

# *Aif1* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Aif1*

**Project type**

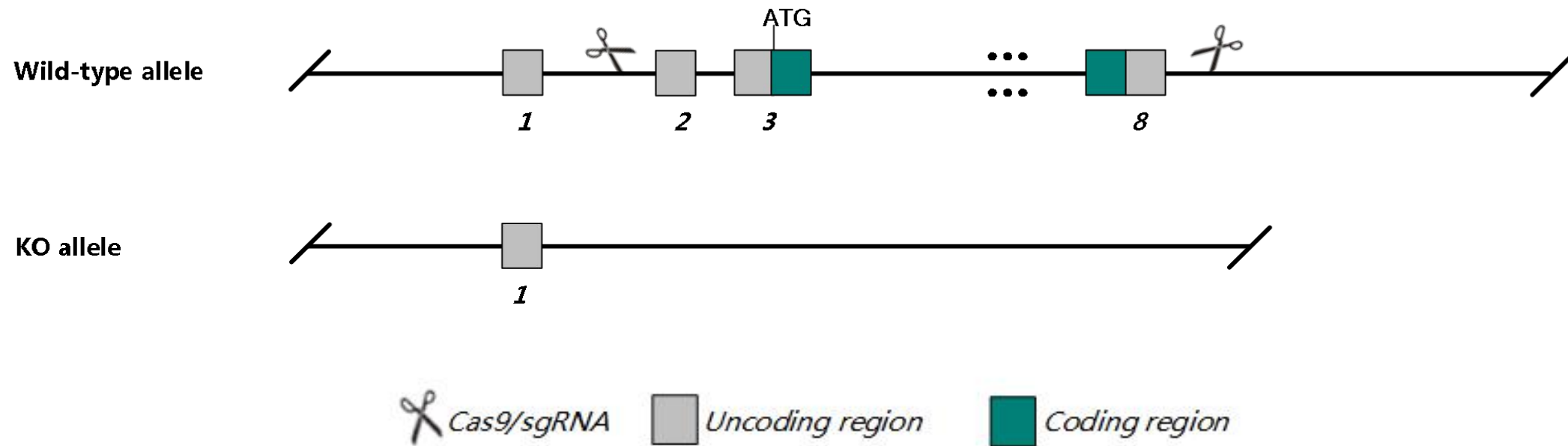
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# 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 w

- 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information (NCBI)

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

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

### Summary



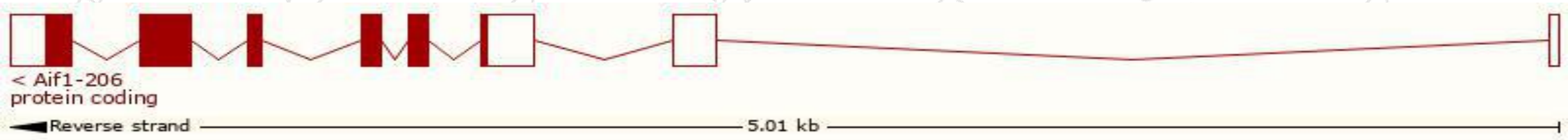
|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Official Symbol</b>    | Aif1 provided by <a href="#">MGI</a>                                                                                                                                      |
| <b>Official Full Name</b> | allograft inflammatory factor 1 provided by <a href="#">MGI</a>                                                                                                           |
| <b>Primary source</b>     | <a href="#">MGI:MGI:1343098</a>                                                                                                                                           |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG00000024397</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>      | AI607846, AIF-1, D17H6S50E, G1, Iba1                                                                                                                                      |
| <b>Expression</b>         | Biased expression in testis adult (RPKM 116.9) and liver E18 (RPKM 4.3) <a href="#">See more</a>                                                                          |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>                                                                                                                                 |

# Transcript information (Ensembl)

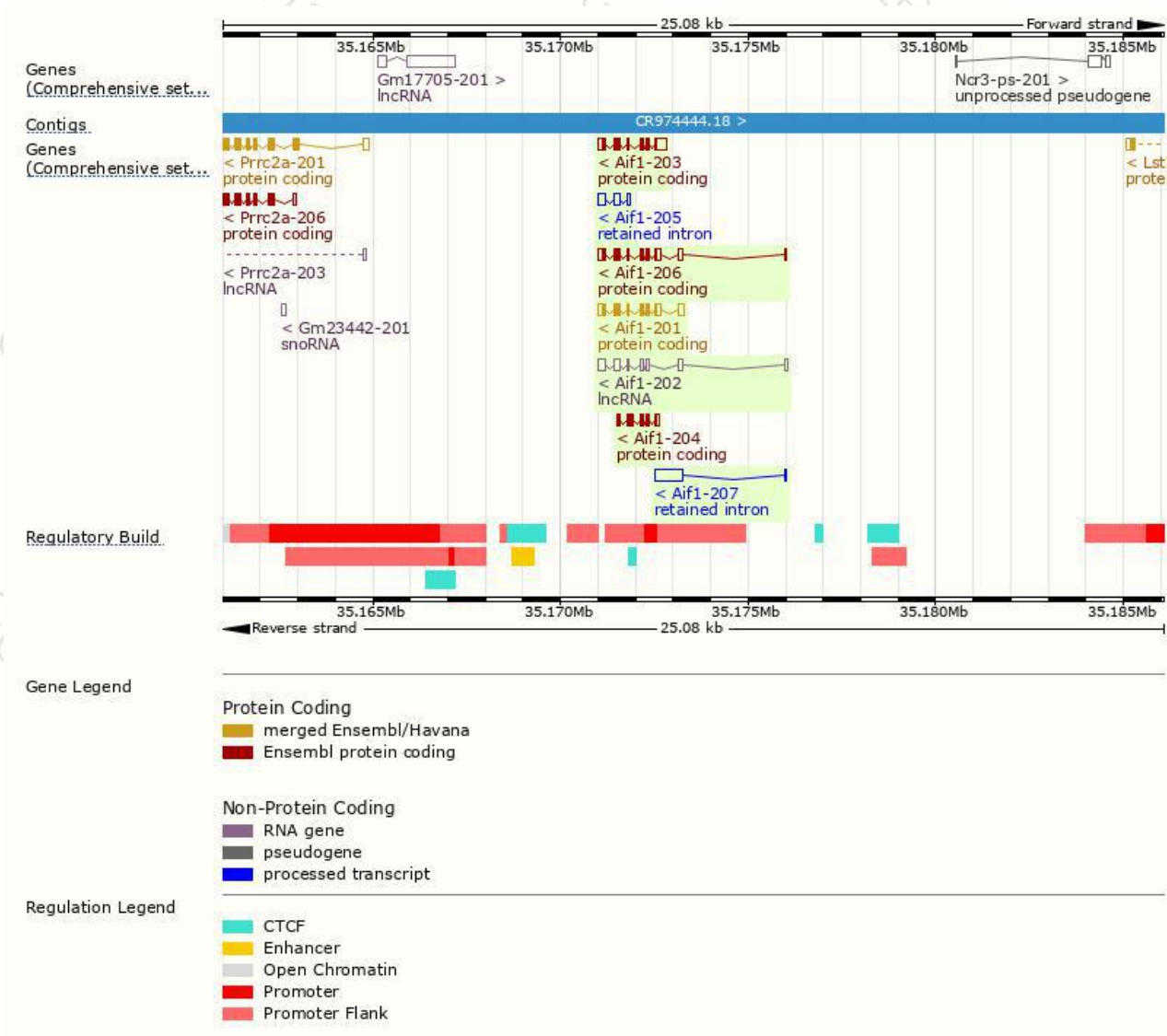
The gene has 7 transcripts,all transcripts are shown below:

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

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

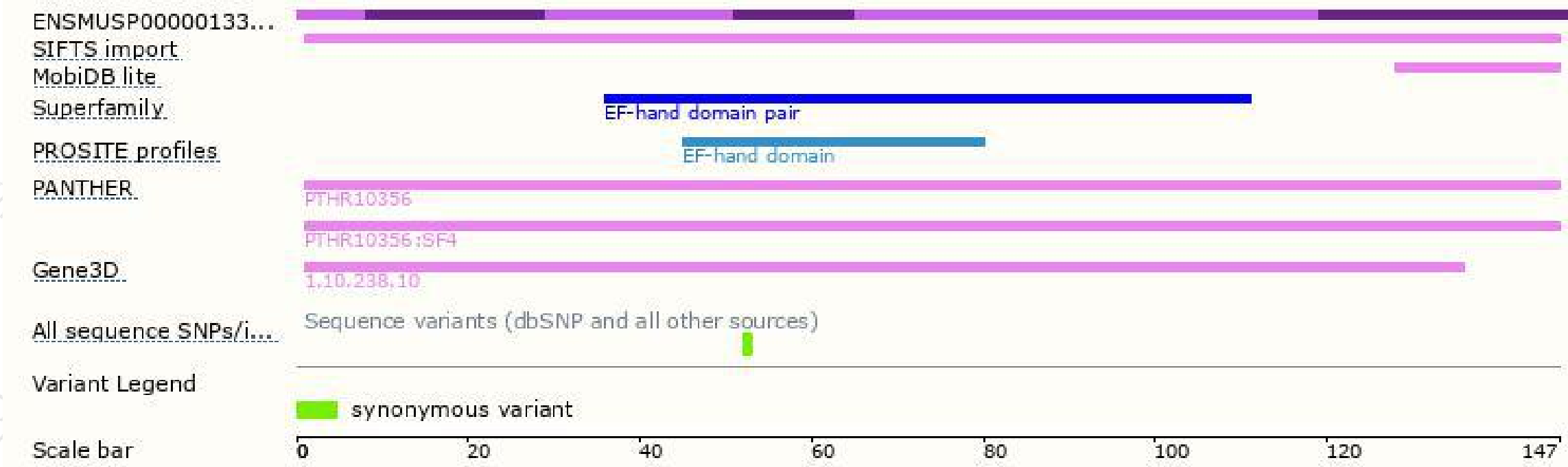


# Genomic location distribution

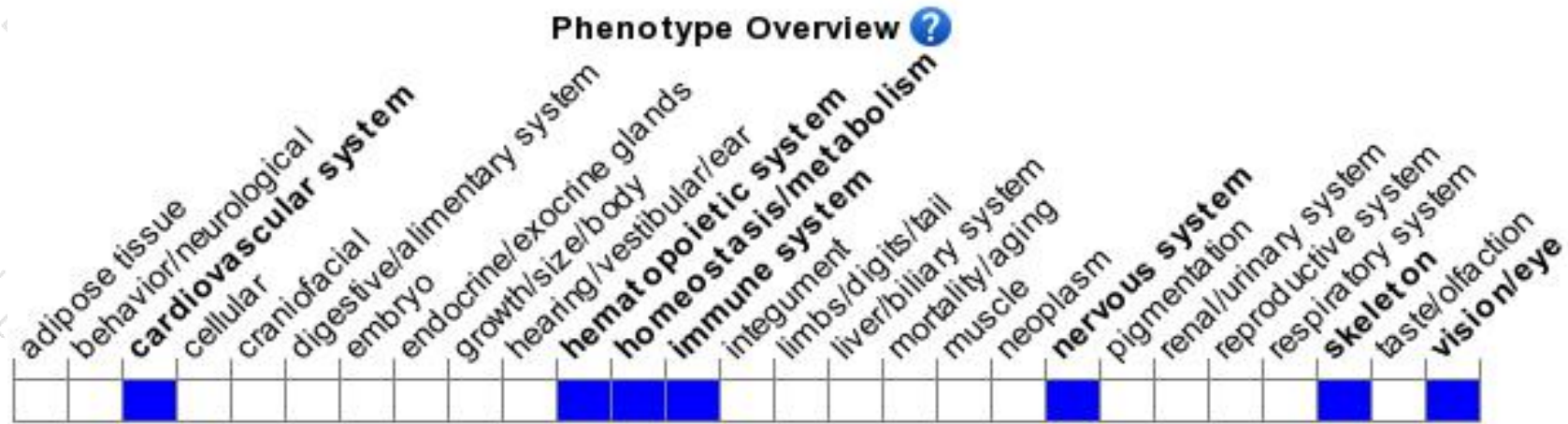




# Protein domain



# 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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