

Arhgef16 Cas9-CKO Strategy

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Project Overview

Project Name

Arhgef16

Project type

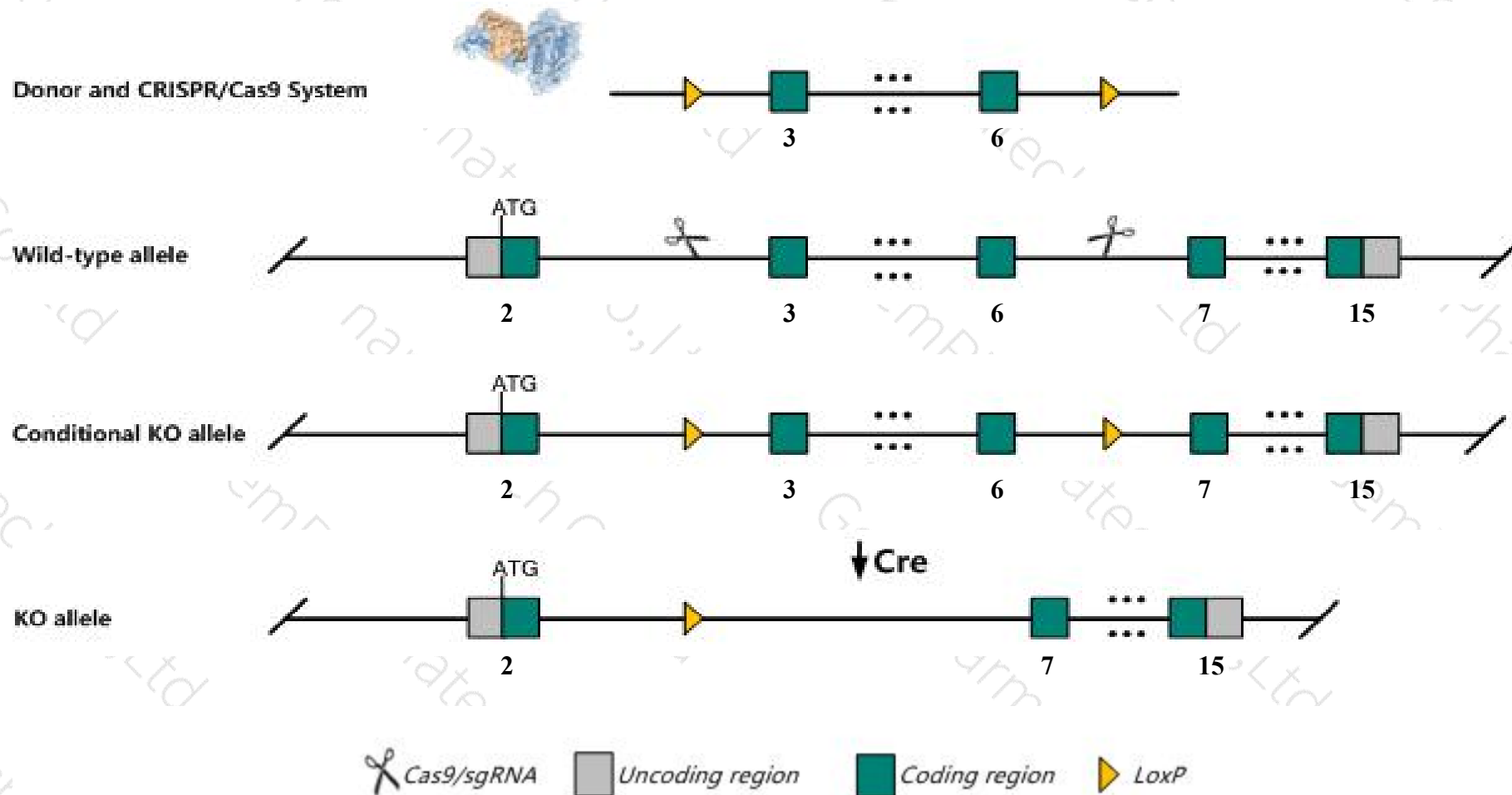
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgef16* gene. The schematic diagram is as follows:



Technical routes

- The *Arhgef16* gene has 7 transcripts. According to the structure of *Arhgef16* gene, exon3-exon6 of *Arhgef16-201*(ENSMUST00000030898.11) transcript is recommended as the knockout region. The region contains 434bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arhgef16* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector 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.

- The *Arhgef16* 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.
- Transcript *Arhgef16*-203 may not be affected.
- The effect on transcript *Arhgef16*-205&206 is unknown.
- 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)

Arhgef16 Rho guanine nucleotide exchange factor (GEF) 16 [Mus musculus (house mouse)]

Gene ID: 230972, updated on 13-Mar-2020

Summary



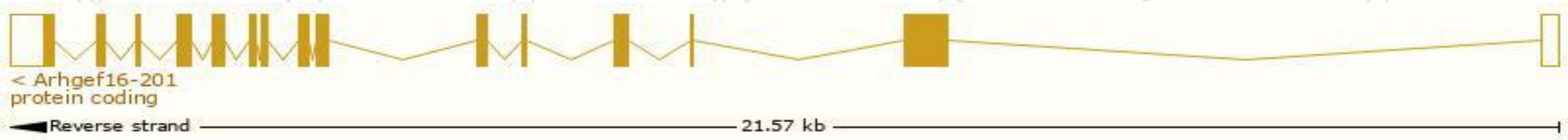
Official Symbol	Arhgef16 provided by MGI
Official Full Name	Rho guanine nucleotide exchange factor (GEF) 16 provided by MGI
Primary source	MGI:MGI:2446219
See related	Ensembl:ENSMUSG00000029032
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in small intestine adult (RPKM 48.9), duodenum adult (RPKM 48.3) and 11 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

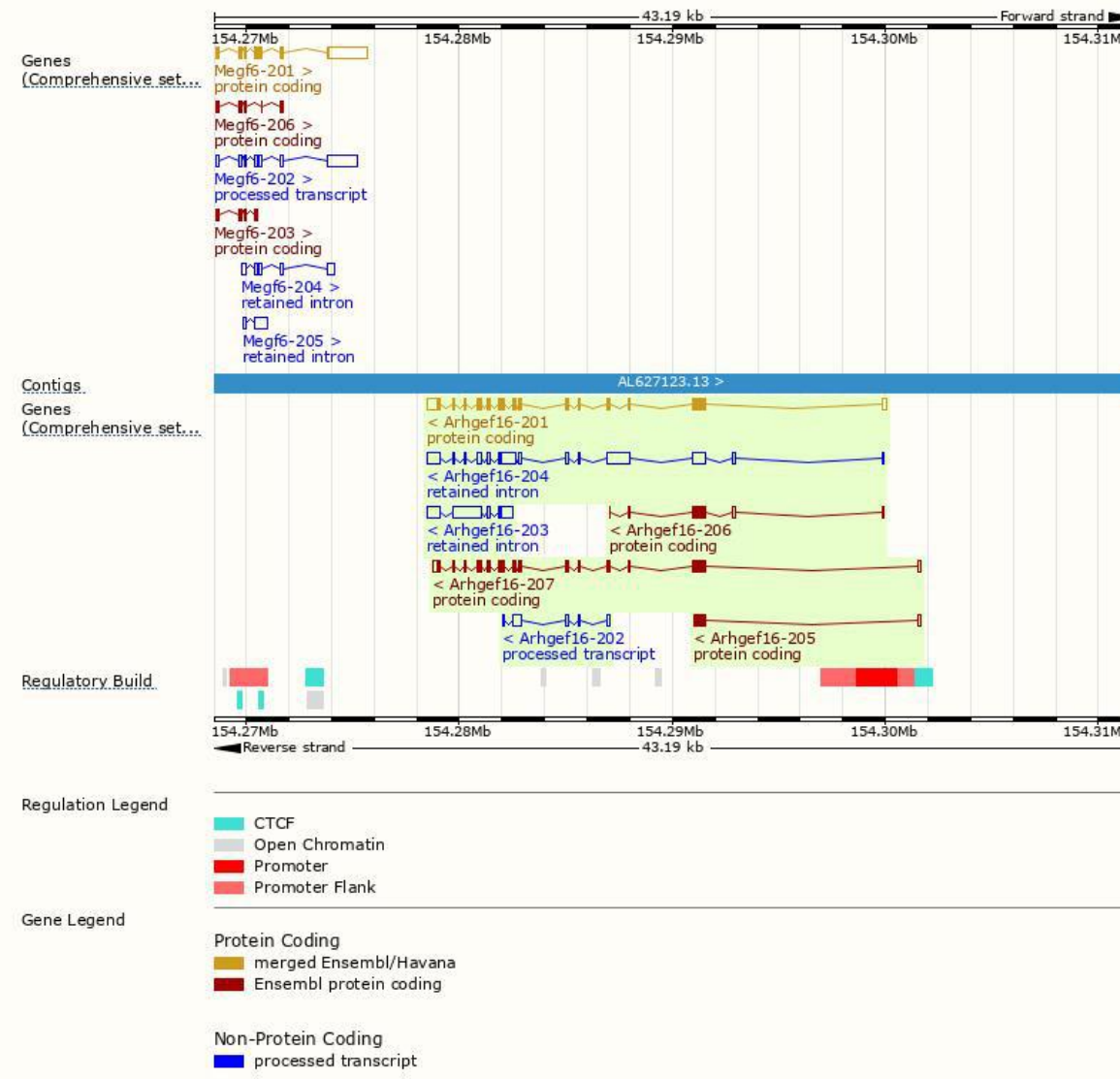
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgef16-201	ENSMUST00000030898.11	2860	713aa	Protein coding	CCDS51399	Q3U5C8	TSL:1 GENCODE basic APPRIS P1
Arhgef16-207	ENSMUST00000169623.7	2474	713aa	Protein coding	CCDS51399	Q3U5C8	TSL:1 GENCODE basic APPRIS P1
Arhgef16-206	ENSMUST00000154895.1	895	232aa	Protein coding	-	B1ASH7	CDS 3' incomplete TSL:5
Arhgef16-205	ENSMUST00000152947.1	664	173aa	Protein coding	-	B1ASH8	CDS 3' incomplete TSL:3
Arhgef16-202	ENSMUST00000129189.1	845	No protein	Processed transcript	-	-	TSL:5
Arhgef16-204	ENSMUST00000144145.7	4123	No protein	Retained intron	-	-	TSL:1
Arhgef16-203	ENSMUST00000143141.7	2671	No protein	Retained intron	-	-	TSL:2

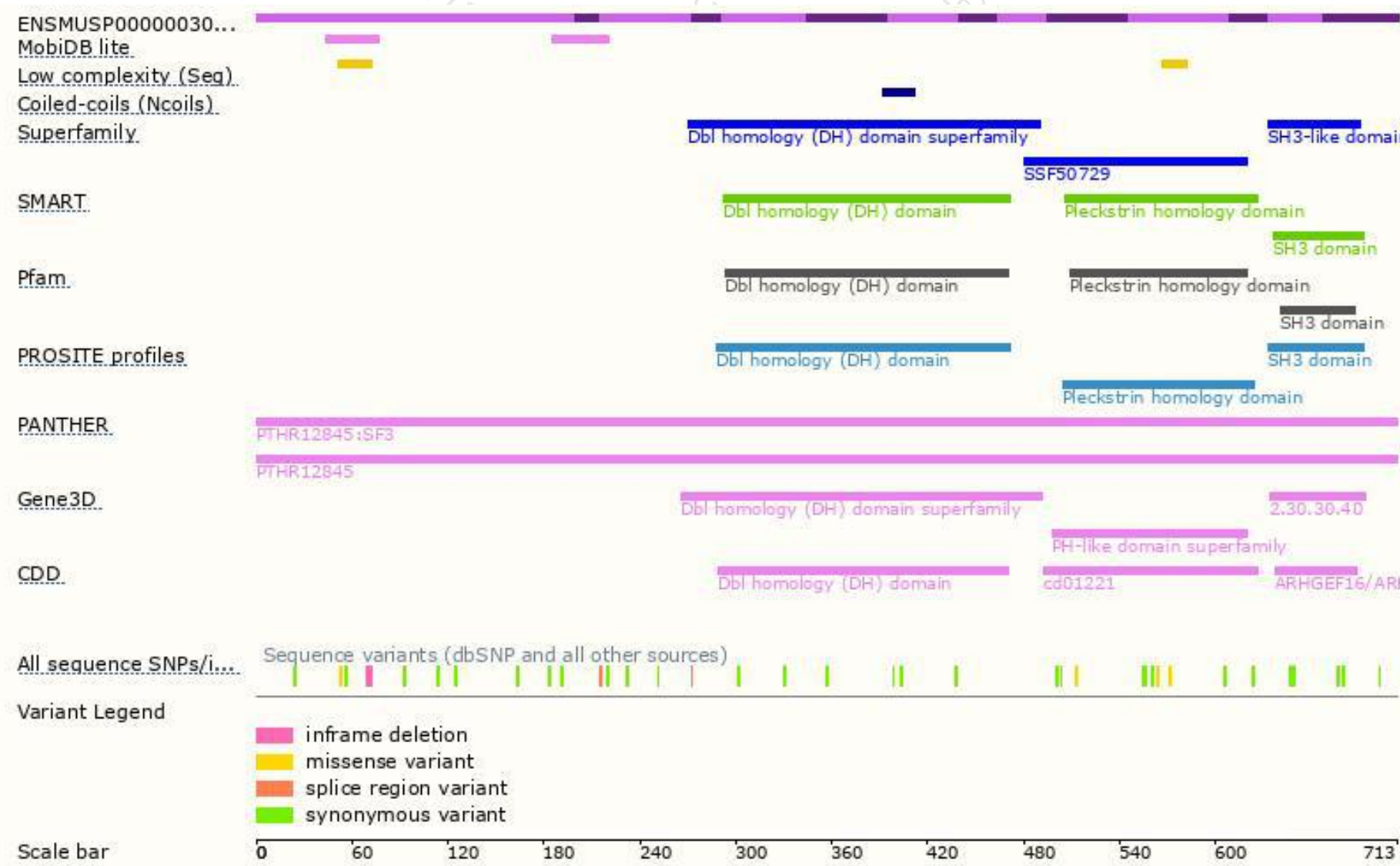
The strategy is based on the design of *Arhgef16-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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