

Arl8a Cas9-CKO Strategy

Designer: Rui Xiong

Reviewer: Longyun Hu

Design Date: 2021-6-8

Project Overview

Project Name

Arl8a

Project type

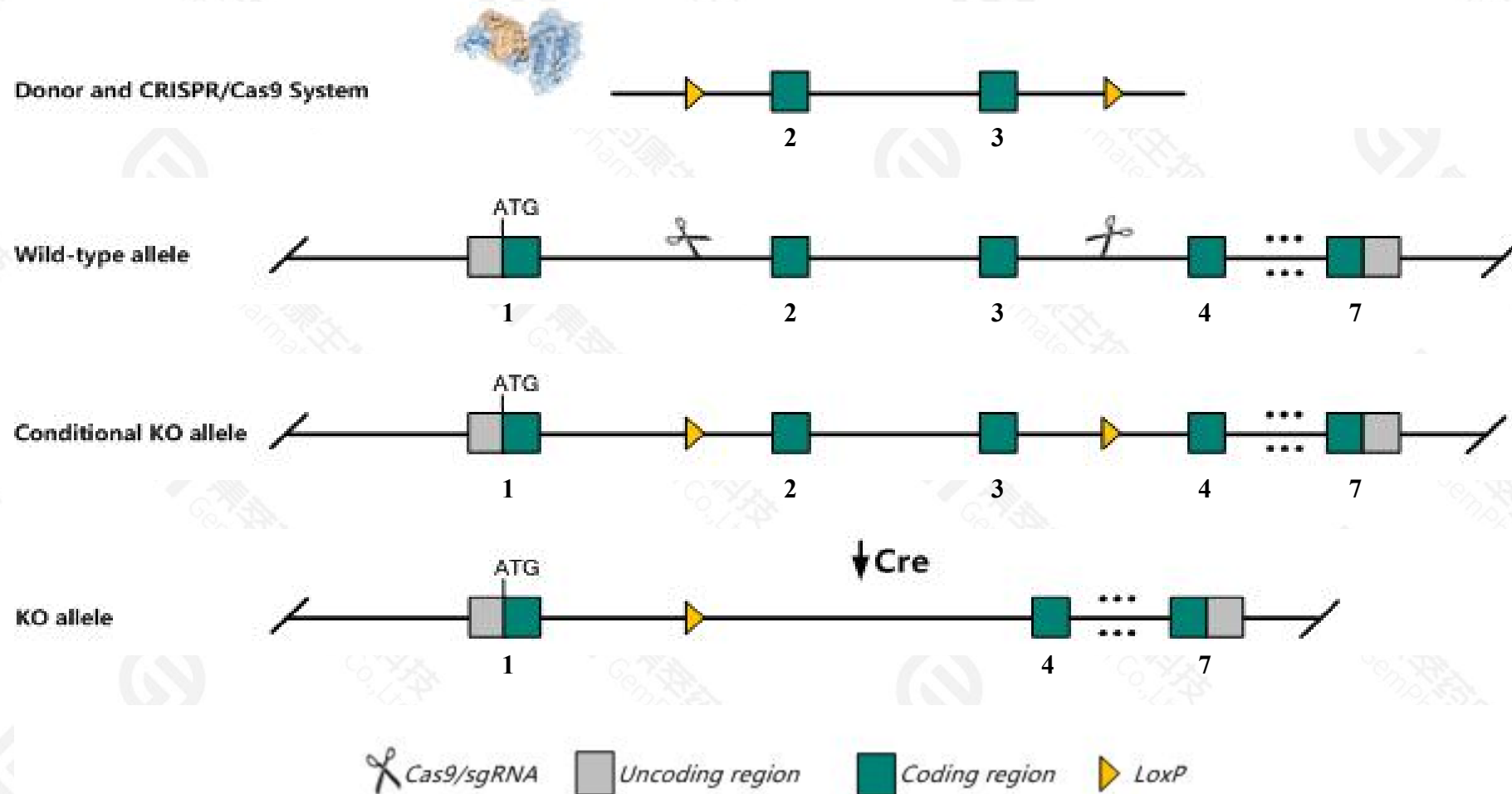
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arl8a* gene. The schematic diagram is as follows:



Technical routes

- The *Arl8a* gene has 4 transcripts. According to the structure of *Arl8a* gene, exon2-exon3 of *Arl8a-201*(ENSMUST00000027684.11) transcript is recommended as the knockout region. The region contains 155bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arl8a* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor was constructed. Cas9, sgRNA 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 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.

- *Gm15445-201* gene will be destroyed.
- The floxed region is near to the N-terminal of *5S_rRNA.111-201* gene, this strategy may influence the regulatory function of the N-terminal of *5S_rRNA.111-201* gene.
- The *Arl8a* 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)

Arl8a ADP-ribosylation factor-like 8A [Mus musculus (house mouse)]

Gene ID: 68724, updated on 17-Feb-2021

Summary



Official Symbol Arl8a provided by [MGI](#)

Official Full Name ADP-ribosylation factor-like 8A provided by [MGI](#)

Primary source [MGI:MGI:1915974](#)

See related [Ensembl:ENSMUSG00000026426](#)

Gene type protein coding

RefSeq status PROVISIONAL

Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as 1110033P22Rik, Arl, Arl10b, gie2

Expression Ubiquitous expression in CNS E18 (RPKM 133.7), whole brain E14.5 (RPKM 99.2) and 25 other tissues [See more](#)

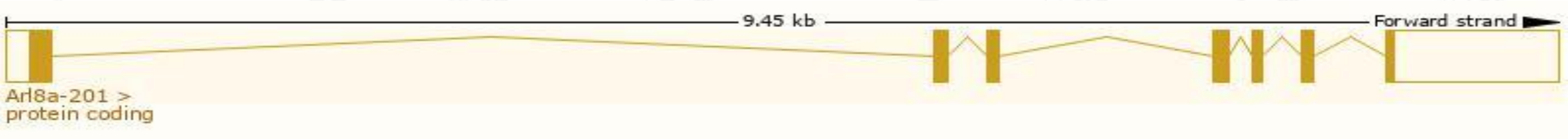
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

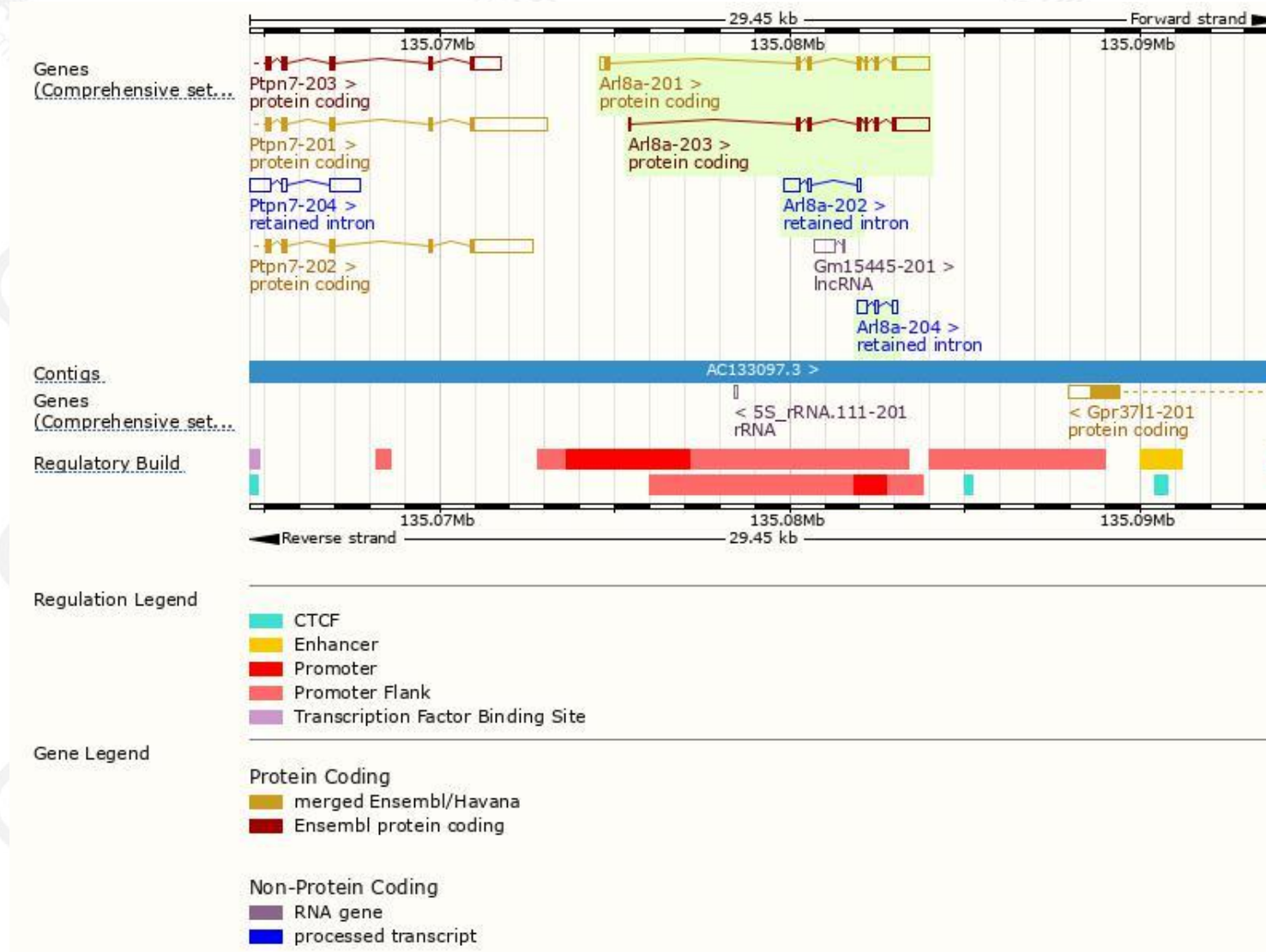
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arl8a-201	ENSMUST00000027684.11	1713	186aa	Protein coding	CCDS15316		TSL:1 , GENCODE basic , APPRIS P1 ,
Arl8a-203	ENSMUST00000125774.2	1495	165aa	Protein coding	-		CDS 5' incomplete , TSL:3 ,
Arl8a-202	ENSMUST00000123344.2	664	No protein	Retained intron	-		TSL:2 ,
Arl8a-204	ENSMUST00000141177.2	472	No protein	Retained intron	-		TSL:2 ,

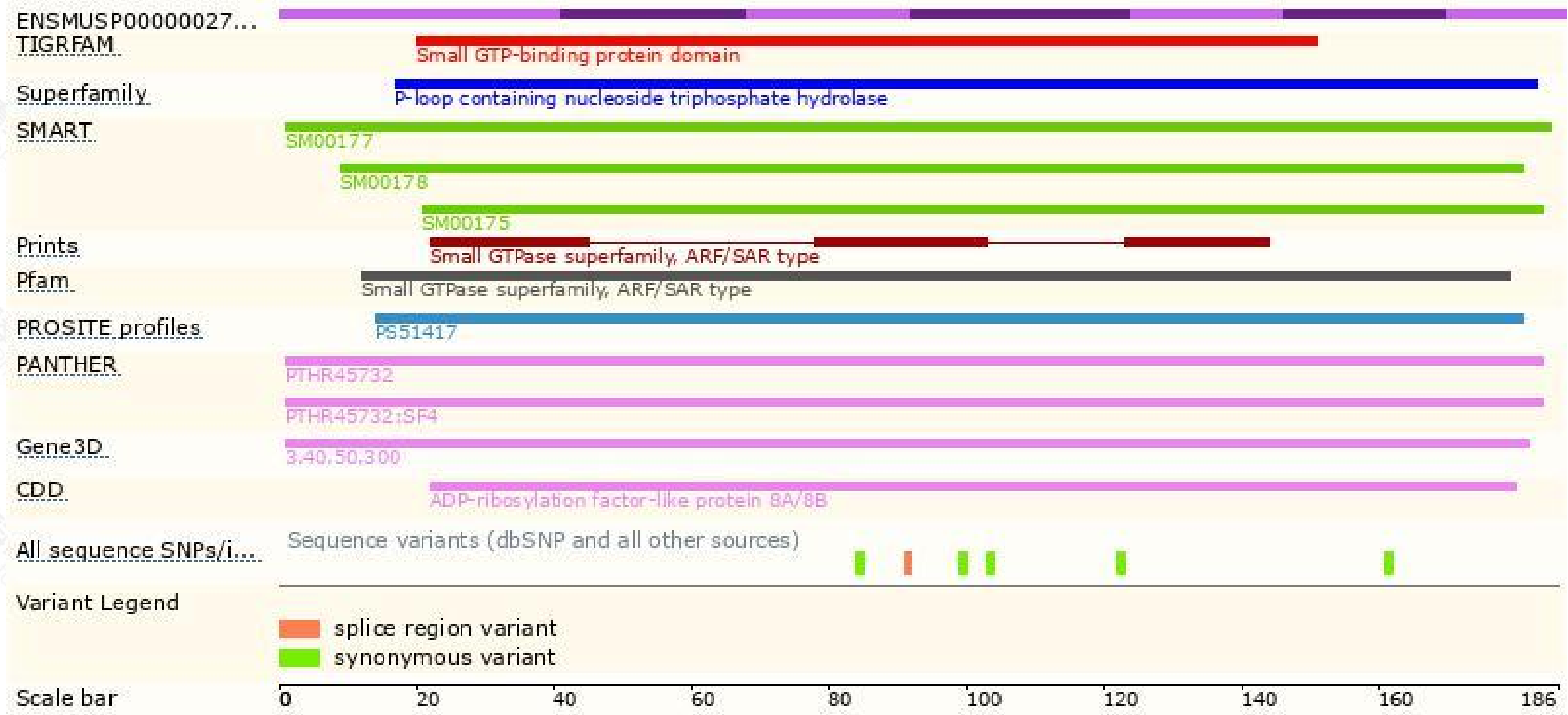
The strategy is based on the design of *Arl8a-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

Tel: 025-5864 1534

