Arhgef10 Cas9-CKO Strategy

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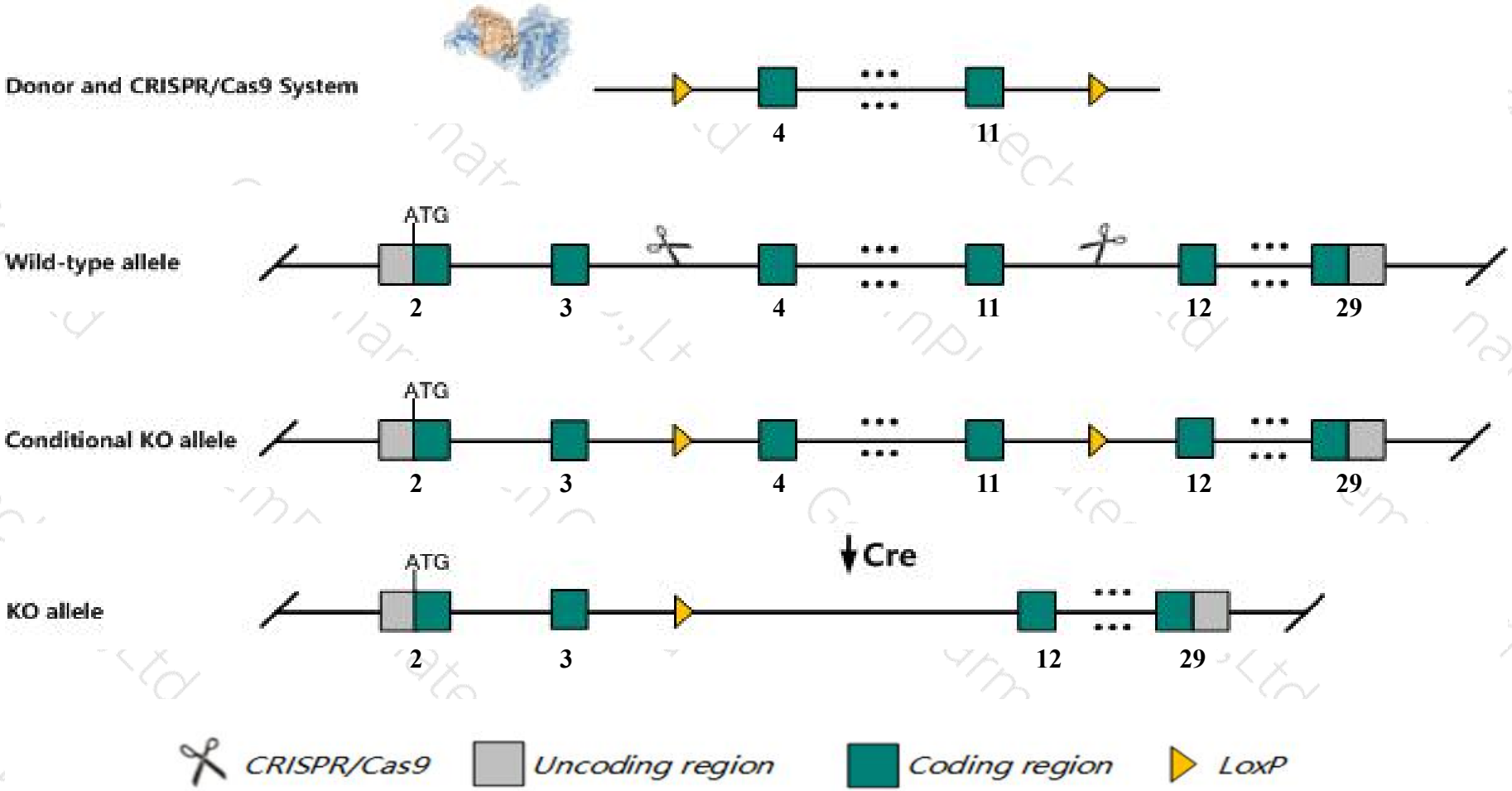
Project Overview

Project Name	***Arhgef10***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgef10* gene. The schematic diagram is as follows:



Technical routes

- The *Arhgef10* gene has 7 transcripts. According to the structure of *Arhgef10* gene, exon4-exon11 of *Arhgef10-201* (ENSMUST00000084207.11) transcript is recommended as the knockout region.The region contains 983bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Arhgef10* 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 *Arhgef10* gene is located on the Chr8. 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 *Arhgef10*-203&205&206 may not be affected . And the effect on transcript *Arhgef10*-207 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）

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Arhgef10 Rho guanine nucleotide exchange factor (GEF) 10 [Mus musculus (house mouse)]

Gene ID: 234094, updated on 31-Jan-2019

Summary

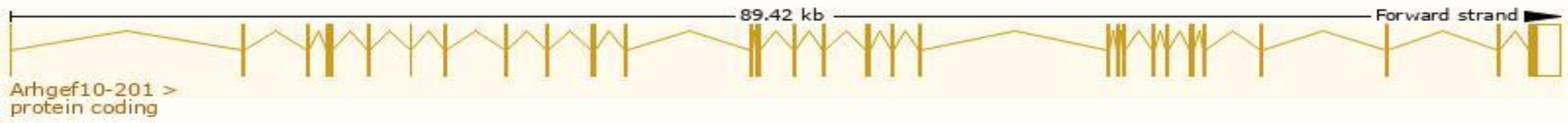
Official Symbol	Arhgef10 provided by MGI
Official Full Name	Rho guanine nucleotide exchange factor (GEF) 10 provided by MGI
Primary source	MGI:MGI:2444453
See related	Ensembl:ENSMUSG00000071176
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	6430549H08Rik, mKIAA0294
Expression	Ubiquitous expression in lung adult (RPKM 7.6), bladder adult (RPKM 6.1) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

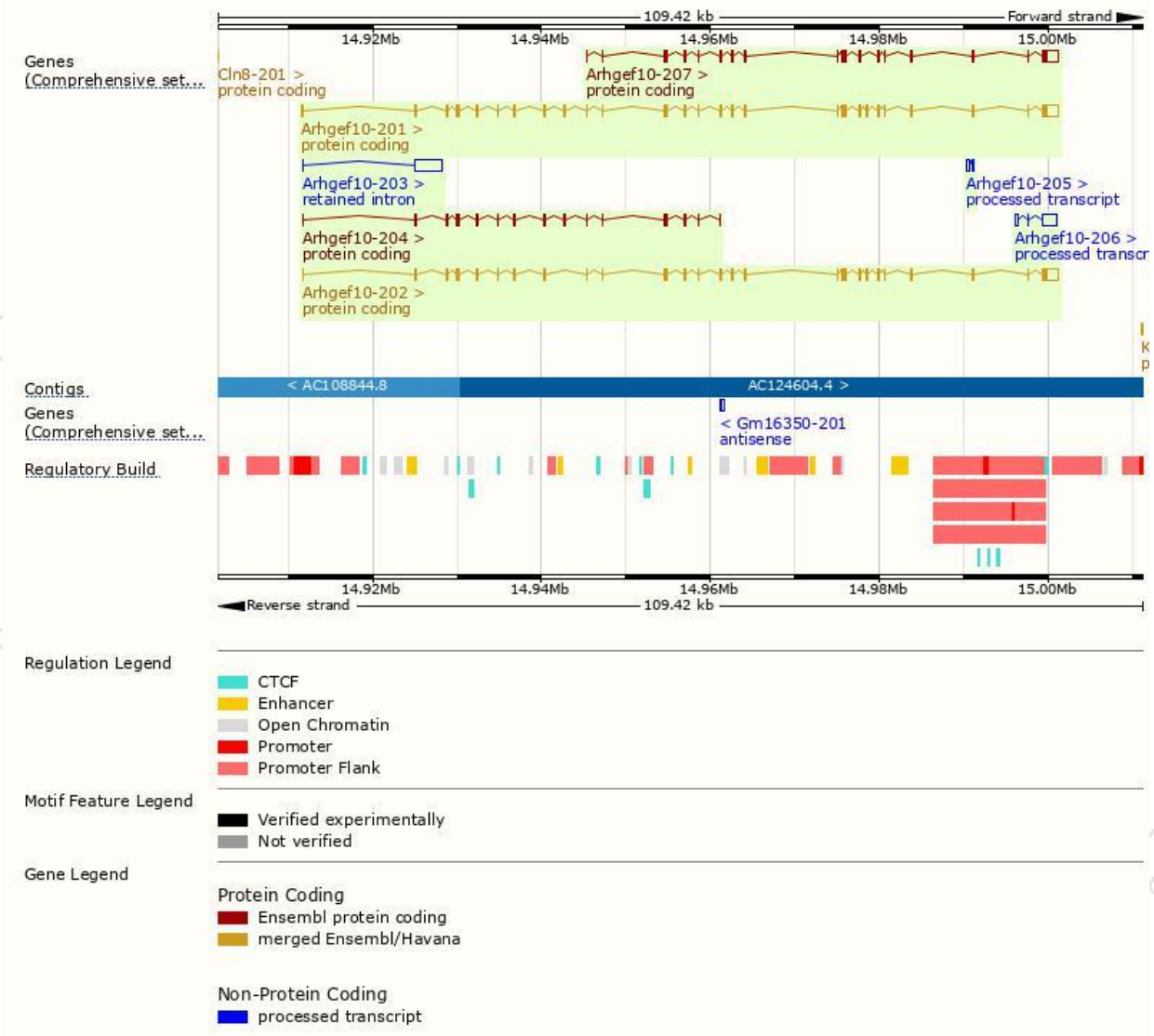
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgef10-201	ENSMUST00000084207.11	5528	1345aa	Protein coding	CCDS40240	Q8C033	TSL:1 GENCODE basic APPRIS P4
Arhgef10-202	ENSMUST00000110800.8	5336	1306aa	Protein coding	CCDS40241	Q8C033	TSL:1 GENCODE basic APPRIS ALT2
Arhgef10-207	ENSMUST00000163062.1	4219	988aa	Protein coding	-	F7BQE4	CDS 5' incomplete TSL:5
Arhgef10-204	ENSMUST00000161162.7	1912	579aa	Protein coding	-	F7BCP8	CDS 3' incomplete TSL:1
Arhgef10-206	ENSMUST00000162636.1	2178	No protein	Processed transcript	-	-	TSL:1
Arhgef10-205	ENSMUST00000162444.1	377	No protein	Processed transcript	-	-	TSL:5
Arhgef10-203	ENSMUST00000160619.1	3289	No protein	Retained intron	-	-	TSL:1

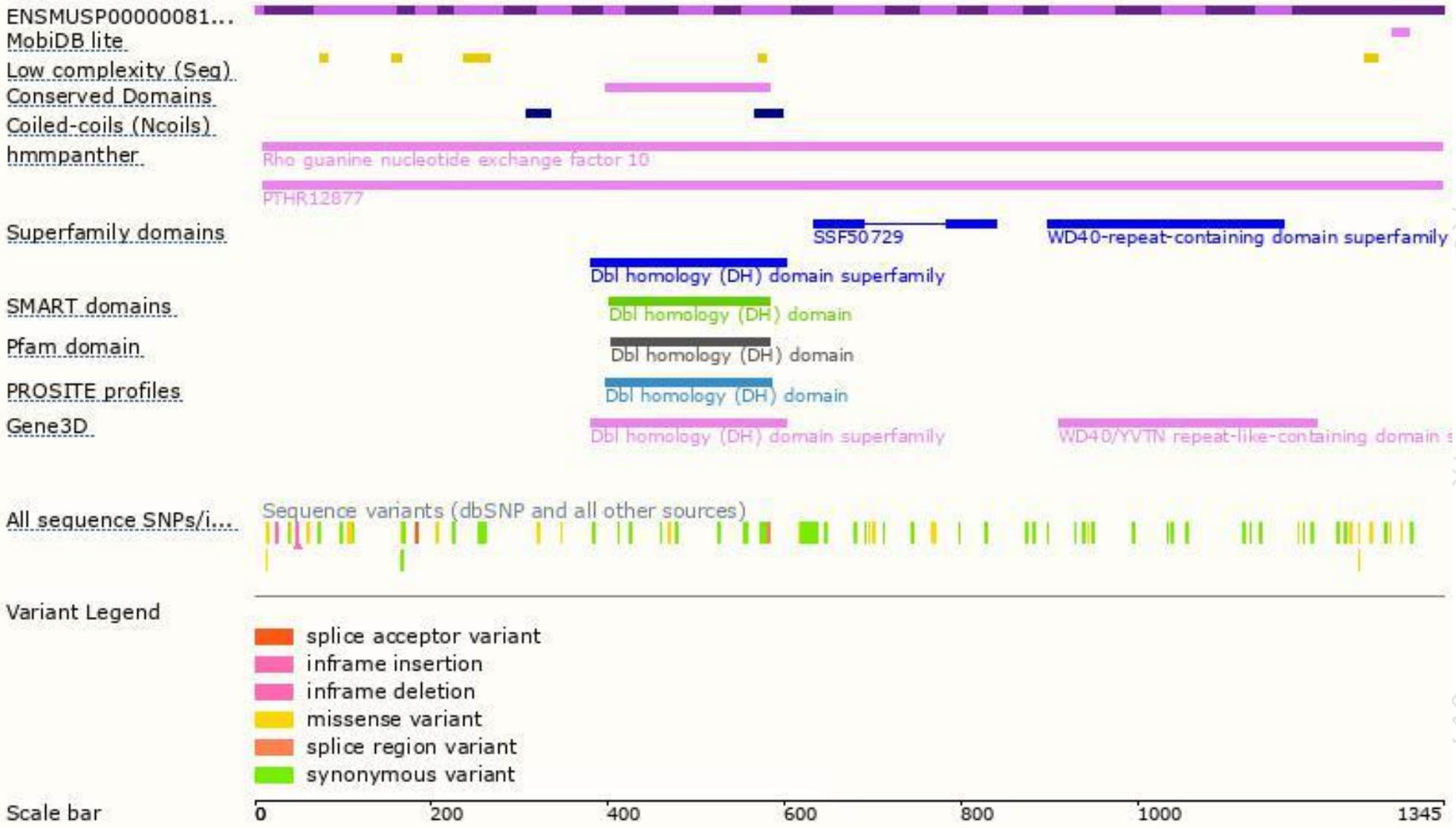
The strategy is based on the design of *Arhgef10-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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