

Akr1e1 Cas9-CKO Strategy

Designer: Huimin Su

Reviewer: Ruiuri Zhang

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Project Overview

Project Name

Akr1e1

Project type

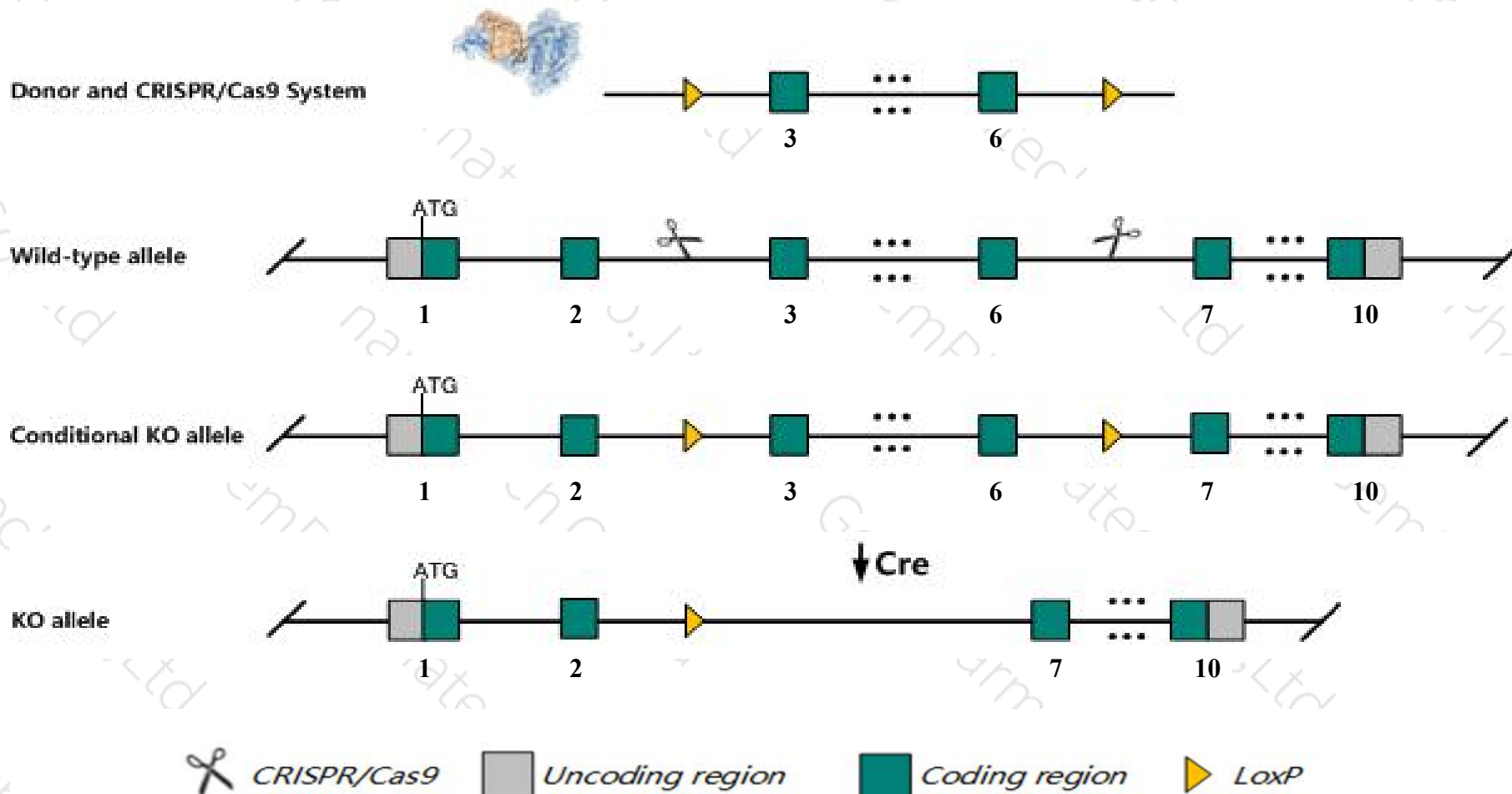
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Akr1e1* gene. The schematic diagram is as follows:



Technical routes

- The *Akr1e1* gene has 4 transcripts. According to the structure of *Akr1e1* gene, exon3-exon6 of *Akr1e1-201* (ENSMUST00000091848.6) transcript is recommended as the knockout region. The region contains 416bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Akr1e1* 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 *Akr1e1* gene is located on the Chr13. 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)

Akr1e1 aldo-keto reductase family 1, member E1 [Mus musculus (house mouse)]

Gene ID: 56043, updated on 13-Mar-2020

Summary



Official Symbol	Akr1e1 provided by MGI
Official Full Name	aldo-keto reductase family 1, member E1 provided by MGI
Primary source	MGI:MGI:1914758
See related	Ensembl:ENSMUSG00000045410
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	1810061I10Rik, Akr1e2
Expression	Ubiquitous expression in bladder adult (RPKM 12.4), CNS E11.5 (RPKM 11.5) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

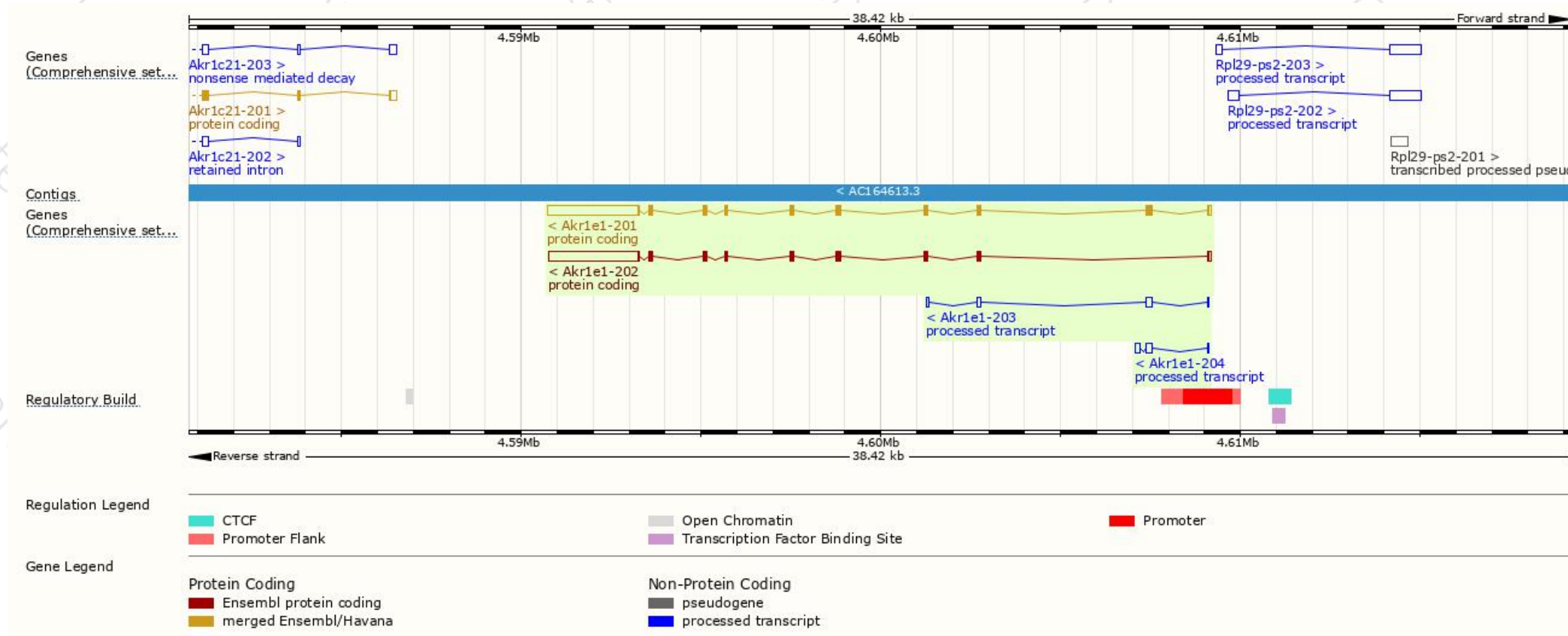
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Akr1e1-201	ENSMUST00000091848.6	3463	301aa	Protein coding	CCDS26226	Q9DCT1	TSL:1 GENCODE basic APPRIS P1
Akr1e1-202	ENSMUST00000110691.9	3288	245aa	Protein coding	-	Q8CEB6	TSL:1 GENCODE basic
Akr1e1-203	ENSMUST00000131982.1	412	No protein	Processed transcript	-	-	TSL:3
Akr1e1-204	ENSMUST00000220936.1	321	No protein	Processed transcript	-	-	TSL:3

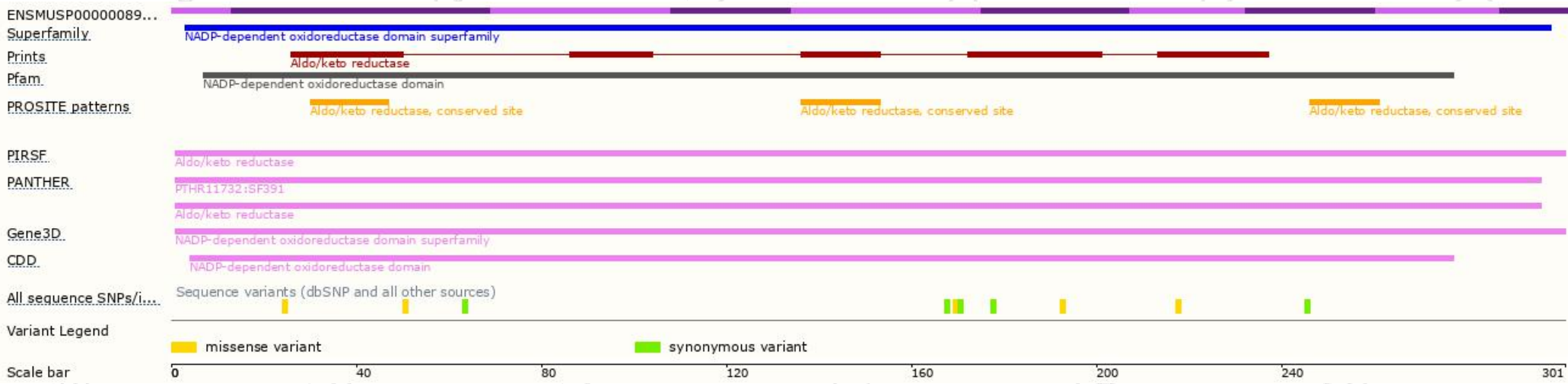
The strategy is based on the design of *Akr1e1-201* transcript, the transcription is shown below



Genomic location distribution



Protein domain



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

Tel: 400-9660890

