

Aif1 Cas9-CKO Strategy

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Project Overview

Project Name

Aif1

Project type

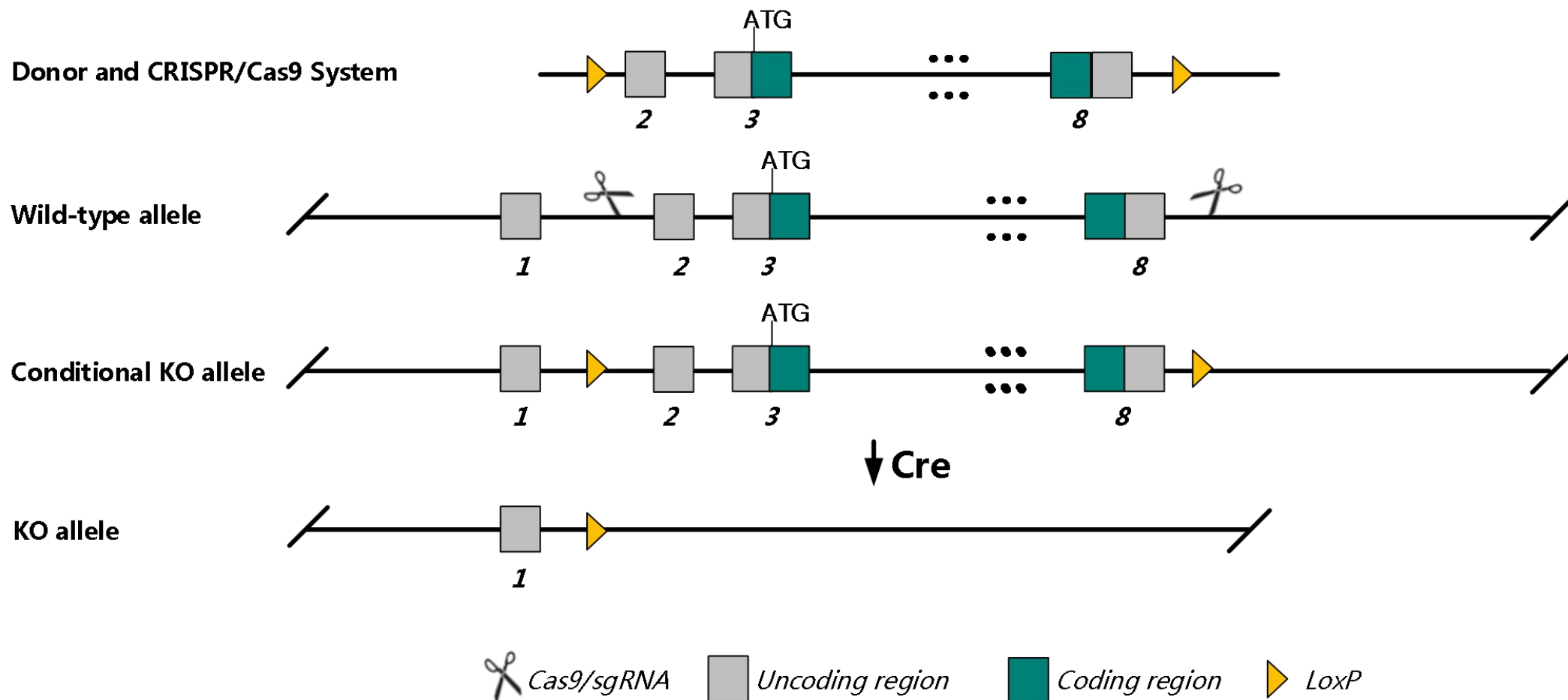
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Aif1* gene. The schematic diagram is as follows:



- The *Aif1* gene has 7 transcripts. According to the structure of *Aif1* gene, exon2-exon8 of *Aif1*-206 (ENSMUST00000173324.7) transcript is recommended as the knockout region. The region contains all coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Aif1* 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 knock-out allele exhibit decreased spleen weight, decreased platelet cell number and decreased susceptibility to induced arthritis.
- The *Aif1* gene is located on the Chr17. 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)

Aif1 allograft inflammatory factor 1 [Mus musculus (house mouse)]

Gene ID: 11629, updated on 19-Mar-2019

Summary



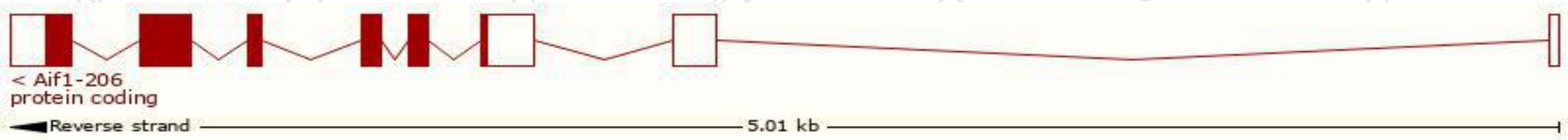
Official Symbol	Aif1 provided by MGI
Official Full Name	allograft inflammatory factor 1 provided by MGI
Primary source	MGI:MGI:1343098
See related	Ensembl:ENSMUSG00000024397
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI607846, AIF-1, D17H6S50E, G1, Iba1
Expression	Biased expression in testis adult (RPKM 116.9) and liver E18 (RPKM 4.3) See more
Orthologs	human all

Transcript information (Ensembl)

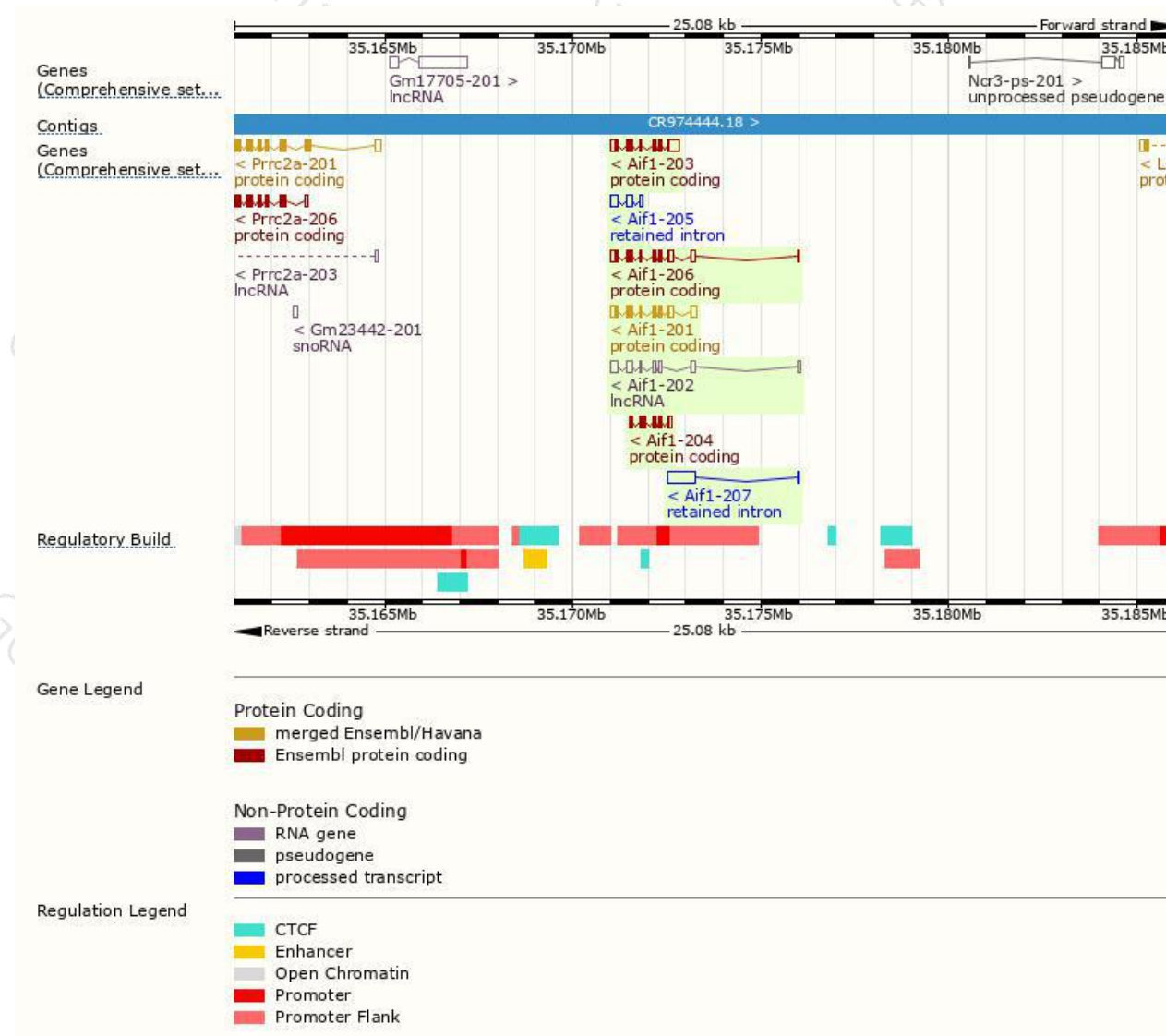
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Aif1-206	ENSMUST00000173324.7	875	147aa	Protein coding	CCDS28689	O70200 Q4FJL9	TSL:1 GENCODE basic APPRIS P1
Aif1-201	ENSMUST00000025257.11	847	147aa	Protein coding	CCDS28689	O70200 Q4FJL9	TSL:2 GENCODE basic APPRIS P1
Aif1-203	ENSMUST00000172693.7	842	147aa	Protein coding	CCDS28689	O70200 Q4FJL9	TSL:1 GENCODE basic APPRIS P1
Aif1-204	ENSMUST00000173106.1	477	128aa	Protein coding	-	G3UYJ2	CDS 3' incomplete TSL:3
Aif1-207	ENSMUST00000174044.1	775	No protein	Retained intron	-	-	TSL:5
Aif1-205	ENSMUST00000173281.7	462	No protein	Retained intron	-	-	TSL:2
Aif1-202	ENSMUST00000172679.1	763	No protein	lncRNA	-	-	TSL:3

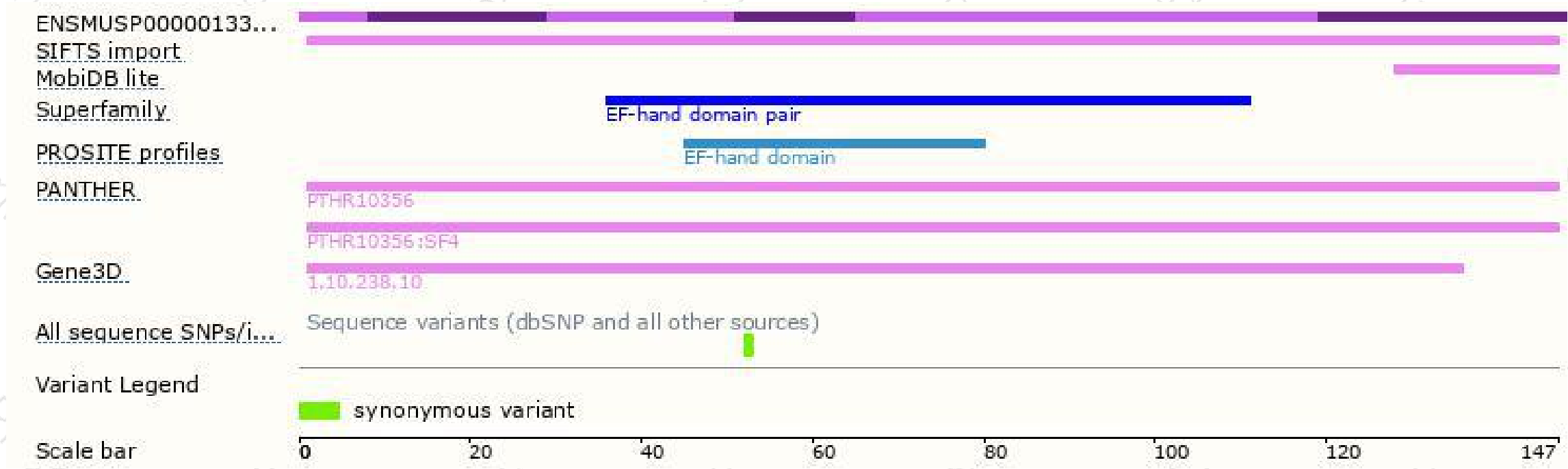
The strategy is based on the design of *Aif1-206* transcript,The transcription is shown below



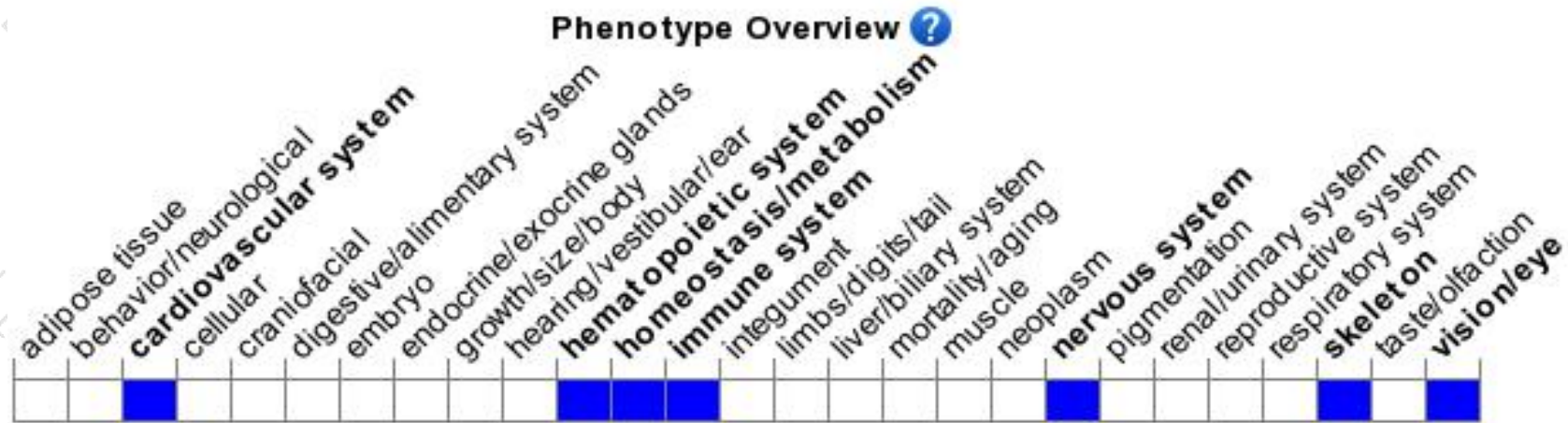
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for a knock-out allele exhibit decreased spleen weight, decreased platelet cell number and decreased susceptibility to induced arthritis.

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

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