

***Arrdc1* Cas9-KO Strategy**

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Project Overview

Project Name

Arrdc1

Project type

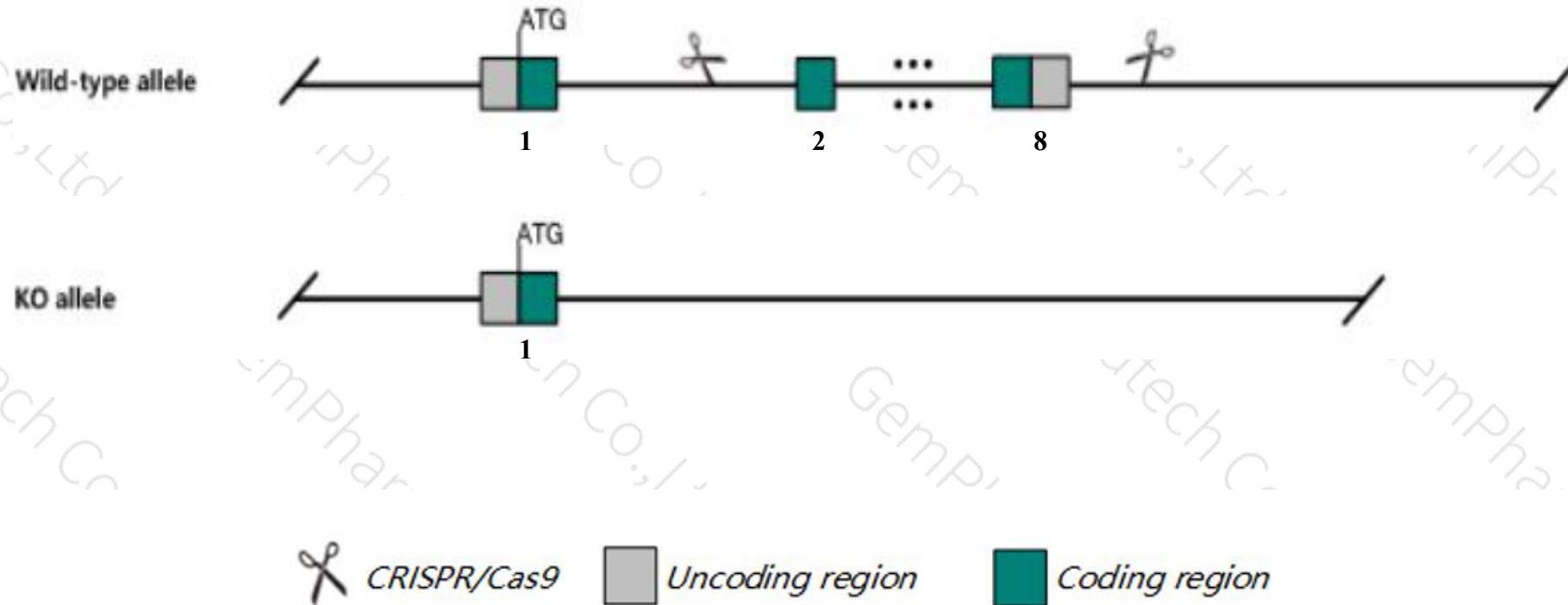
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arrdc1* gene. The schematic diagram is as follows:



- The *Arrdc1* gene has 12 transcripts. According to the structure of *Arrdc1* gene, exon2-exon8 of *Arrdc1-201* (ENSMUST00000028349.13) transcript is recommended as the knockout region. The region contains 1187bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arrdc1* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, homozygous null mouse embryonic fibroblasts exhibit reduced extracellular vesicle release.
- The *Arrdc1* gene is located on the Chr2. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Arrdc1 arrestin domain containing 1 [*Mus musculus* (house mouse)]

Gene ID: 215705, updated on 3-May-2020

Summary

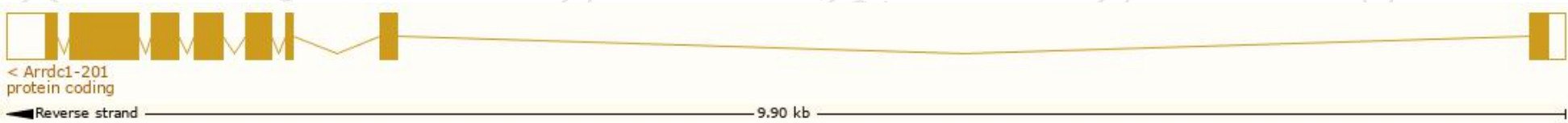
Official Symbol	Arrdc1 provided by MGI
Official Full Name	arrestin domain containing 1 provided by MGI
Primary source	MGI:MGI:2446136
See related	Ensembl:ENSMUSG000000026972
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI957342; BC004091
Expression	Broad expression in stomach adult (RPKM 119.7), colon adult (RPKM 105.8) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

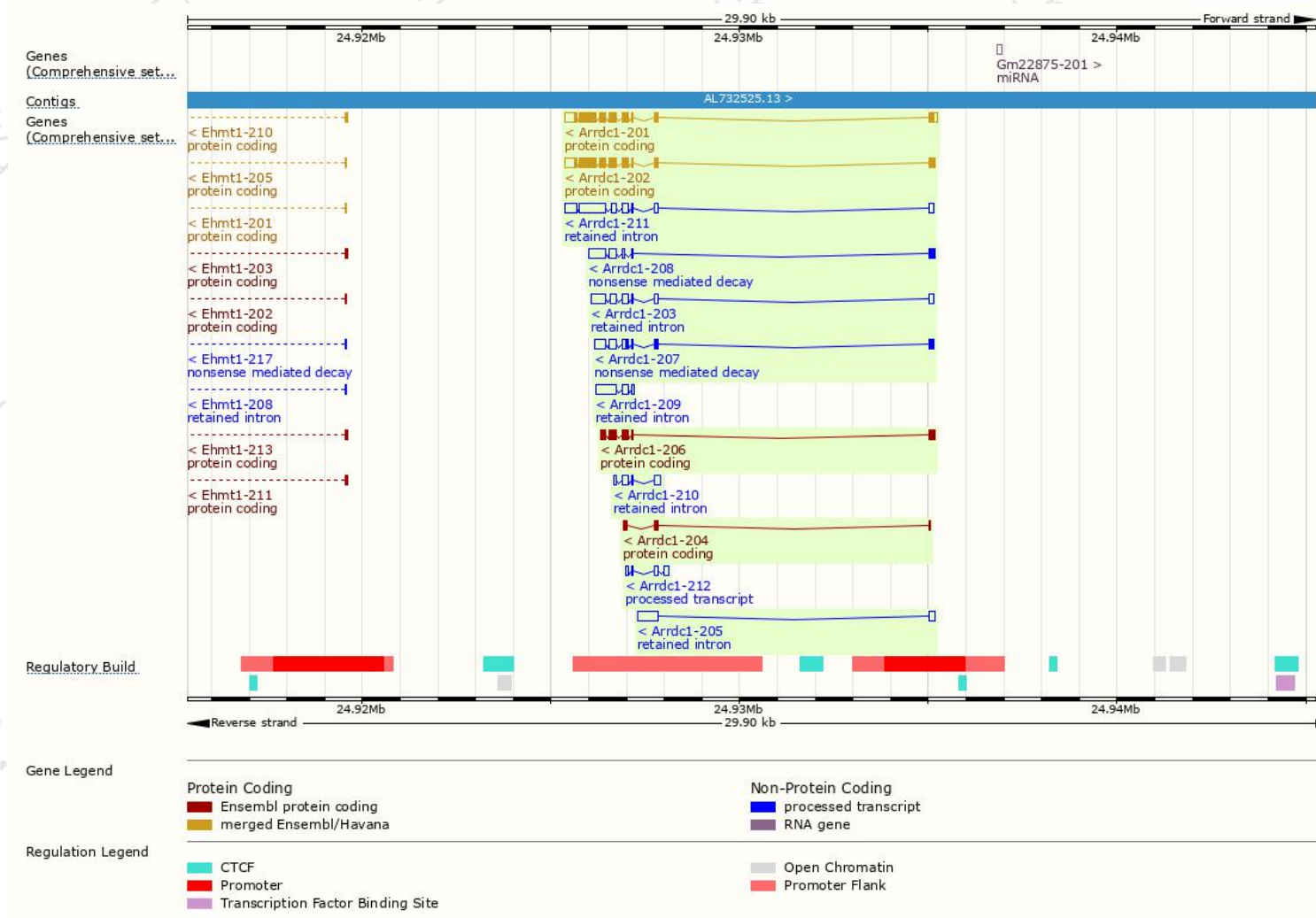
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arrdc1-201	ENSMUST00000028349.13	1666	434aa	Protein coding	CCDS50521	Q99KN1	TSL:1 GENCODE basic APPRIS ALT2
Arrdc1-202	ENSMUST00000102935.9	1574	433aa	Protein coding	CCDS15741	Q99KN1	TSL:1 GENCODE basic APPRIS P3
Arrdc1-206	ENSMUST00000133934.1	662	211aa	Protein coding	-	A2AIS9	CDS 3' incomplete TSL:2
Arrdc1-204	ENSMUST00000132074.1	253	84aa	Protein coding	-	F6Q4G2	CDS 5' and 3' incomplete TSL:5
Arrdc1-208	ENSMUST00000144963.7	903	60aa	Nonsense mediated decay	-	D6RDR8	TSL:3
Arrdc1-207	ENSMUST00000142887.7	902	108aa	Nonsense mediated decay	-	F7ANZ2	CDS 5' incomplete TSL:3
Arrdc1-212	ENSMUST00000156706.1	338	No protein	Processed transcript	-	-	TSL:2
Arrdc1-211	ENSMUST00000155953.7	1590	No protein	Retained intron	-	-	TSL:5
Arrdc1-203	ENSMUST00000129784.7	974	No protein	Retained intron	-	-	TSL:3
Arrdc1-209	ENSMUST00000152240.7	775	No protein	Retained intron	-	-	TSL:2
Arrdc1-205	ENSMUST00000133396.1	717	No protein	Retained intron	-	-	TSL:2
Arrdc1-210	ENSMUST00000155525.7	437	No protein	Retained intron	-	-	TSL:3

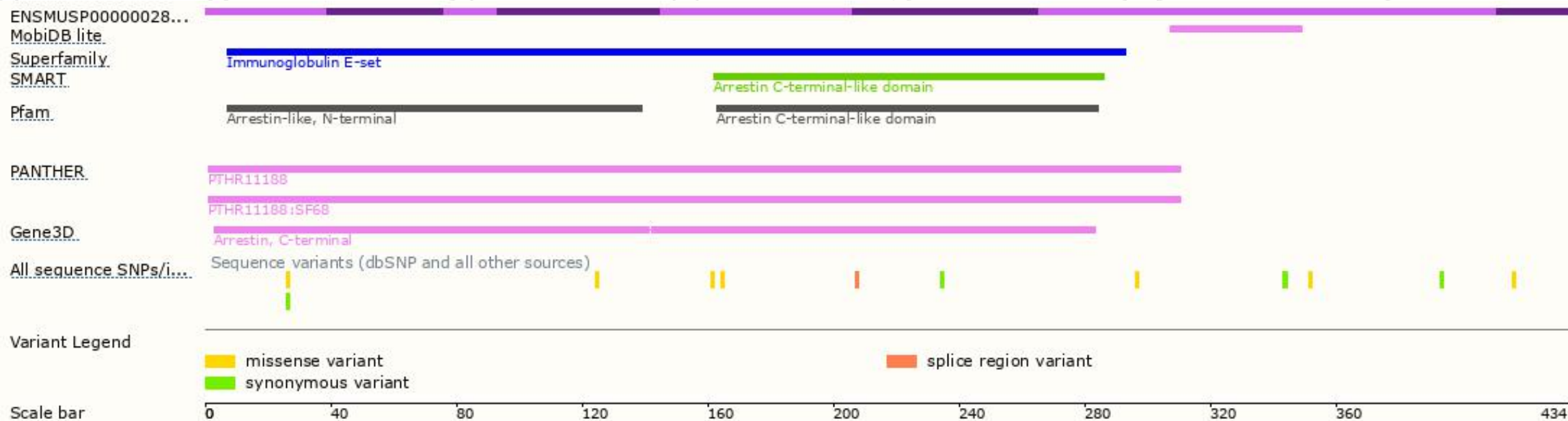
The strategy is based on the design of *Arrdc1-201* transcript, the transcription is shown below



Genomic location distribution

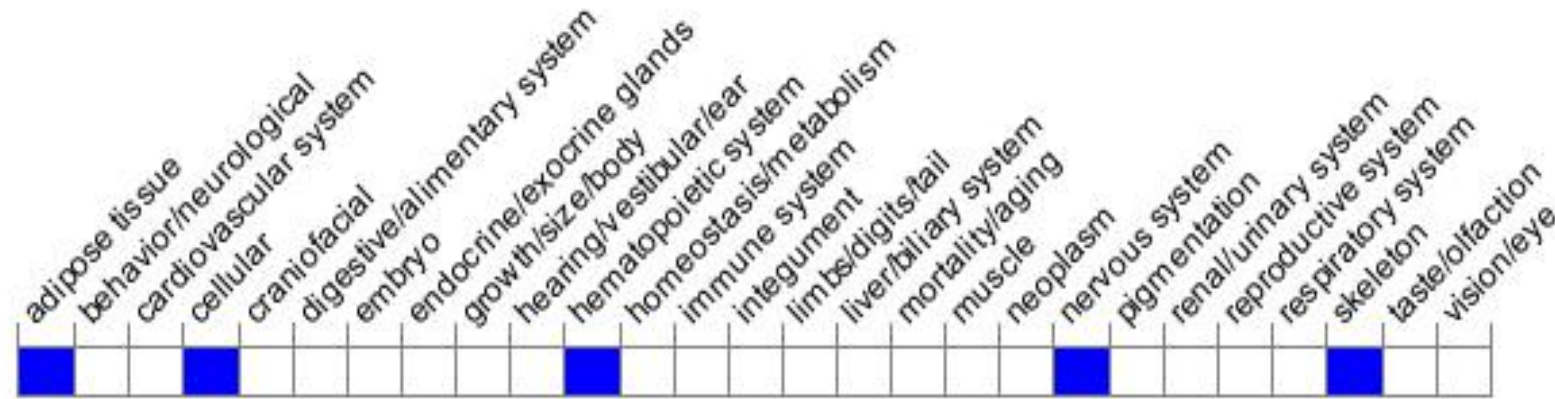


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview



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

According to the existing MGI data, homozygous null mouse embryonic fibroblasts exhibit reduced extracellular vesicle release.

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

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