

Arcn1 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2020-3-3

Project Overview

Project Name

Arcn1

Project type

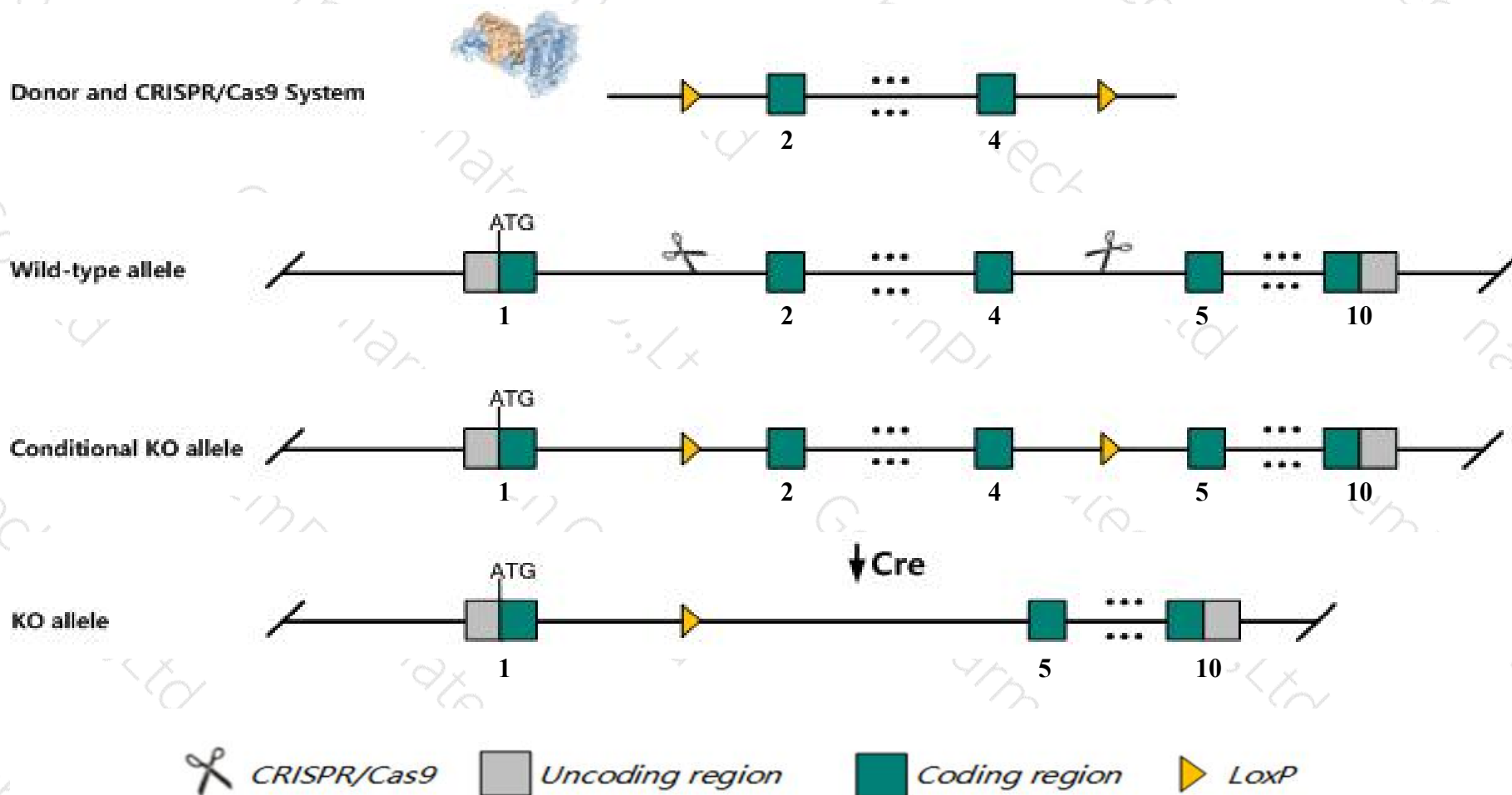
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arcn1* gene. The schematic diagram is as follows:



Technical routes

- The *Arcn1* gene has 6 transcripts. According to the structure of *Arcn1* gene, exon2-exon4 of *Arcn1-201* (ENSMUST00000034607.9) transcript is recommended as the knockout region. The region contains 650bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arcn1* 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, Mice homozygous for a spontaneous mutation have a dilute coat color and neurological defects.
- The *Arcn1* gene is located on the Chr9. 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)

Arcn1 archain 1 [Mus musculus (house mouse)]

Gene ID: 213827, updated on 7-Apr-2019

Summary



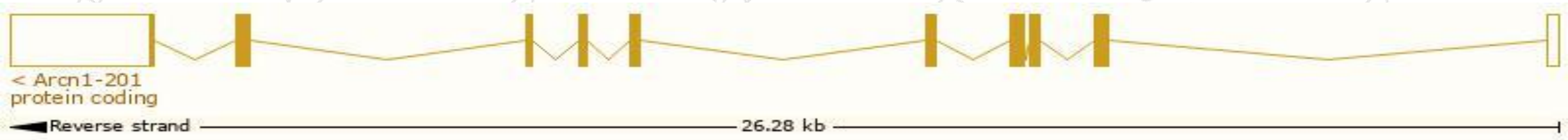
Official Symbol	Arcn1 provided by MGI
Official Full Name	archain 1 provided by MGI
Primary source	MGI:MGI:2387591
See related	Ensembl:ENSMUSG000000032096
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4632432M07Rik, nur17
Expression	Ubiquitous expression in placenta adult (RPKM 54.6), limb E14.5 (RPKM 40.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

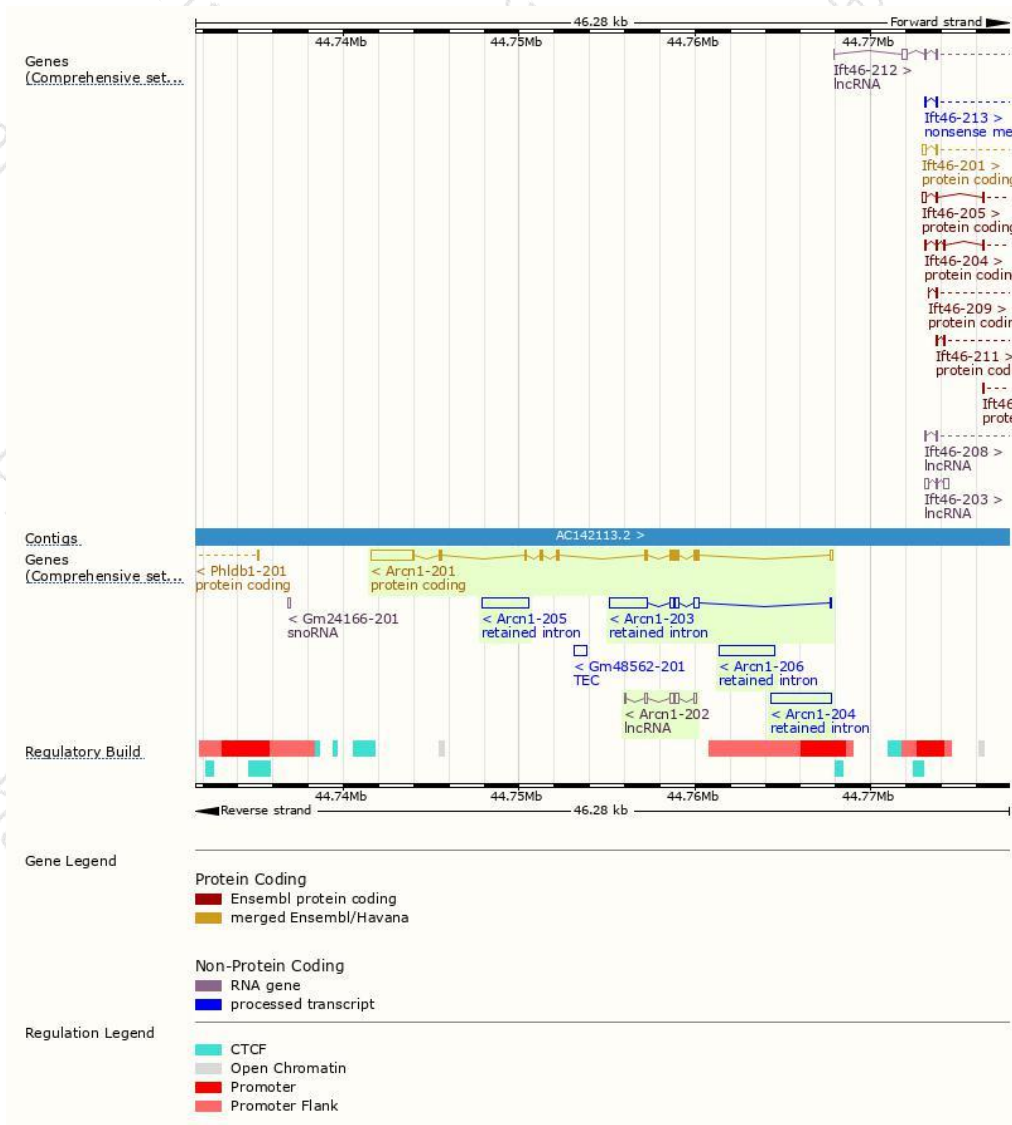
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arcn1-201	ENSMUST00000034607.9	4072	511aa	Protein coding	CCDS40602	Q5XJY5	TSL:1 GENCODE basic APPRIS P1
Arcn1-204	ENSMUST00000215140.1	3497	No protein	Retained intron	-	-	TSL:NA
Arcn1-206	ENSMUST00000217199.1	3211	No protein	Retained intron	-	-	TSL:NA
Arcn1-203	ENSMUST00000150160.7	2956	No protein	Retained intron	-	-	TSL:1
Arcn1-205	ENSMUST00000217194.1	2616	No protein	Retained intron	-	-	TSL:NA
Arcn1-202	ENSMUST00000125164.1	739	No protein	lncRNA	-	-	TSL:5

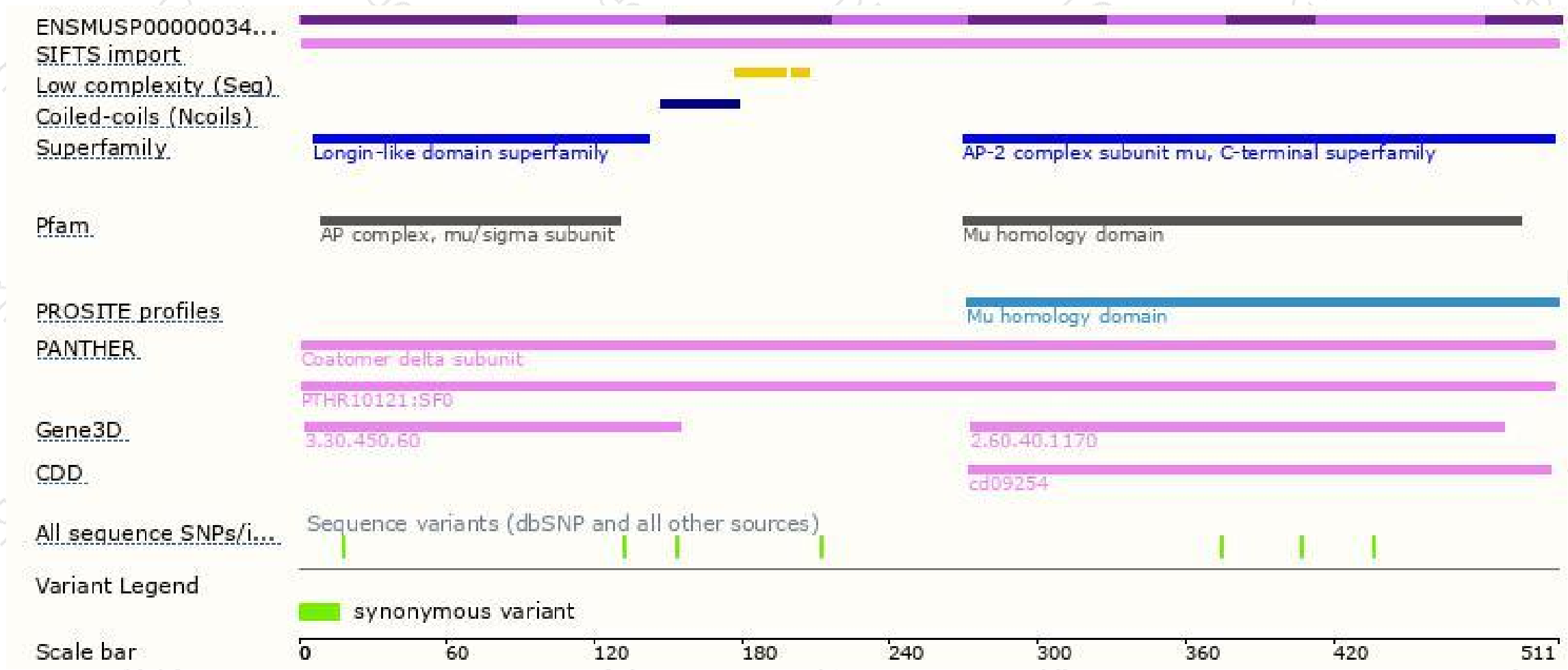
The strategy is based on the design of *Arcn1-201* transcript,The transcription is shown below



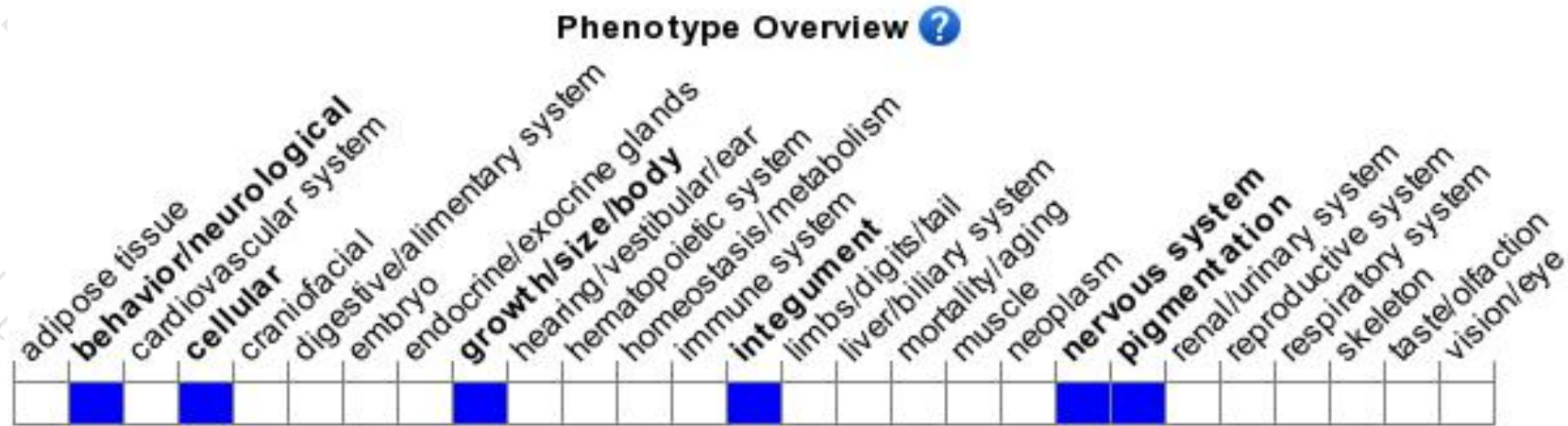
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

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

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