

Farp2 Cas9-CKO Strategy

Designer: Xueting Zhang

Reviewer: Yanhua Shen

Date: 2020-02-19

Project Overview

Project Name

Farp2

Project type

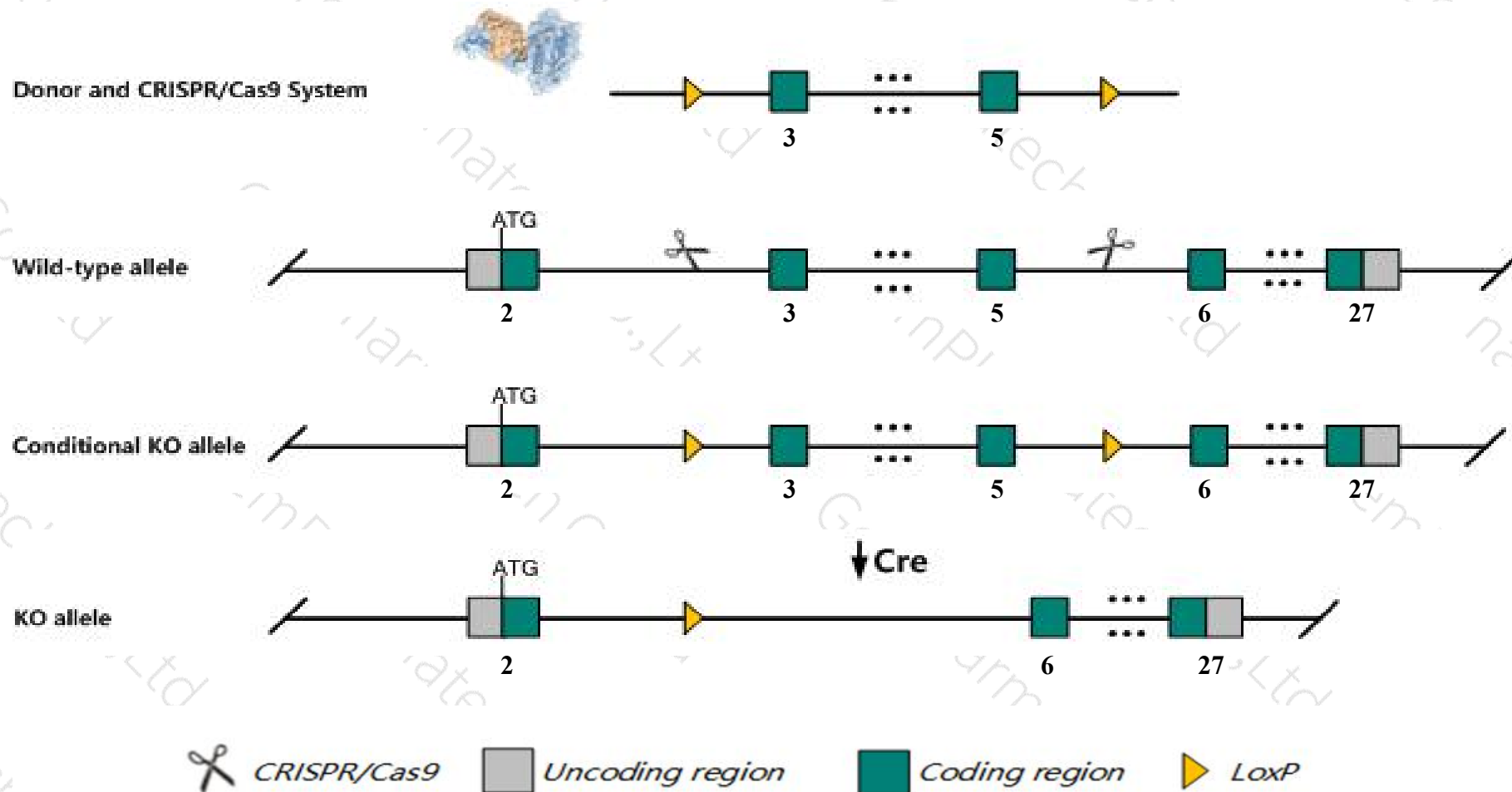
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Farp2* gene. The schematic diagram is as follows:



Technical routes

- The *Farp2* gene has 2 transcripts. According to the structure of *Farp2* gene, exon3-exon5 of *Farp2*-201 (ENSMUST00000120301.7) transcript is recommended as the knockout region. The region contains 227bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Farp2* 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 slight increase in bone volumetrics and reduced osteoclast differentiation from BMDMs cultured with M-CSF and RANKL
- The *Farp2* gene is located on the Chr1. 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)

Farp2 FERM, RhoGEF and pleckstrin domain protein 2 [*Mus musculus* (house mouse)]

Gene ID: 227377, updated on 12-Aug-2019

Summary

- Official Symbol** Farp2 provided by [MGI](#)
- Official Full Name** FERM, RhoGEF and pleckstrin domain protein 2 provided by [MGI](#)
- Primary source** [MGI:MGI:2385126](#)
- See related** [Ensembl:ENSMUSG00000034066](#)
- 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** Fir; AI465173; BC009153; mKIAA0793; D030026M03Rik
- Expression** Ubiquitous expression in large intestine adult (RPKM 5.0), colon adult (RPKM 4.4) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 1; 1 D See Farp2 in [Genome Data Viewer](#)

Exon count: 27

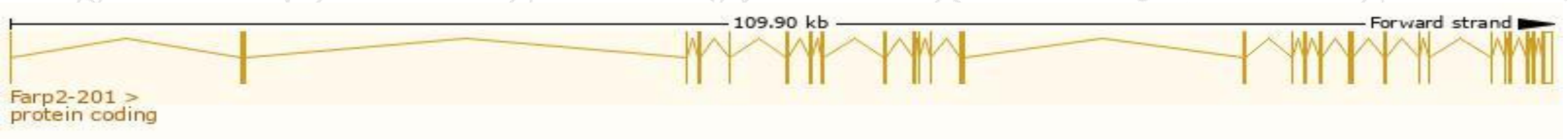
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	1	NC_000067.6 (93512104..93621976)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	1	NC_000067.5 (95408681..95518553)

Transcript information (Ensembl)

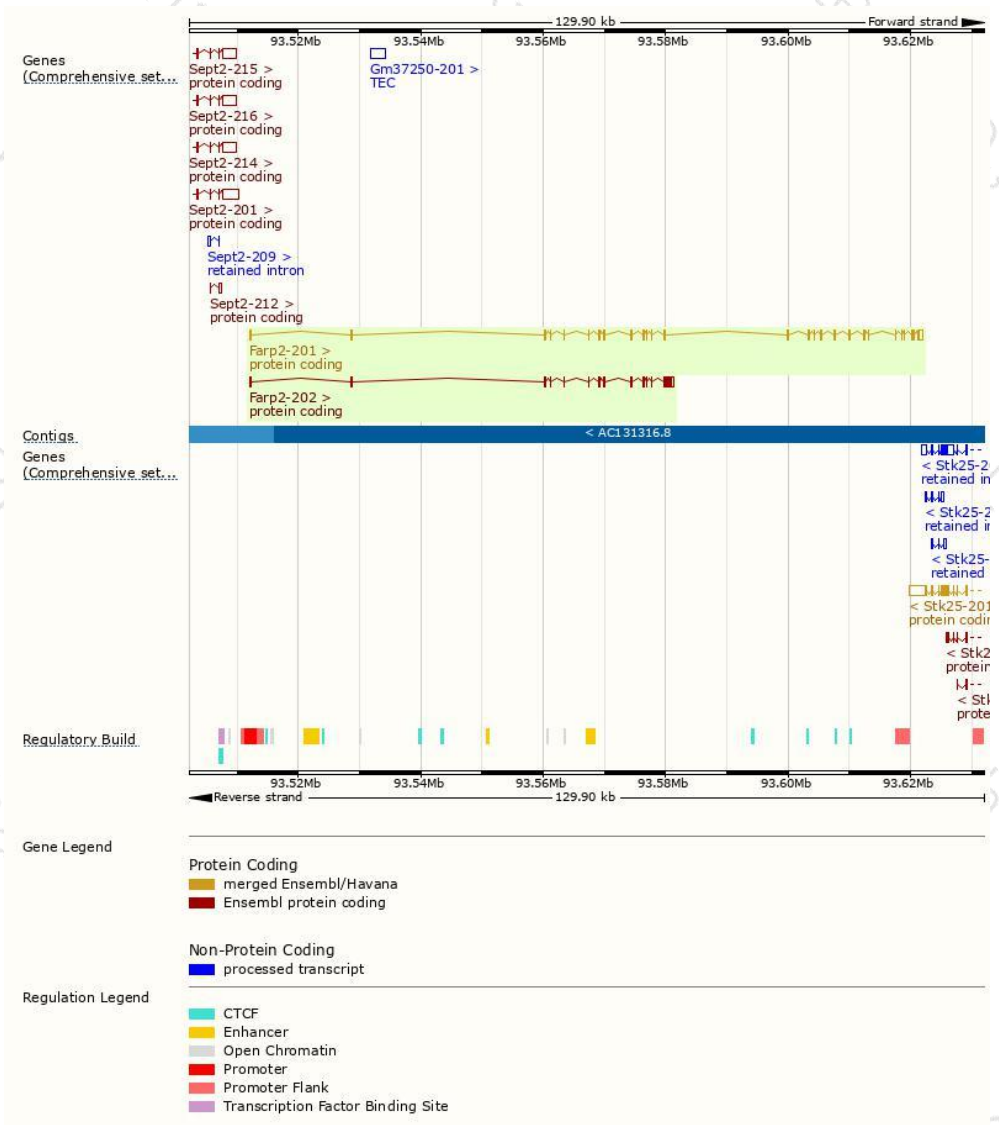
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Farp2-201	ENSMUST00000120301.7	3937	1065aa	Protein coding	CCDS15191	Q91VS8	TSL:1 GENCODE basic APPRIS P1
Farp2-202	ENSMUST00000122402.2	2816	795aa	Protein coding	-	D3Z4C0	TSL:1 GENCODE basic

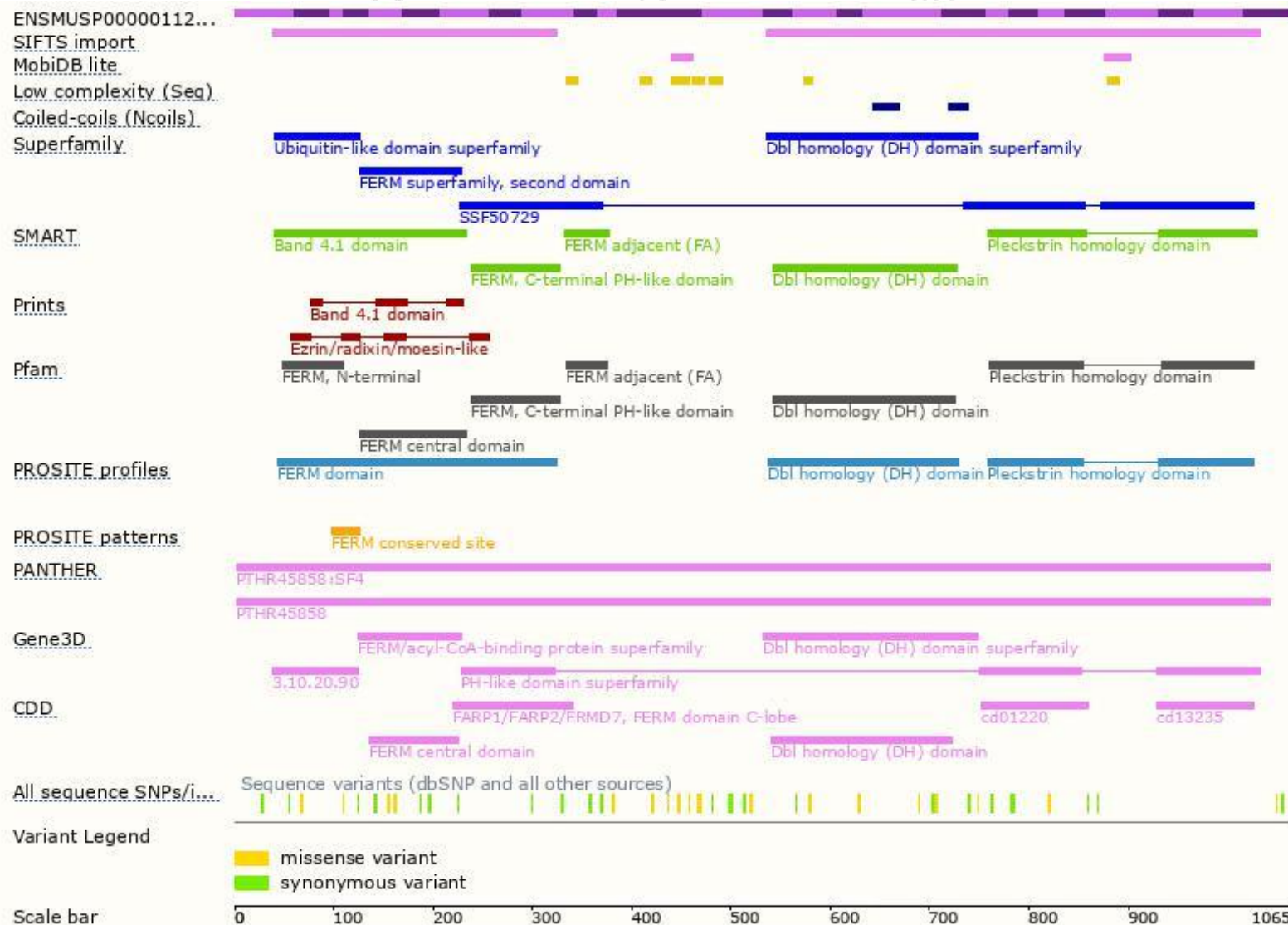
The strategy is based on the design of *Farp2-201* transcript,The transcription is shown below



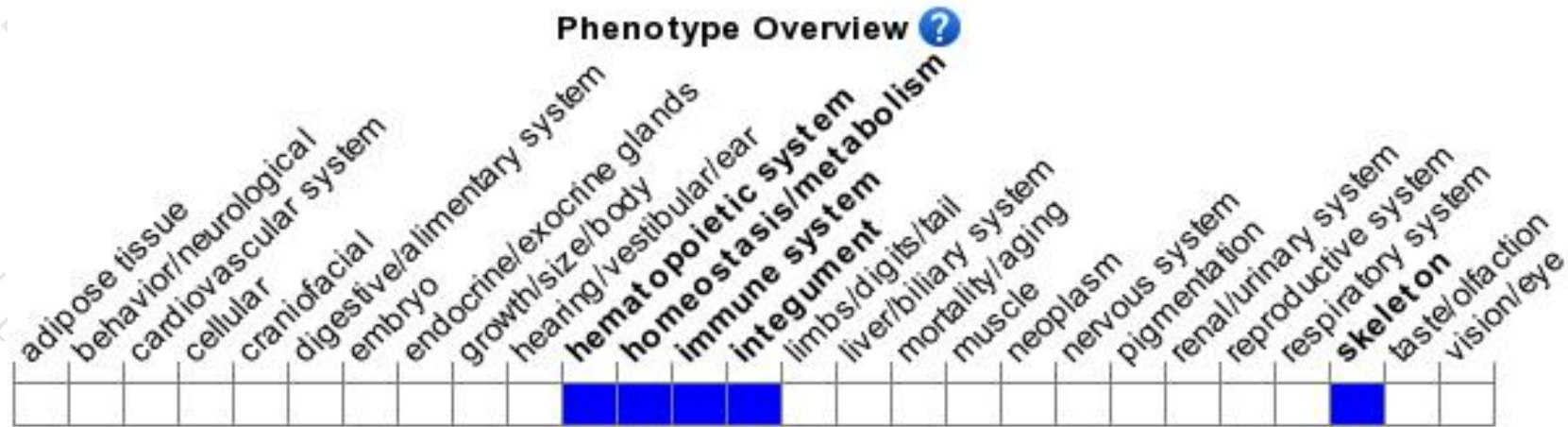
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for a knock-out allele exhibit slight increase in bone volumetrics and reduced osteoclast differentiation from BMDMs cultured with M-CSF and RANKL

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

Tel: 400-9660890

