Arhgap39 Cas9-CKO Strategy

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Project Overview

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Project Name	***Arhgap39***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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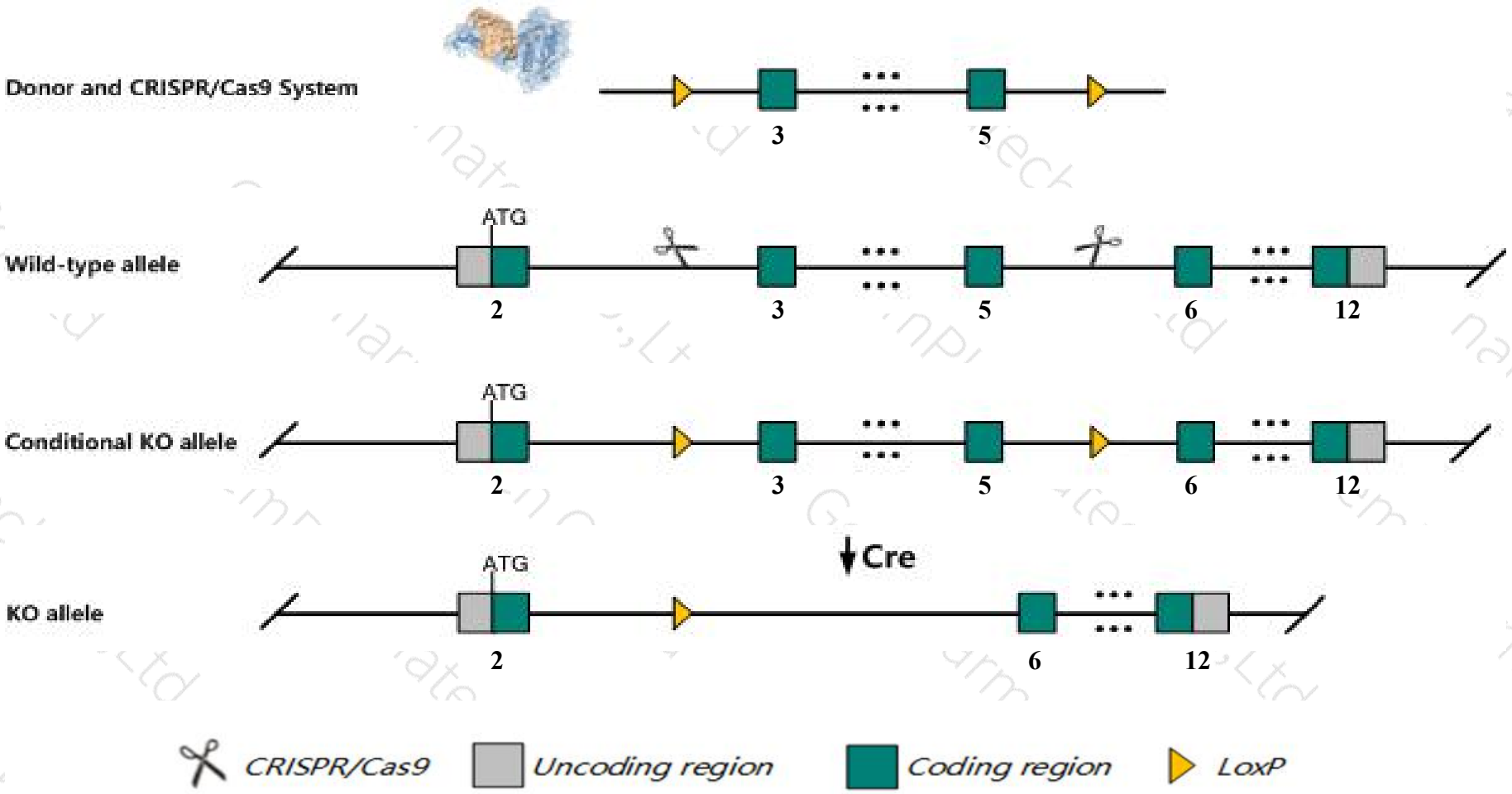
This model will use CRISPR/Cas9 technology to edit the *Arhgap39* gene. The schematic diagram is as follows:



Technical routes

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- The *Arhgap39* gene has 10 transcripts. According to the structure of *Arhgap39* gene, exon3-exon5 of *Arhgap39-201* (ENSMUST00000036176.14) transcript is recommended as the knockout region.The region contains 1858bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Arhgap39* 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 *Arhgap39* gene is located on the Chr15. 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 203,206 CDS 3' incomplete the influences is unknown.

- Transcripts 204,209 maybe unaffected.

- 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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Arhgap39 Rho GTPase activating protein 39 [Mus musculus (house mouse)]

Gene ID: 223666, updated on 25-Mar-2019

Summary

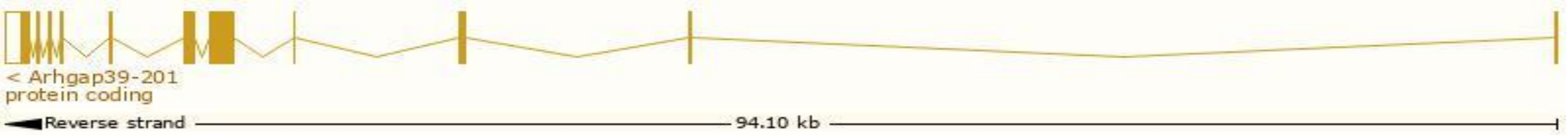
Official Symbol	Arhgap39 provided by MGI
Official Full Name	Rho GTPase activating protein 39 provided byMGI
Primary source	MGI:MGI:107858
See related	Ensembl:ENSMUSG00000033697
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9530053N22, AI843066, D15Wsu169e, Kiaa1688, Porf-2
Expression	Ubiquitous expression in ovary adult (RPKM 13.3), colon adult (RPKM 12.2) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

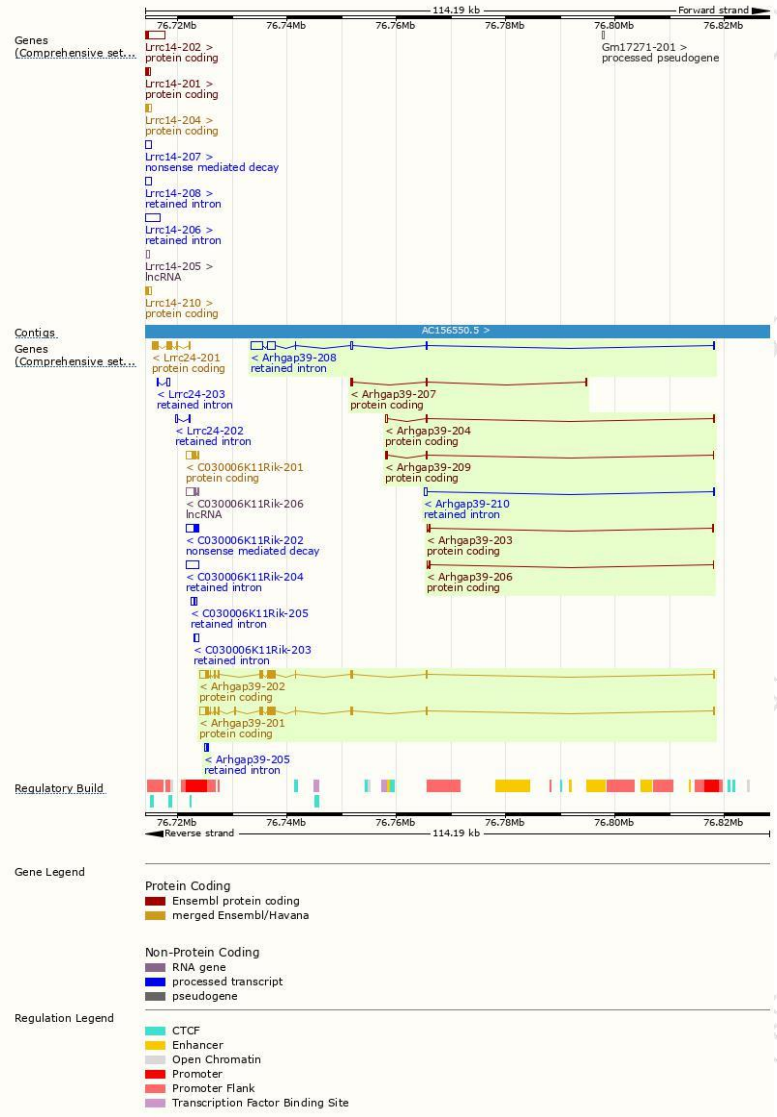
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgap39-201	ENSMUST00000036176.14	4500	1109aa	Protein coding	CCDS49654	G3X932	TSL:5 GENCODE basic APPRIS ALT2
Arhgap39-202	ENSMUST00000077821.9	4494	1078aa	Protein coding	CCDS27592	H7BX46	TSL:1 GENCODE basic APPRIS P3
Arhgap39-207	ENSMUST00000176855.7	669	119aa	Protein coding	-	H3BJM3	CDS 3' incomplete TSL:3
Arhgap39-204	ENSMUST00000176219.7	542	44aa	Protein coding	-	H3BKC8	TSL:5 GENCODE basic
Arhgap39-203	ENSMUST00000175843.1	475	16aa	Protein coding	-	H3BJU8	CDS 3' incomplete TSL:3
Arhgap39-209	ENSMUST00000177026.1	371	41aa	Protein coding	-	H3BLS4	TSL:5 GENCODE basic
Arhgap39-206	ENSMUST00000176736.1	293	11aa	Protein coding	-	H3BJW7	CDS 3' incomplete TSL:3
Arhgap39-208	ENSMUST00000177011.1	4145	No protein	Retained intron	-	-	TSL:1
Arhgap39-210	ENSMUST00000177255.1	730	No protein	Retained intron	-	-	TSL:2
Arhgap39-205	ENSMUST00000176724.1	598	No protein	Retained intron	-	-	TSL:2

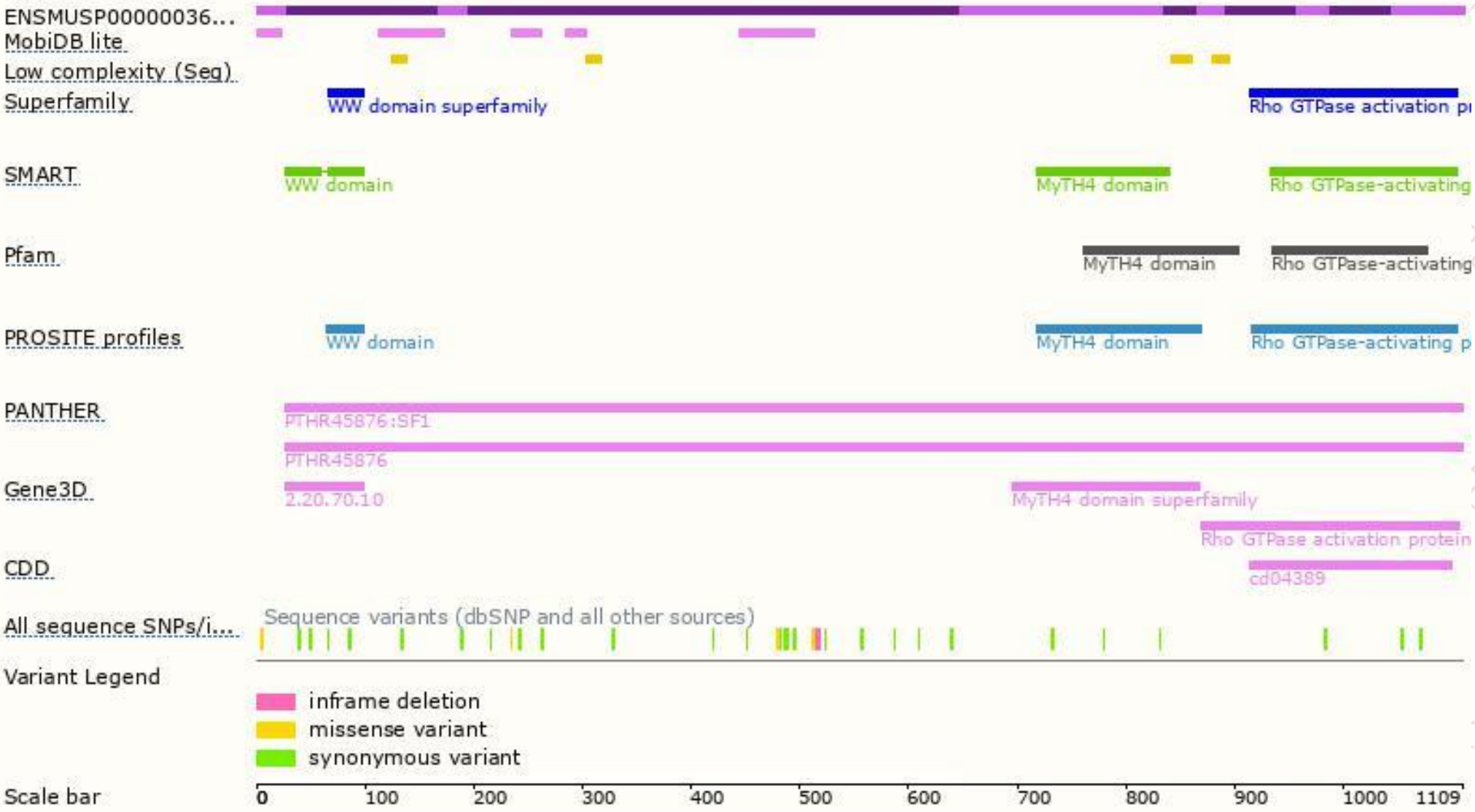
The strategy is based on the design of *Arhgap39-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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