

***Arpc1a* Cas9-CKO Strategy**

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Reviewer:

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Design Date:

2019-10-29

Project Overview

Project Name

Arpc1a

Project type

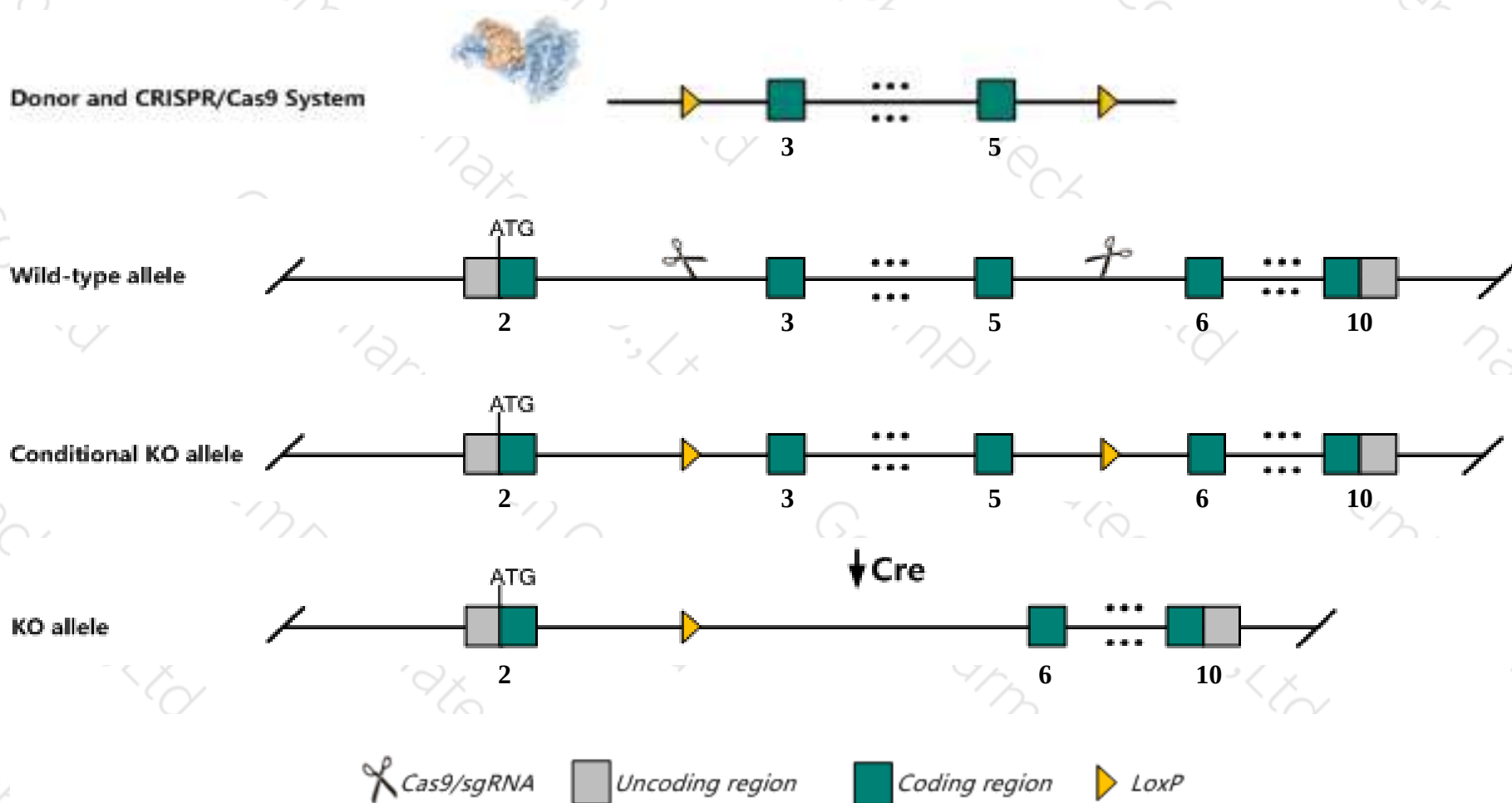
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arpc1a* gene. The schematic diagram is as follows:



- The *Arpc1a* gene has 6 transcripts. According to the structure of *Arpc1a* gene, exon3-exon5 of *Arpc1a*-201 (ENSMUST00000031625.14) transcript is recommended as the knockout region. The region contains 436bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arpc1a* 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 *Arpc1a* gene is located on the Chr5. 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.

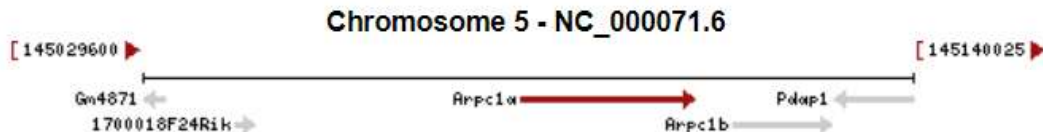
Gene information (NCBI)

Arpc1a actin related protein 2/3 complex, subunit 1A [*Mus musculus* (house mouse)]

Gene ID: 56443, updated on 12-Aug-2019

Summary

Official Symbol	Arpc1a provided by MGI
Official Full Name	actin related protein 2/3 complex, subunit 1A provided by MGI
Primary source	MGI:MGI:1928896
See related	Ensembl:ENSMUSG00000029621
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
Also known as	41kDa; Sid32; Sid329; AA407347; 0610010H08Rik; 1110030K07Rik
Expression	Ubiquitous expression in bladder adult (RPKM 113.1), CNS E18 (RPKM 73.8) and 28 other tissues See more
Orthologs	human all

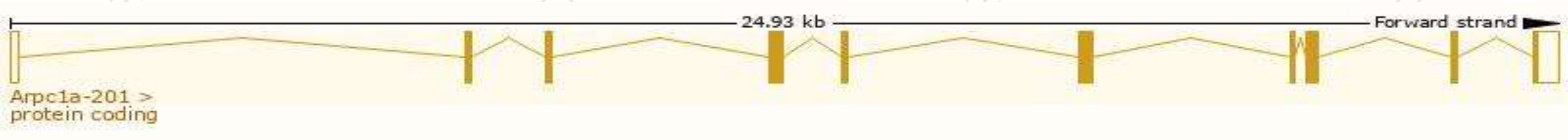


Transcript information (Ensembl)

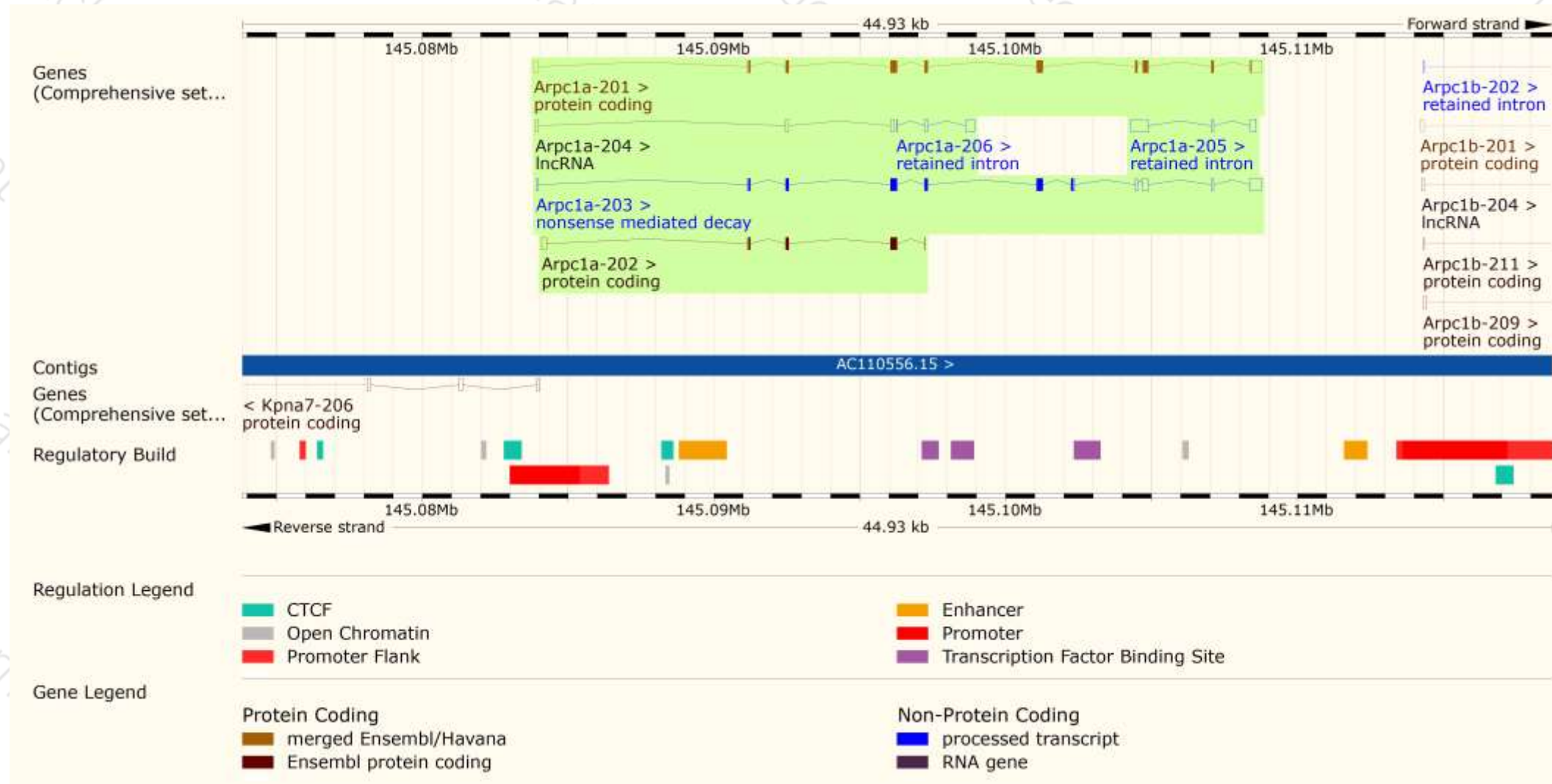
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Arpc1a-201	ENSMUST00000031625.14	1632	370aa	ENSMUSP00000031625.8	Protein coding	CCDS19855	Q9R0Q6	TSL:1 GENCODE basic APPRIS P1
Arpc1a-202	ENSMUST00000124379.2	588	135aa	ENSMUSP00000114421.1	Protein coding	-	D3YVI5	CDS 3' incomplete TSL:5
Arpc1a-203	ENSMUST00000127694.7	1685	262aa	ENSMUSP00000143026.1	Nonsense mediated decay	-	A0A0G2JF52	TSL:5
Arpc1a-205	ENSMUST00000142276.1	926	No protein	-	Retained intron	-	-	TSL:1
Arpc1a-206	ENSMUST00000147564.1	425	No protein	-	Retained intron	-	-	TSL:5
Arpc1a-204	ENSMUST00000134835.3	326	No protein	-	lncRNA	-	-	TSL:3

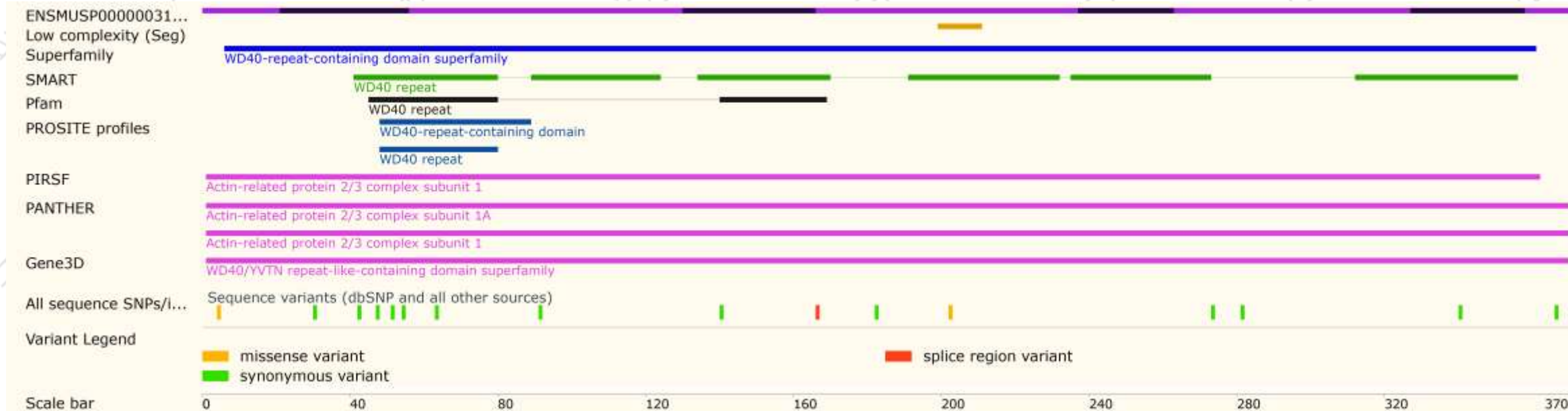
The strategy is based on the design of *Arpc1a-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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