

Arhgap12 Cas9-CKO Strategy

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Project Overview

Project Name

Arhgap12

Project type

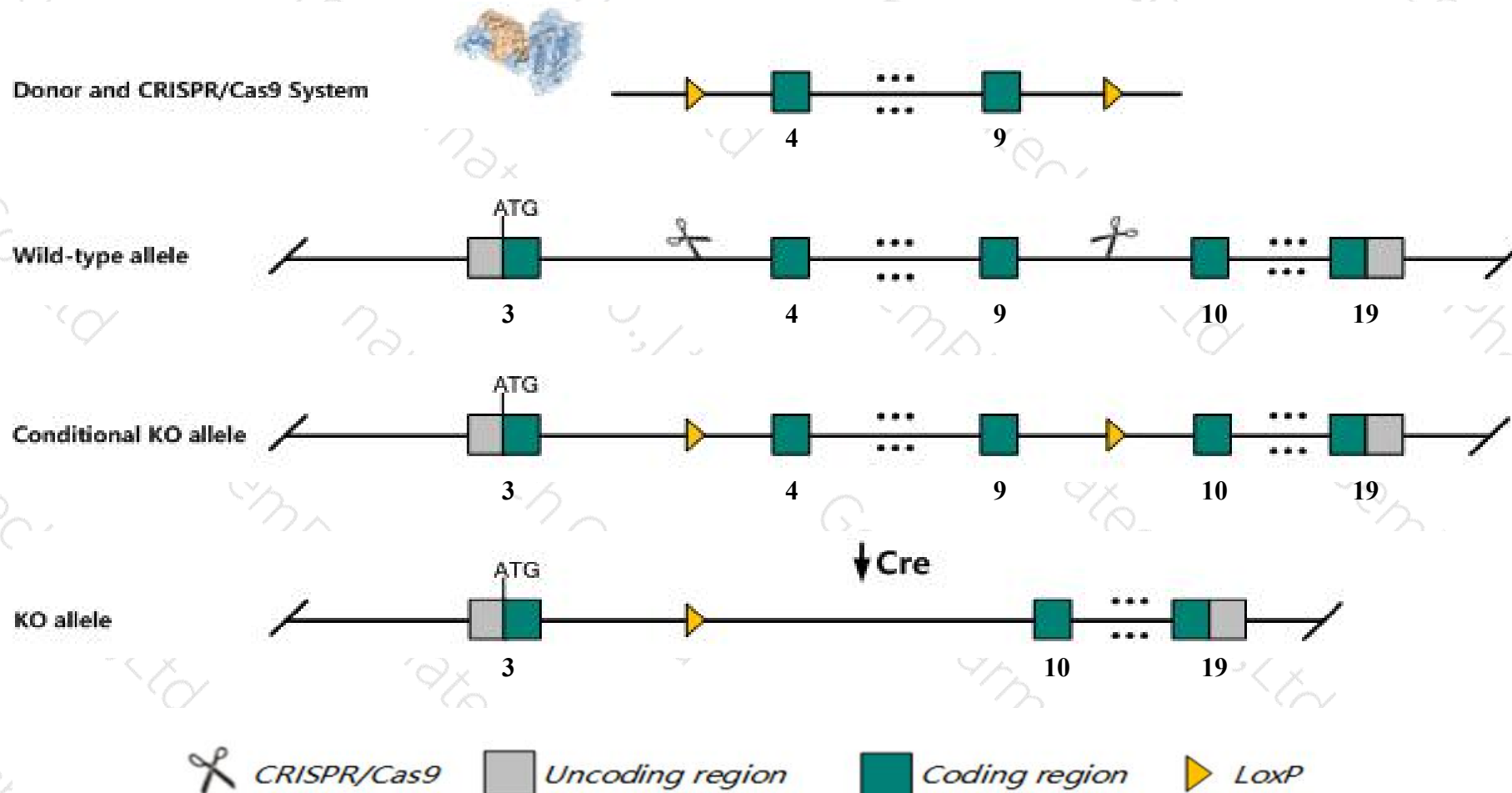
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgap12* gene. The schematic diagram is as follows:



- The *Arhgap12* gene has 15 transcripts. According to the structure of *Arhgap12* gene, exon4-exon9 of *Arhgap12*-212(ENSMUST00000182559.7) transcript is recommended as the knockout region. The region contains 746bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arhgap12* 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.

- According to the existing MGI data, a null gene trap mutation resulted in no notable phenotype in homozygous mutant mice.
- The *Arhgap12* gene is located on the Chr18. 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)

Arhgap12 Rho GTPase activating protein 12 [Mus musculus (house mouse)]

Gene ID: 75415, updated on 13-Mar-2020

Summary



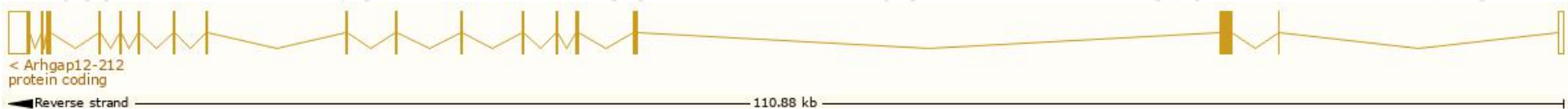
Official Symbol	Arhgap12 provided by MGI
Official Full Name	Rho GTPase activating protein 12 provided by MGI
Primary source	MGI:MGI:1922665
See related	Ensembl:ENSMUSG00000041225
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2810011M08Rik
Expression	Broad expression in bladder adult (RPKM 10.7), CNS E14 (RPKM 8.1) and 25 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

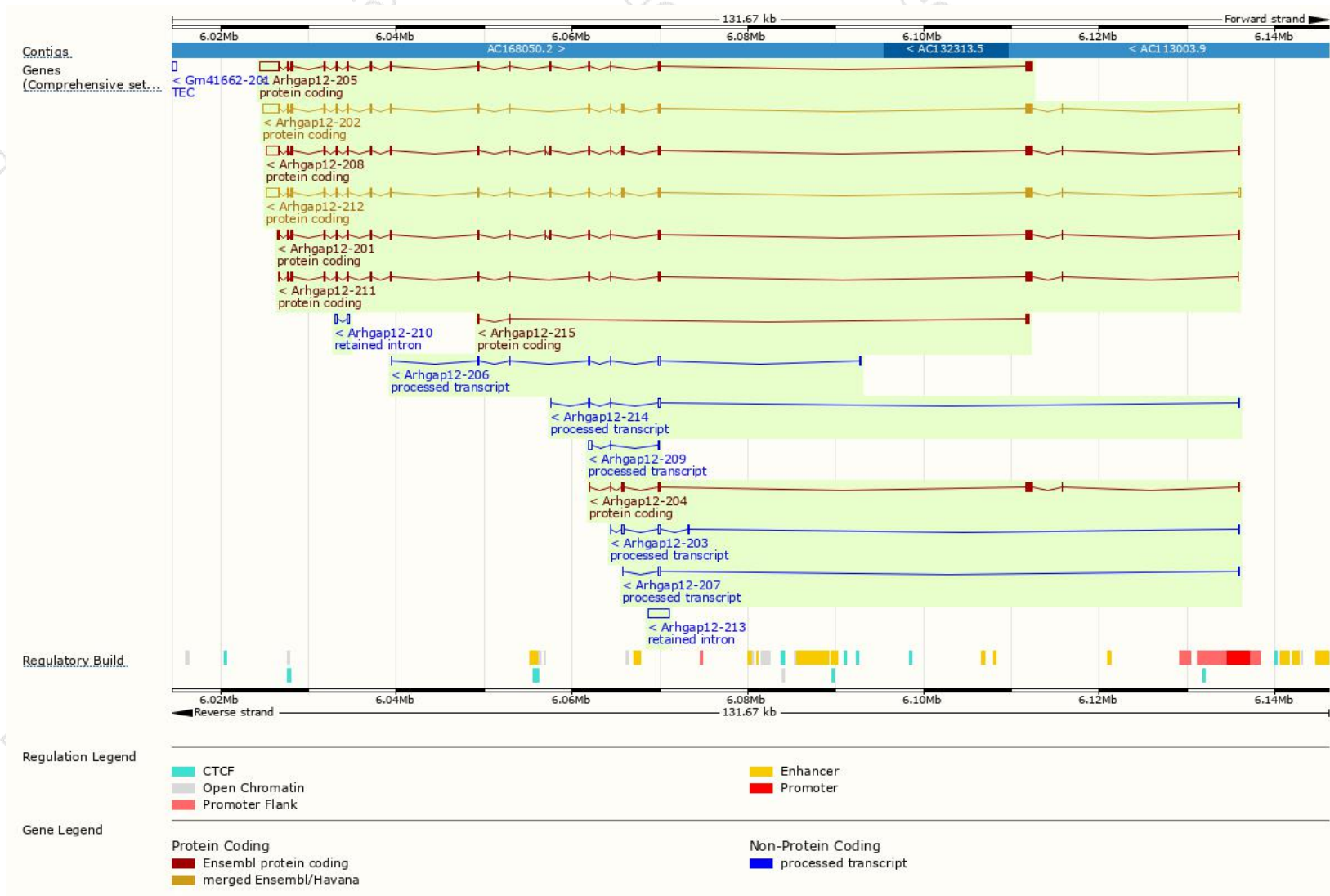
The gene has 15 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgap12-215	ENSMUST00000182921.1	439	146aa	Protein coding	-	S4R2V0	CDS 5' and 3' incomplete TSL:3
Arhgap12-204	ENSMUST00000182038.1	1435	394aa	Protein coding	-	S4R1B0	CDS 3' incomplete TSL:1
Arhgap12-211	ENSMUST00000182383.7	2500	766aa	Protein coding	-	S4R203	TSL:5 GENCODE basic APPRIS ALT1
Arhgap12-205	ENSMUST00000182066.7	4506	791aa	Protein coding	-	S4R248	TSL:5 GENCODE basic APPRIS ALT1
Arhgap12-201	ENSMUST00000062584.13	2718	796aa	Protein coding	-	A0A0A0MQ95	TSL:5 GENCODE basic
Arhgap12-202	ENSMUST00000077128.12	4431	813aa	Protein coding	CCDS37722	B2RUJ8	TSL:1 GENCODE basic APPRIS ALT1
Arhgap12-212	ENSMUST00000182559.7	4265	838aa	Protein coding	CCDS37723	Q8C0D4	TSL:1 GENCODE basic APPRIS P4
Arhgap12-208	ENSMUST00000182213.7	4162	843aa	Protein coding	-	S4R221	TSL:5 GENCODE basic
Arhgap12-206	ENSMUST00000182101.7	735	No protein	Processed transcript	-	-	TSL:3
Arhgap12-203	ENSMUST00000181989.7	679	No protein	Processed transcript	-	-	TSL:3
Arhgap12-214	ENSMUST00000182614.7	668	No protein	Processed transcript	-	-	TSL:3
Arhgap12-209	ENSMUST00000182322.1	595	No protein	Processed transcript	-	-	TSL:3
Arhgap12-207	ENSMUST00000182178.1	435	No protein	Processed transcript	-	-	TSL:3
Arhgap12-213	ENSMUST00000182572.1	2444	No protein	Retained intron	-	-	TSL:NA
Arhgap12-210	ENSMUST00000182343.1	556	No protein	Retained intron	-	-	TSL:2

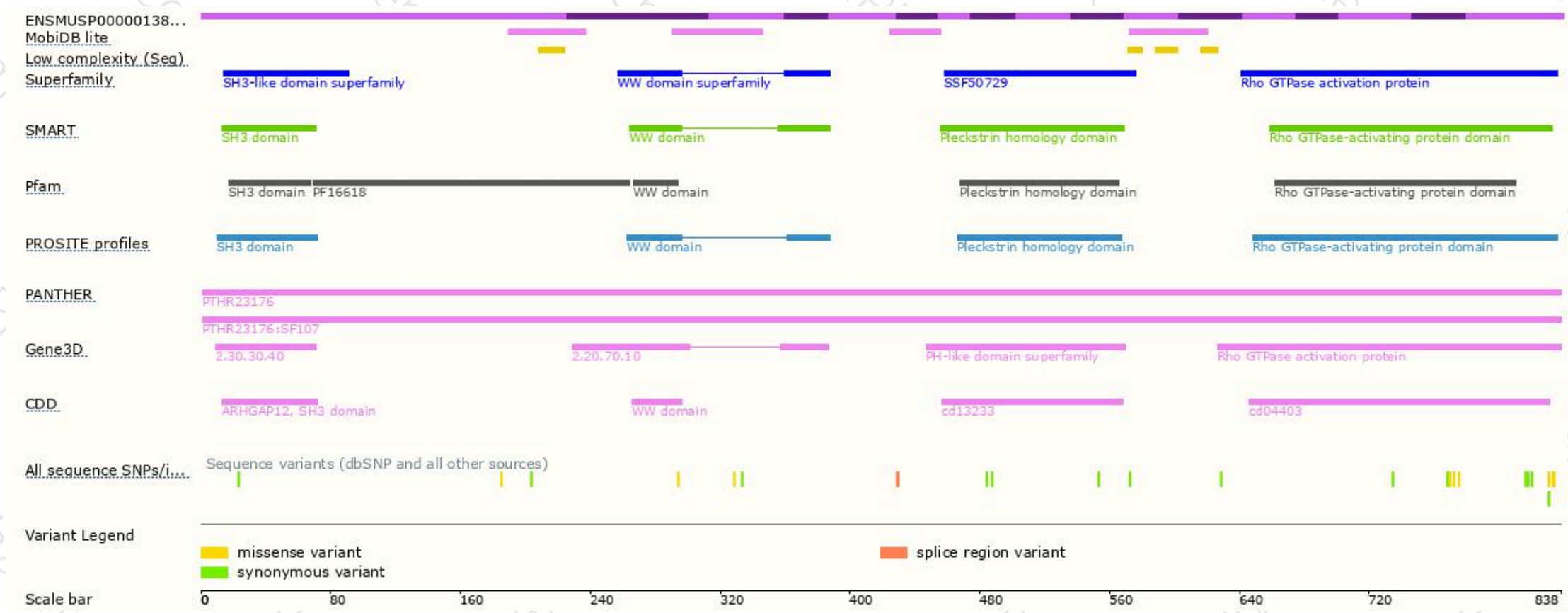
The strategy is based on the design of *Arhgap12-212* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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