

# *Arpc1b* Cas9-CKO Strategy

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**Reviewer:**

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**Design Date:**

**2019-10-29**

# Project Overview

**Project Name**

***Arpc1b***

**Project type**

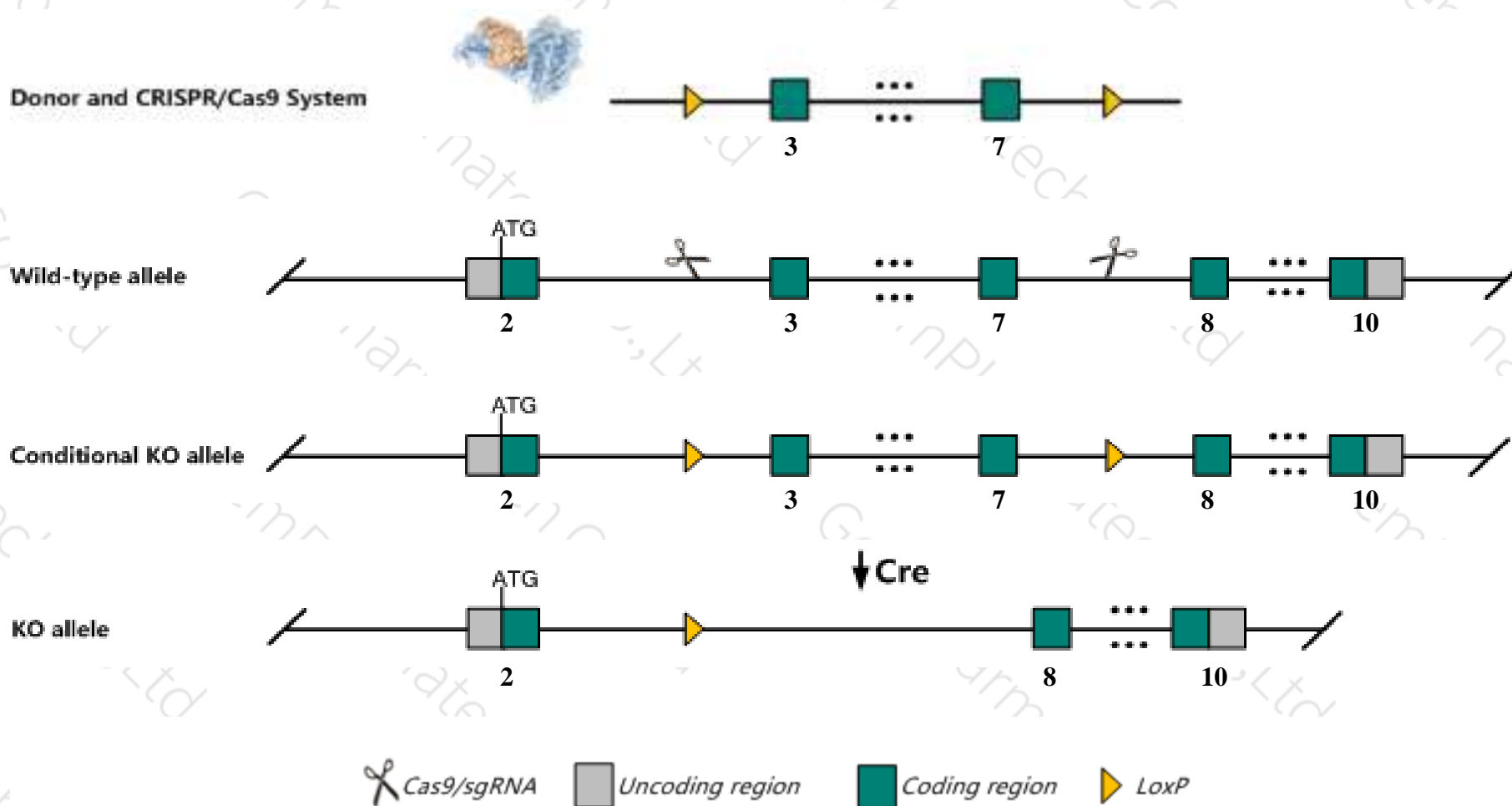
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arcp1b* gene. The schematic diagram is as follows:



- The *Arpc1b* gene has 11 transcripts. According to the structure of *Arpc1b* gene, exon3-exon7 of *Arpc1b-201* (ENSMUST00000085679.12) transcript is recommended as the knockout region. The region contains 719bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arpc1b* 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.

- Transcript *Arpc1b*-208 CDS 5' is incomplete, whether the ko region will affect the transcript is still unknown.
- The *Arpc1b* 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.

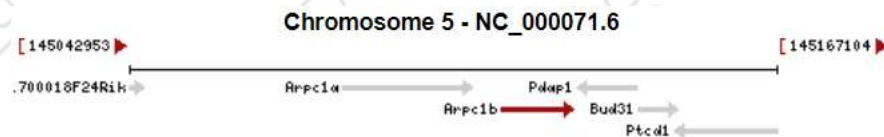
# Gene information (NCBI)

## Arpc1b actin related protein 2/3 complex, subunit 1B [ *Mus musculus* (house mouse) ]

Gene ID: 11867, updated on 12-Aug-2019

### Summary

<b>Official Symbol</b>	Arpc1b provided by MGI
<b>Official Full Name</b>	actin related protein 2/3 complex, subunit 1B provided by MGI
<b>Primary source</b>	MGI:MGI:1343142
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000029622</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	L72; 41kDa; SOP2Hs; p41-ARC; AA408064; AA408534; AA571392; AF007010; AW208418
<b>Expression</b>	Broad expression in colon adult (RPKM 219.0), ovary adult (RPKM 201.5) and 23 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

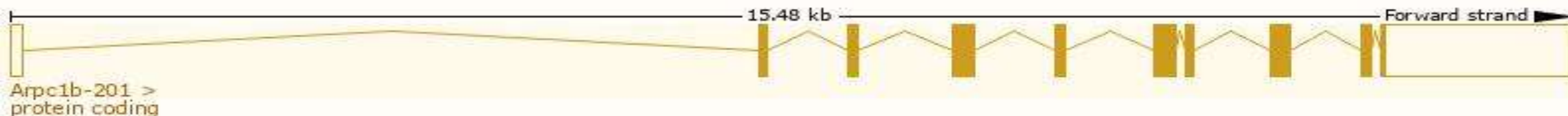


# Transcript information (Ensembl)

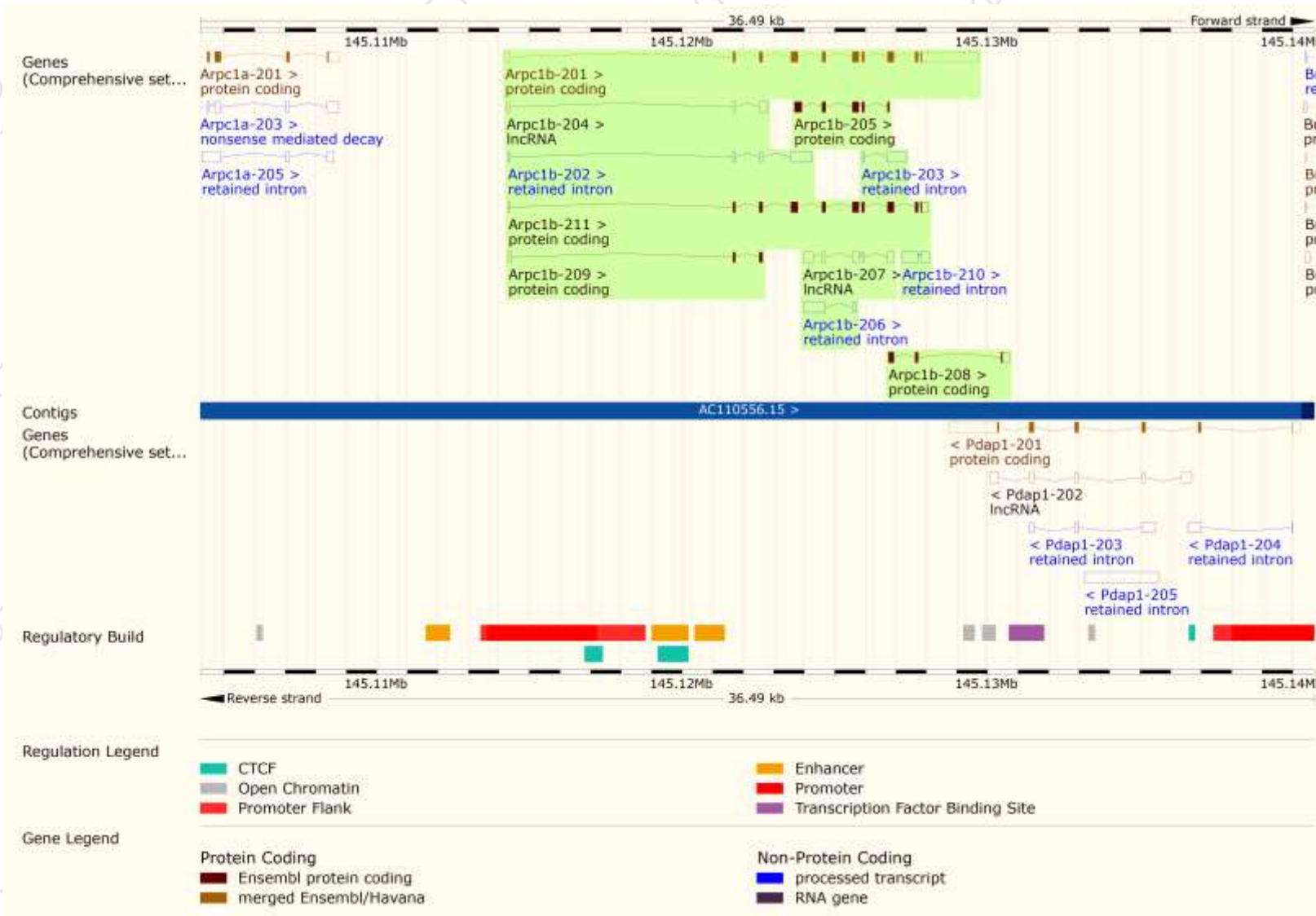
The gene has 11 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Arpc1b-201	<a href="#">ENSMUST00000085679.12</a>	3105	<a href="#">372aa</a>	<a href="#">ENSMUSP00000082822.6</a>	Protein coding	<a href="#">CCDS19856</a>	<a href="#">Q9WV32</a>	TSL:1 GENCODE basic APPRIS P2
Arpc1b-211	<a href="#">ENSMUST00000196111.4</a>	1394	<a href="#">376aa</a>	<a href="#">ENSMUSP00000143438.1</a>	Protein coding	-	<a href="#">Q91Z25</a>	TSL:1 GENCODE basic APPRIS ALT1
Arpc1b-205	<a href="#">ENSMUST00000136074.1</a>	696	<a href="#">232aa</a>	<a href="#">ENSMUSP00000115022.1</a>	Protein coding	-	<a href="#">F6VVE6</a>	CDS 5' and 3' incomplete TSL:3
Arpc1b-208	<a href="#">ENSMUST00000138922.1</a>	525	<a href="#">105aa</a>	<a href="#">ENSMUSP00000115515.1</a>	Protein coding	-	<a href="#">F6THG2</a>	CDS 5' incomplete TSL:5
Arpc1b-209	<a href="#">ENSMUST00000141602.1</a>	295	<a href="#">56aa</a>	<a href="#">ENSMUSP00000122340.1</a>	Protein coding	-	<a href="#">D3Z6S0</a>	CDS 3' incomplete TSL:5
Arpc1b-202	<a href="#">ENSMUST00000126343.1</a>	916	No protein	-	Retained intron	-	-	TSL:1
Arpc1b-206	<a href="#">ENSMUST00000138235.1</a>	850	No protein	-	Retained intron	-	-	TSL:3
Arpc1b-210	<a href="#">ENSMUST00000144375.1</a>	772	No protein	-	Retained intron	-	-	TSL:1
Arpc1b-203	<a href="#">ENSMUST00000128229.1</a>	680	No protein	-	Retained intron	-	-	TSL:2
Arpc1b-207	<a href="#">ENSMUST00000138900.7</a>	914	No protein	-	lncRNA	-	-	TSL:3
Arpc1b-204	<a href="#">ENSMUST00000129033.7</a>	431	No protein	-	lncRNA	-	-	TSL:2

The strategy is based on the design of *Arpc1b-201* transcript, The transcription is shown below

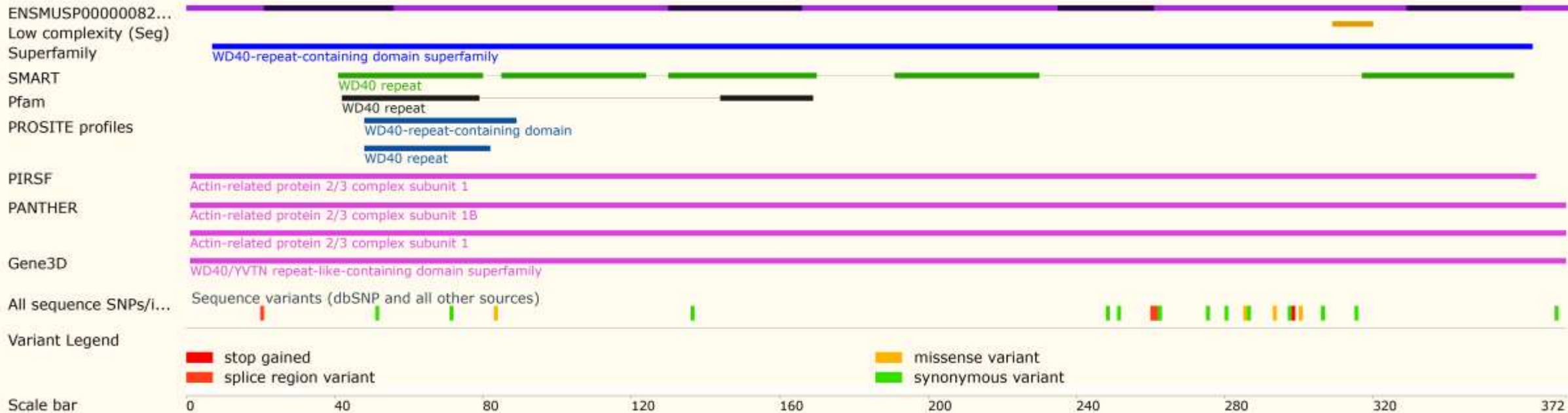


# Genomic location distribution





# Protein domain



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

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