

Aldh1l1 Cas9-CKO Strategy

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Reviewer :

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Design Date:

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Project Overview

Project Name

Aldh1l1

Project type

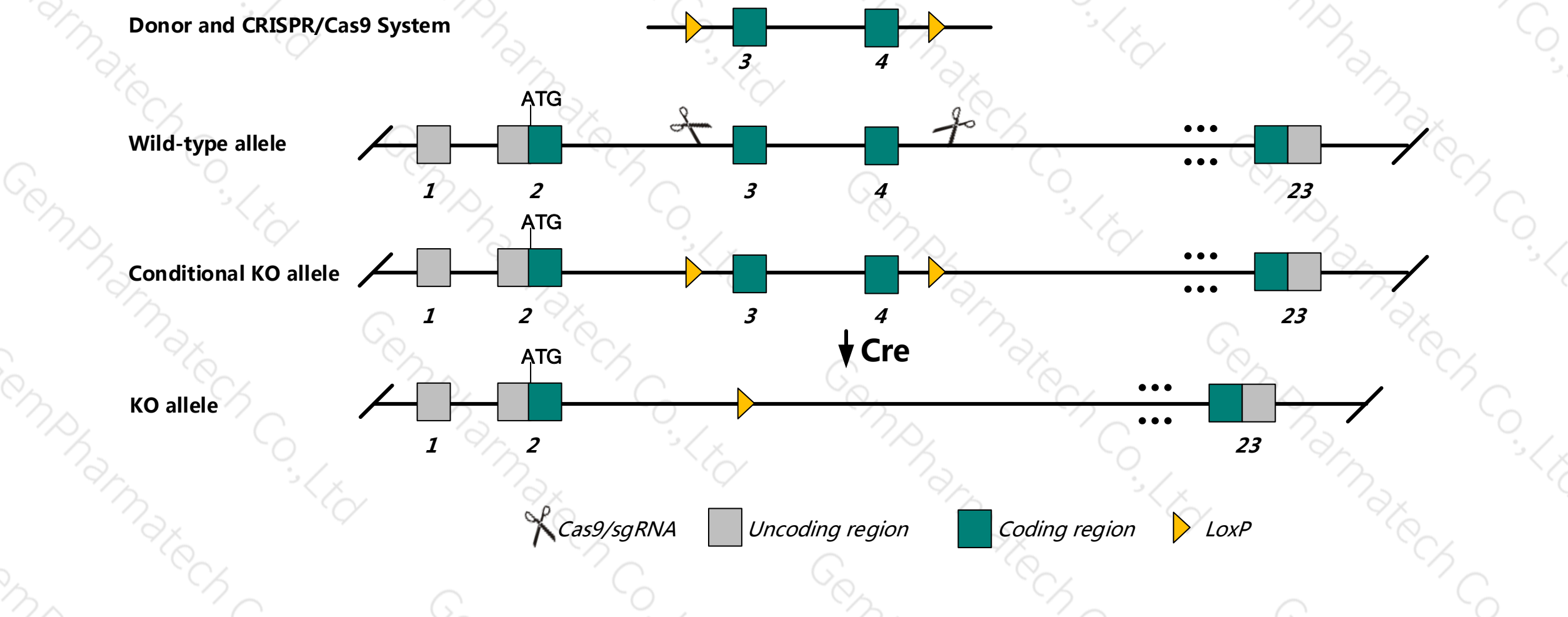
Cas9-CKO

Animal background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Aldh1l1* gene. The schematic diagram is as follows:



Technical routes

- The *Aldh1l1* gene has 7 transcripts, According to the structure of *Aldh1l1* gene, exon3-exon4 of *Aldh1l1-201* transcript is recommended as the knockout region. The region contains the 401bp coding sequence. Knock out the region, result in destruction of protein.
- This project uses CRISPR/Cas9 technology to modify *Aldh1l1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed, Cas9, sgRNA and donor were microinjected into fertilized eggs of C57BL/6JGpt mice and homologous recombination was carried out to obtain F0 mice. A stable and hereditary F1 generation mouse model was obtained by mating F0 generation mice with C57BL/6JGpt mice which were confirmed positive by PCR-sequencing.
- 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.

- The *Aldh1l1* gene is located in the Chr6. If the knockout mice are mixed with other mice, two target genes are avoided on the same chromosome as possible, otherwise the offspring of mice with double gene positive and homozygous gene knockout can not be obtained.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Aldh1l1 aldehyde dehydrogenase 1 family, member L1 [*Mus musculus* (house mouse)]

Gene ID: 107747, updated on 8-Dec-2018

Summary

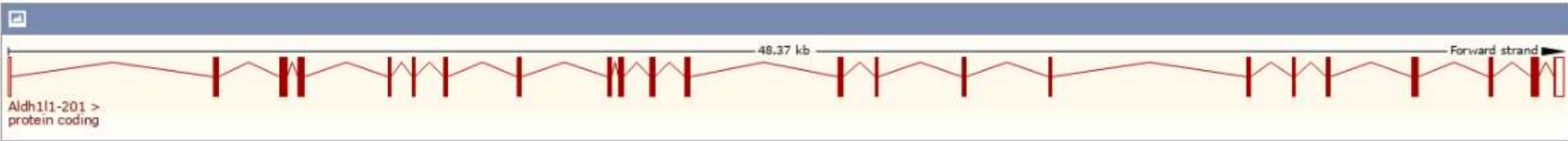
Official Symbol	Aldh1l1 provided by MGI
Official Full Name	aldehyde dehydrogenase 1 family, member L1 provided by MGI
Primary source	MGI:MGI:1340024
See related	Ensembl:ENSMUSG00000030088
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	FDH; Fthfd; Neut2; 1810048F20Rik
Expression	Biased expression in liver adult (RPKM 382.3), kidney adult (RPKM 107.4) and 7 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

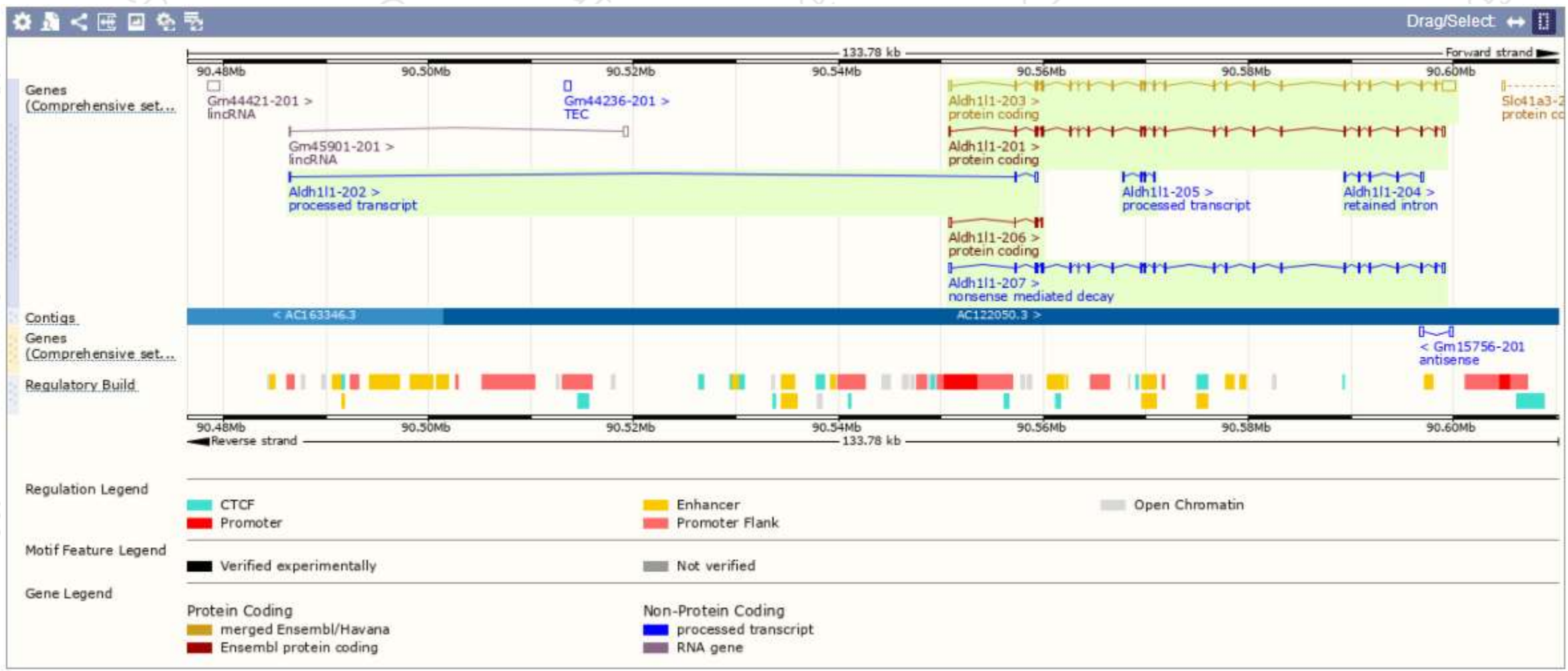
The gene has 7 transcripts, and all transcripts are shown below :

Show/hide columns (1 hidden)								Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags	
Aldh1l1-203	ENSMUST00000130418.7	4175	902aa	Protein coding	CCDS20361	Q8R0Y6	-	TSL:1	GENCODE basic APPRIS P1
Aldh1l1-201	ENSMUST00000032175.10	3052	902aa	Protein coding	CCDS20361	Q8R0Y6	NM_001356412 NM_027406 NP_001343341 NP_081682	TSL:1	GENCODE basic APPRIS P1
Aldh1l1-206	ENSMUST00000203111.1	556	135aa	Protein coding	-	A0A0N4SVT2	-	CDS 3' incomplete	TSL:5
Aldh1l1-207	ENSMUST00000204796.2	3025	359aa	Nonsense mediated decay	-	A0A0N4SW56	-	TSL:5	
Aldh1l1-205	ENSMUST00000152436.1	472	No protein	Processed transcript	-	-	-	TSL:3	
Aldh1l1-202	ENSMUST00000127199.1	400	No protein	Processed transcript	-	-	-	TSL:3	
Aldh1l1-204	ENSMUST00000137669.1	653	No protein	Retained intron	-	-	-	TSL:3	

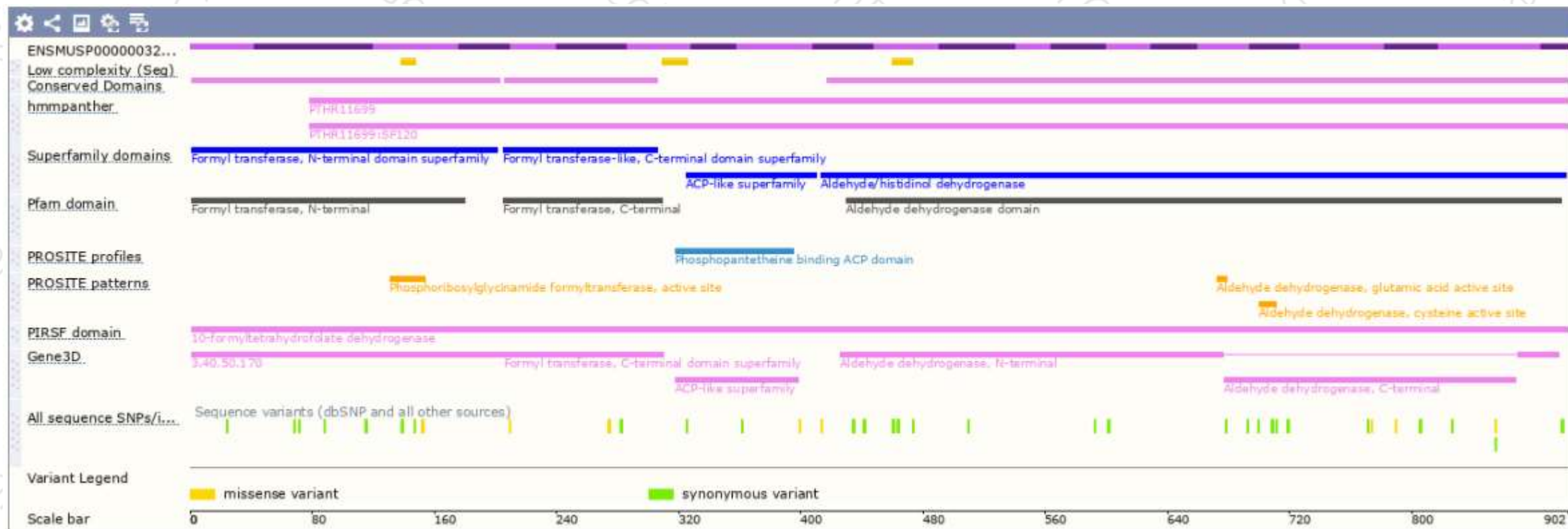
The strategy is based on the design of *Aldh1l1-201* transcript,The transcription is shown below :



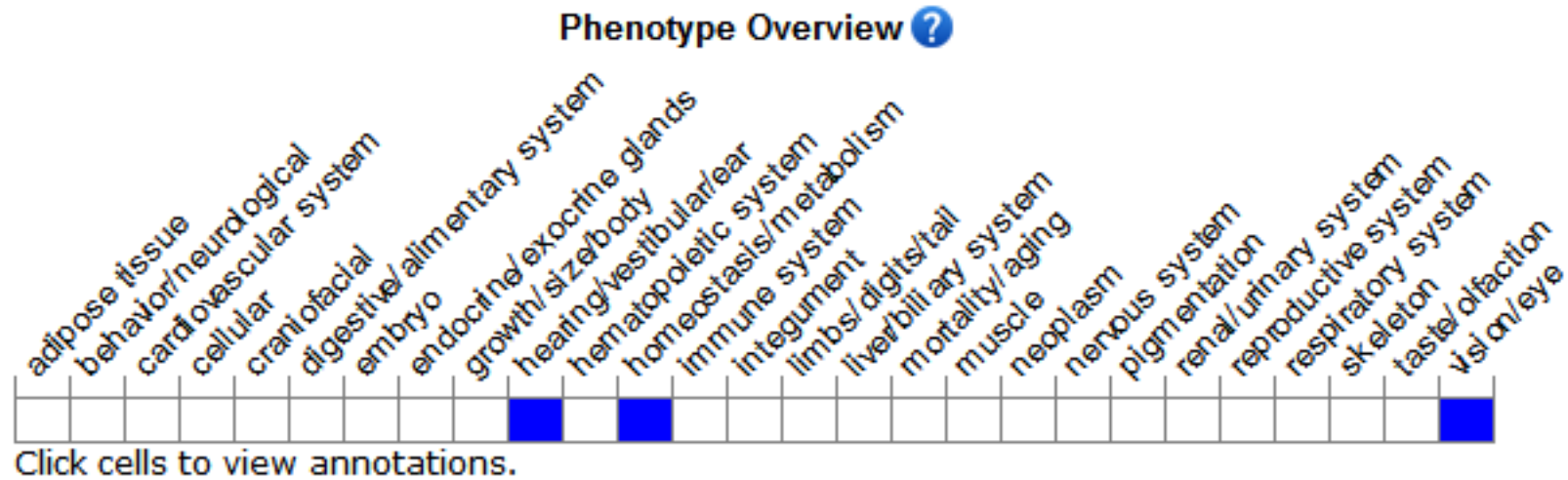
Genomic location distribution



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/>) .

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