

Arf4 Cas9-KO Strategy

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Project Overview

Project Name

Arf4

Project type

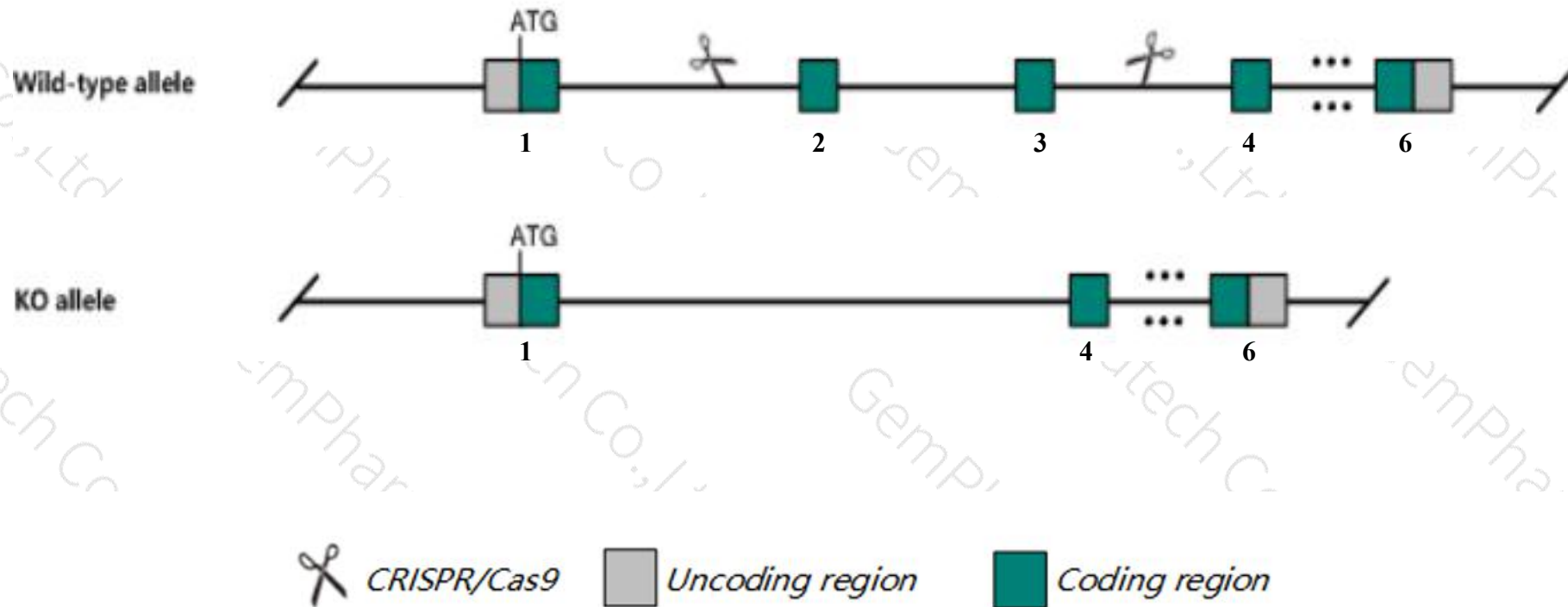
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arf4* gene. The schematic diagram is as follows:



- The *Arf4* gene has 7 transcripts. According to the structure of *Arf4* gene, exon2-exon3 of *Arf4*-201(ENSMUST00000022429.8) transcript is recommended as the knockout region. The region contains 191bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arf4* gene. The brief process is as follows: CRISPR/Cas9 system 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 gene trap allele exhibit embryonic lethality. Mice heterozygous for the gene trap allele exhibit failure to increase exploration of an object in a novel context, reduced spine density and reduced mESPC amplitudes.
- The *Arf4* gene is located on the Chr14. 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)

Arf4 ADP-ribosylation factor 4 [Mus musculus (house mouse)]

Gene ID: 11843, updated on 26-Mar-2020

Summary



Official Symbol Arf4 provided by [MGI](#)

Official Full Name ADP-ribosylation factor 4 provided by [MGI](#)

Primary source [MGI:MGI:99433](#)

See related [Ensembl:ENSMUSG000000021877](#)

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 AA407803

Expression Ubiquitous expression in adrenal adult (RPKM 186.8), duodenum adult (RPKM 168.4) and 28 other tissues [See more](#)

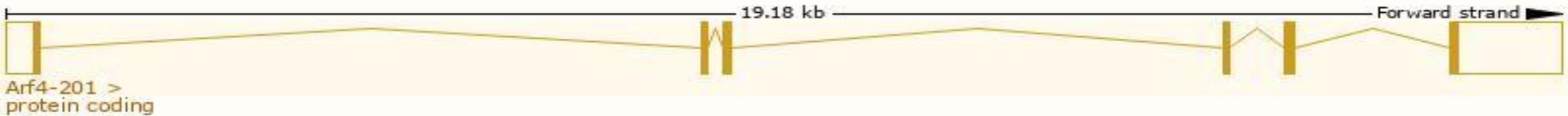
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

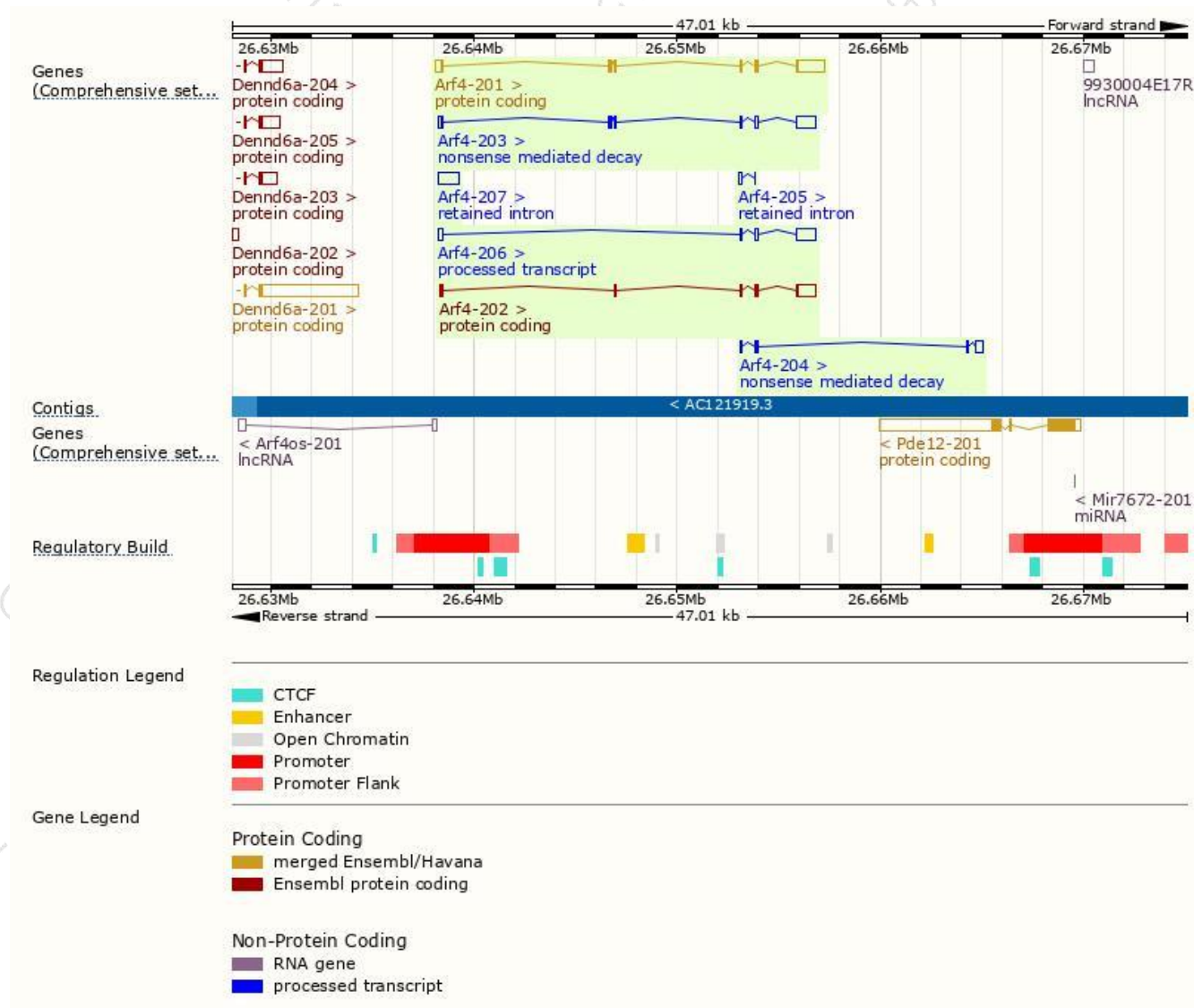
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arf4-201	ENSMUST00000022429.8	2165	180aa	Protein coding	CCDS26881	P61750 Q14BR4	TSL:1 GENCODE basic APPRIS P1
Arf4-202	ENSMUST00000112318.9	1367	153aa	Protein coding	-	E9Q798	TSL:5 GENCODE basic
Arf4-203	ENSMUST00000166075.7	1582	64aa	Nonsense mediated decay	-	E9Q2C2	TSL:5
Arf4-204	ENSMUST00000167376.1	700	60aa	Nonsense mediated decay	-	F6UFB9	CDS 5' incomplete TSL:5
Arf4-206	ENSMUST00000171282.1	1345	No protein	Processed transcript	-	-	TSL:5
Arf4-207	ENSMUST00000224138.1	1034	No protein	Retained intron	-	-	
Arf4-205	ENSMUST00000171207.1	188	No protein	Retained intron	-	-	TSL:5

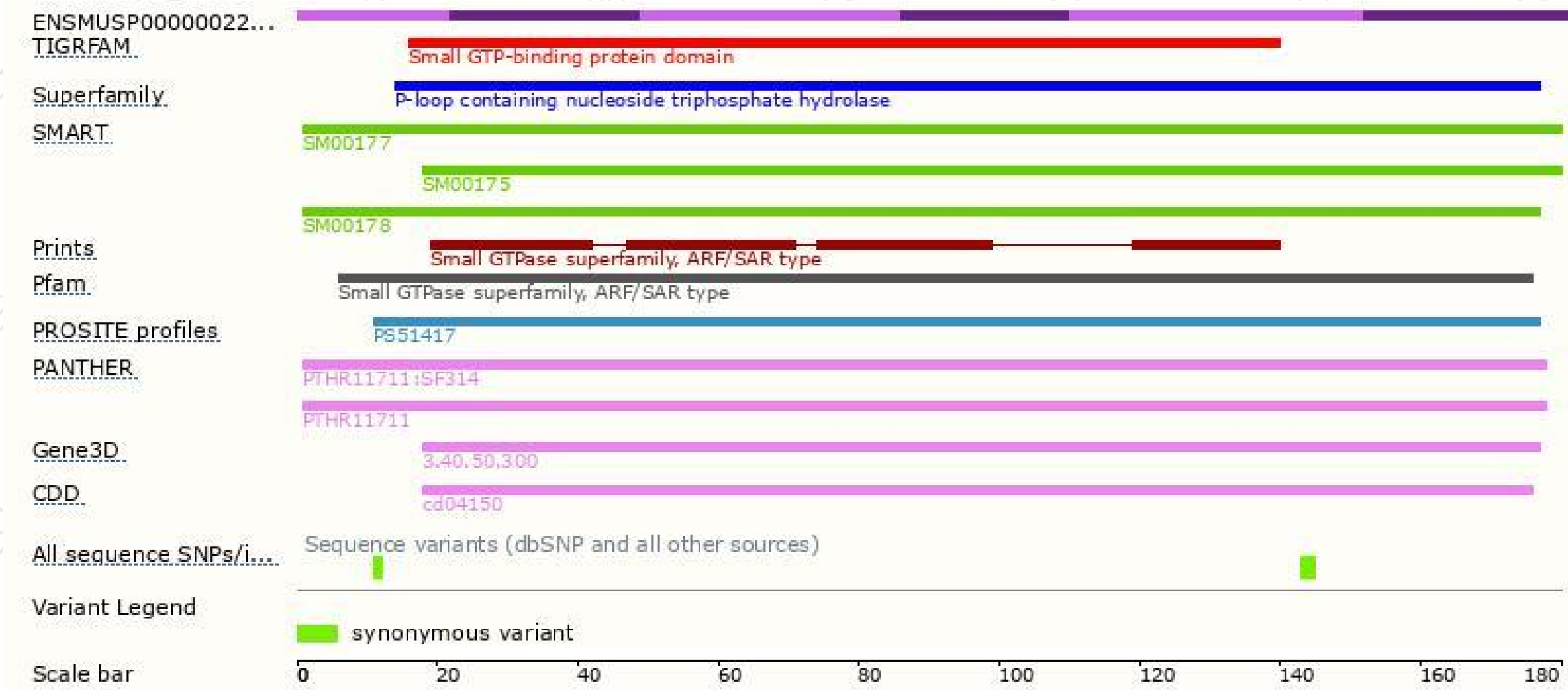
The strategy is based on the design of *Arf4-201* transcript,the transcription is shown below:



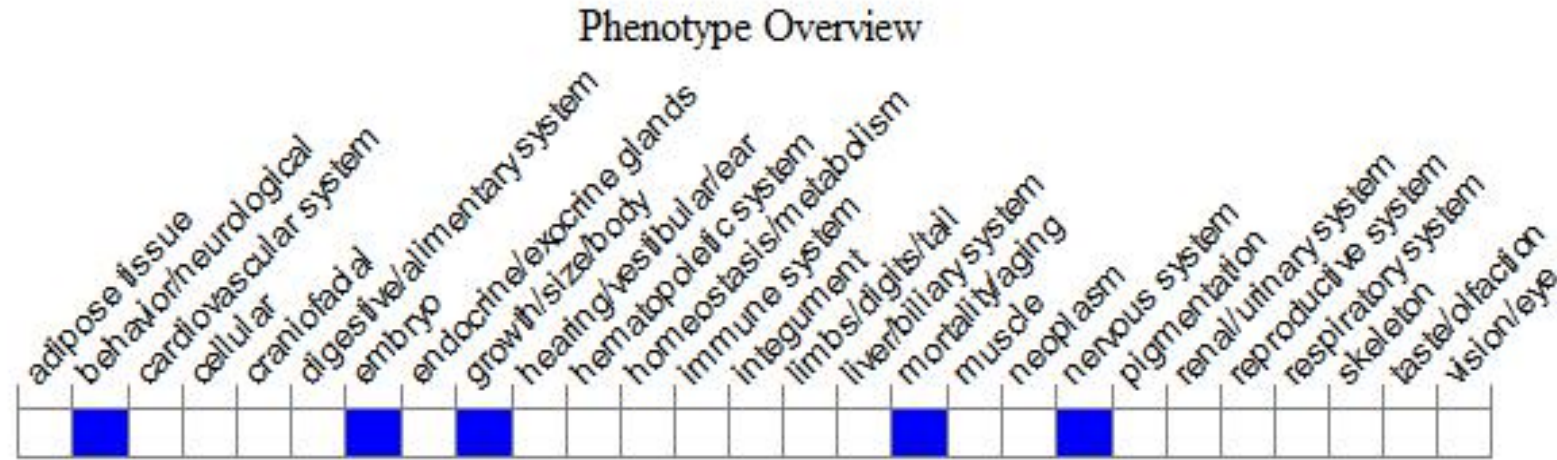
Genomic location distribution



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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