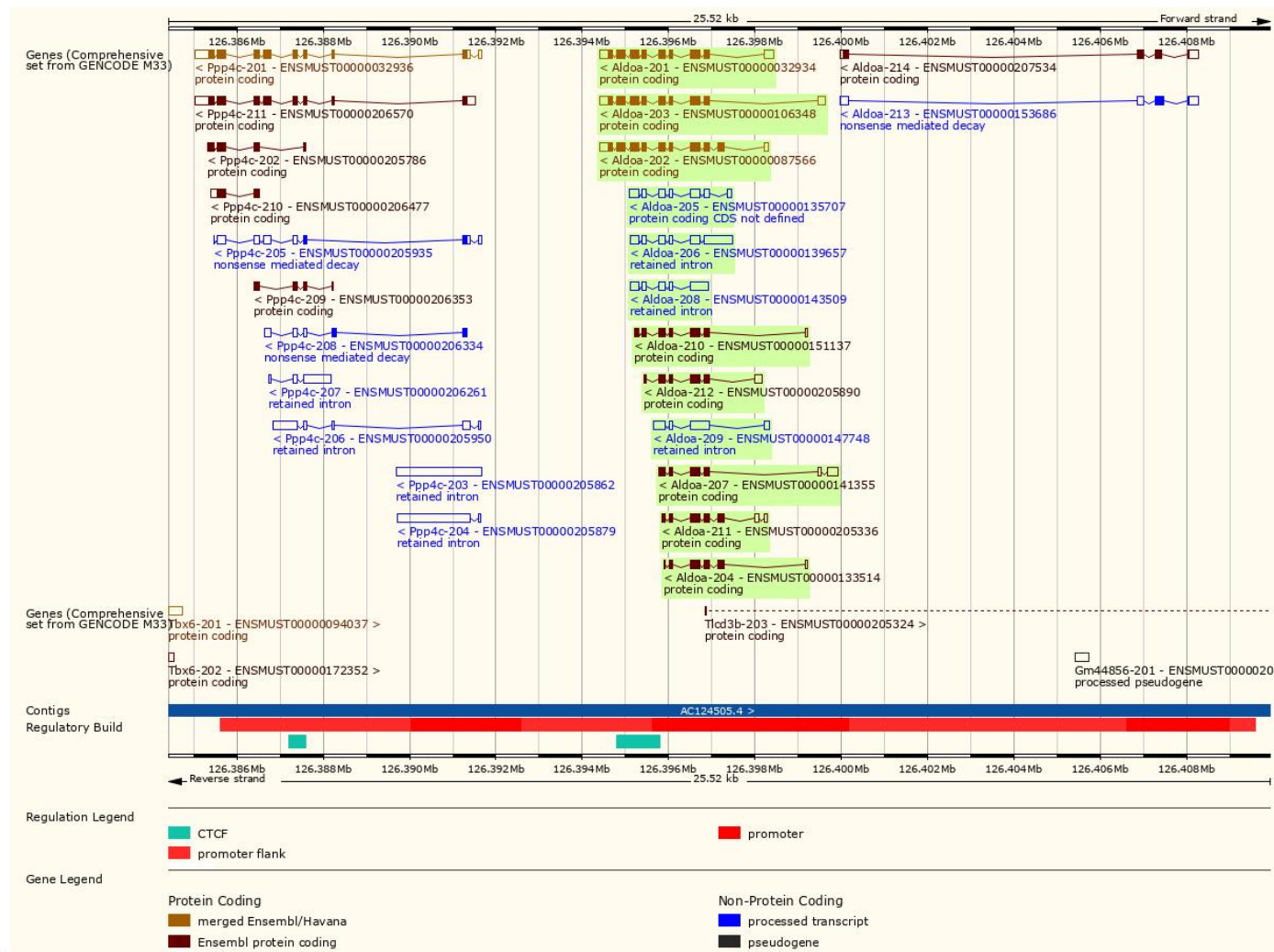
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000087566.11	Aldoa-202	1549	418aa	Protein coding	CCDS52399	A6ZI44	Ensembl Canonical Gencode basic TSL:5
ENSMUST00000032934.12	Aldoa-201	1511	364aa	Protein coding	CCDS21845	P05064 Q5FWB7	Gencode basic APPRIS P1 TSL:1
ENSMUST00000106348.8	Aldoa-203	1460	364aa	Protein coding	CCDS21845	P05064 Q5FWB7	Gencode basic APPRIS P1 TSL:1
ENSMUST00000151137.8	Aldoa-210	776	236aa	Protein coding		D3YWI1	TSL:2 CDS 3' incomplete
ENSMUST00000205336.2	Aldoa-211	796	209aa	Protein coding		A0A0U1RPT5	TSL:5 CDS 3' incomplete
ENSMUST00000133514.8	Aldoa-204	626	193aa	Protein coding		D3YV98	TSL:3 CDS 3' incomplete
ENSMUST00000205890.2	Aldoa-212	762	190aa	Protein coding		A0A0U1RPN8	TSL:5 CDS 3' incomplete
ENSMUST00000141355.4	Aldoa-207	879	180aa	Protein coding		D3Z510	TSL:5 CDS 3' incomplete
ENSMUST00000135707.8	Aldoa-205	945	No protein	Protein coding CDS not defined		-	TSL:5
ENSMUST00000139657.8	Aldoa-206	1352	No protein	Retained intron		-	TSL:2
ENSMUST00000147748.2	Aldoa-209	895	No protein	Retained intron		-	TSL:5
ENSMUST00000143509.8	Aldoa-208	891	No protein	Retained intron		-	TSL:2

The strategy is based on the design of *Aldoa*-202 transcript, the transcription is shown below:



Source: <http://asia.ensembl.org/>

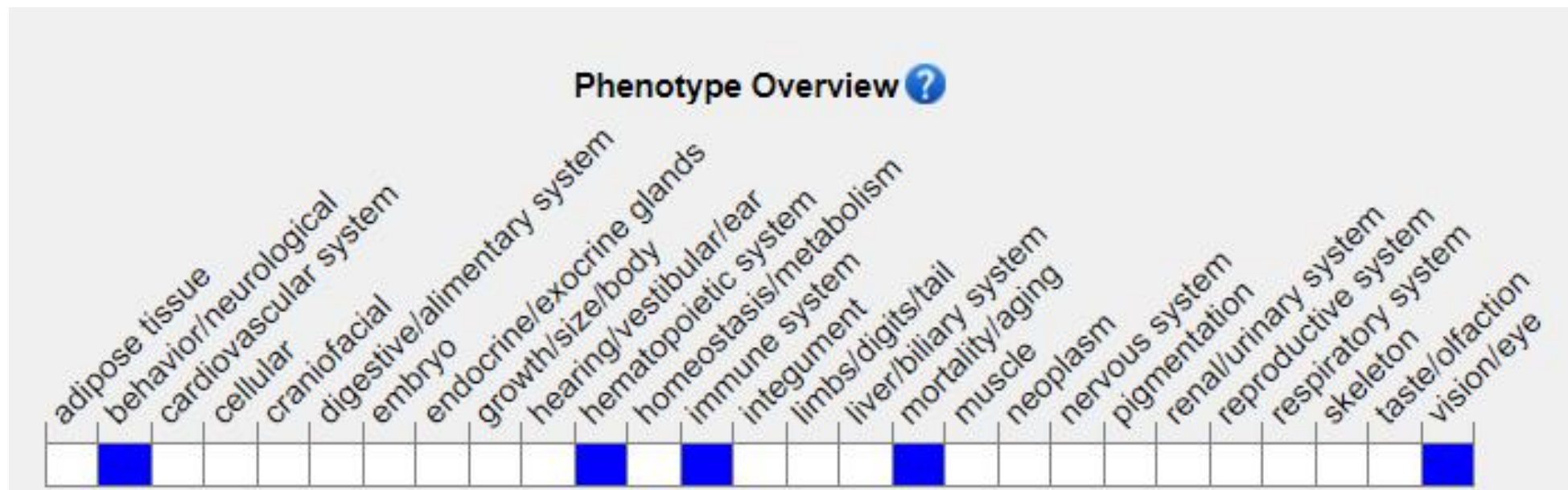
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



Important Information

- The knockout region is about 2.5 kb away from the 5' of the *Ppp4c* gene, which may affect the regulation of this gene.
- The knockout region is about 0.5 kb away from the 5' of the *Tlcd3b* gene, which may affect the regulation of this gene.
- This strategy may not affect *Aldoa*-213 and *Aldoa*-214 transcript.
- A part of amino acid sequence (162 aa) will still remain at the N-terminal of *Aldoa* gene
- *Aldoa* is located on Chr 7. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.