

Arvcf Cas9-KO Strategy

Designer:

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Project Overview

Project Name

Arvcf

Project type

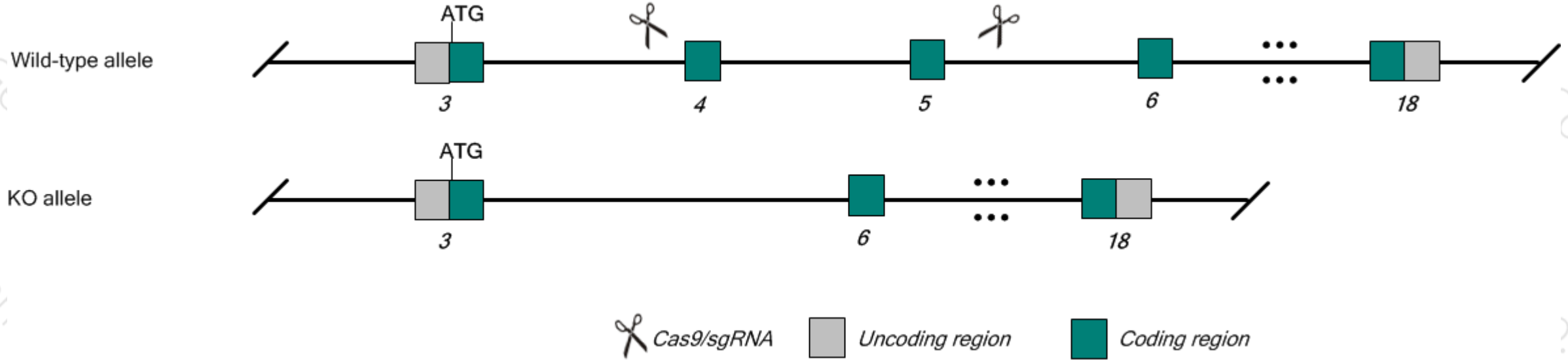
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



Technical routes

- The *Arvcf* gene has 13 transcripts, According to the structure of *Arvcf* gene, exon4-5 of *Arvcf*-201 transcript is recommended as the knockout region. The region contains the 1189bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arvcf* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data , Mice homozygous for a targeted allele display abnormal gait and cataracts.
- Transcript *Arvcf-206*, *Arvcf-208*, *Arvcf-209* may not be affected. The impact on transcript *Arvcf-213* is unknown.
- The *Arvcf* gene is located in the Chr16. 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 the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Arvcf armadillo repeat gene deleted in velocardiofacial syndrome [*Mus musculus* (house mouse)]

Gene ID: 11877, updated on 31-Jan-2019

Summary

Official Symbol	Arvcf provided by MGI
Official Full Name	armadillo repeat gene deleted in velocardiofacial syndrome provided by MGI
Primary source	MGI:MGI:109620
See related	Ensembl:ENSMUSG000000000325
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
Expression	Ubiquitous expression in whole brain E14.5 (RPKM 26.2), CNS E14 (RPKM 23.5) and 28 other tissues See more
Orthologs	human all

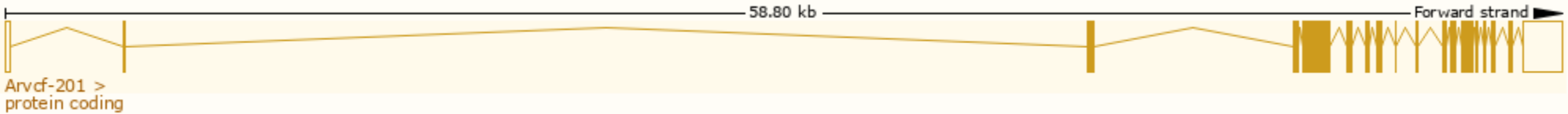
Transcript information (Ensembl)



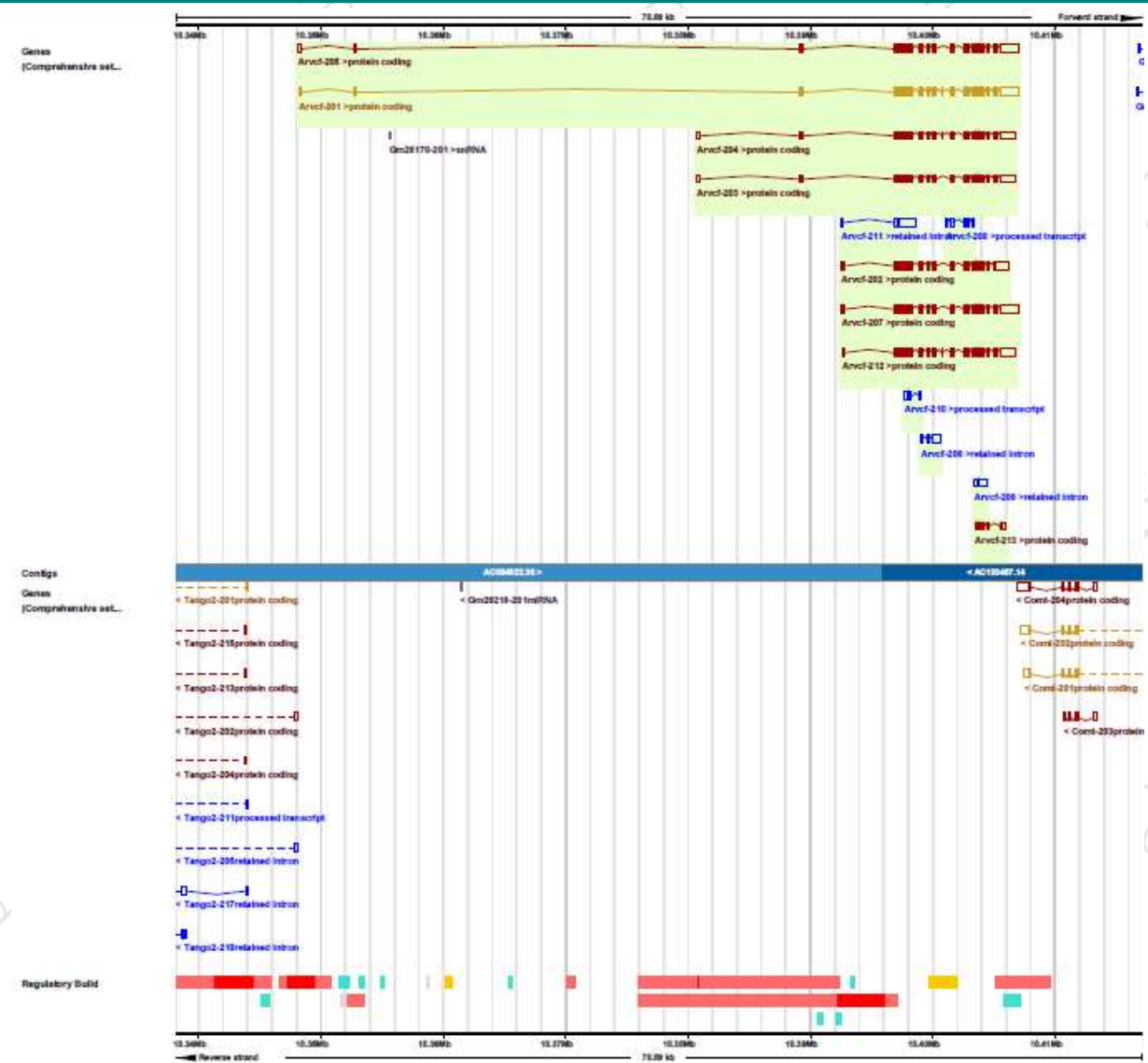
The gene has 13 transcripts, and all transcripts are shown below :

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Arvcf-205	ENSMUST00000115614.8	4698	956aa	Protein coding	CCDS70693	P98203	NM_001272029 NP_001258958	TSL:1 GENCODE basic APPRIS ALT2
Arvcf-201	ENSMUST00000090103.10	4622	962aa	Protein coding	CCDS28020	P98203	NM_033474 NP_258435	TSL:1 GENCODE basic APPRIS P3
Arvcf-204	ENSMUST00000115613.8	4236	962aa	Protein coding	CCDS28020	P98203	NM_001272028 NP_001258957	TSL:5 GENCODE basic APPRIS P3
Arvcf-207	ENSMUST00000150253.2	4232	892aa	Protein coding	CCDS70694	D6RI19	NM_001272032 NP_001258961	TSL:1 GENCODE basic APPRIS ALT2
Arvcf-203	ENSMUST00000115612.7	4218	956aa	Protein coding	CCDS70693	P98203	NM_001272030 NP_001258959	TSL:1 GENCODE basic APPRIS ALT2
Arvcf-202	ENSMUST00000115610.1	3829	892aa	Protein coding	CCDS70694	P98203	-	TSL:5 GENCODE basic APPRIS ALT2
Arvcf-212	ENSMUST00000232025.1	3888	898aa	Protein coding	-	-	NM_001272031 NP_001258960	GENCODE basic APPRIS ALT2
Arvcf-213	ENSMUST00000232241.1	801	131aa	Protein coding	-	-	-	CDS 5' incomplete
Arvcf-210	ENSMUST00000155548.1	568	No protein	Processed transcript	-	-	-	TSL:5
Arvcf-208	ENSMUST00000150484.1	507	No protein	Processed transcript	-	-	-	TSL:3
Arvcf-211	ENSMUST00000231791.1	1604	No protein	Retained intron	-	-	-	
Arvcf-209	ENSMUST00000152132.1	916	No protein	Retained intron	-	-	-	TSL:3
Arvcf-206	ENSMUST00000126183.1	732	No protein	Retained intron	-	-	-	TSL:2

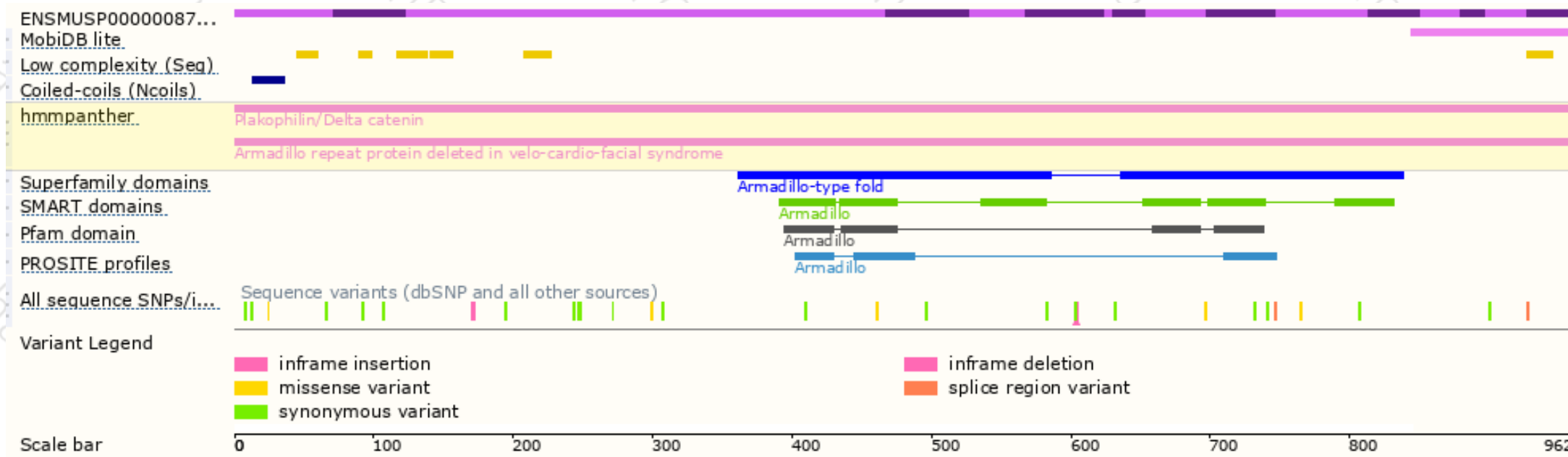
The strategy is based on the design of *Arvcf-201* transcript, The transcription is shown below



Genomic location distribution



Protein domain



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