

Dpf2 Cas9-CKO Strategy

Designer: Mingzhu Xu

Reviewer: Xiaoying Sun

Design Date: 2023-04-06

Overview

Target Gene Name

- Dpf2

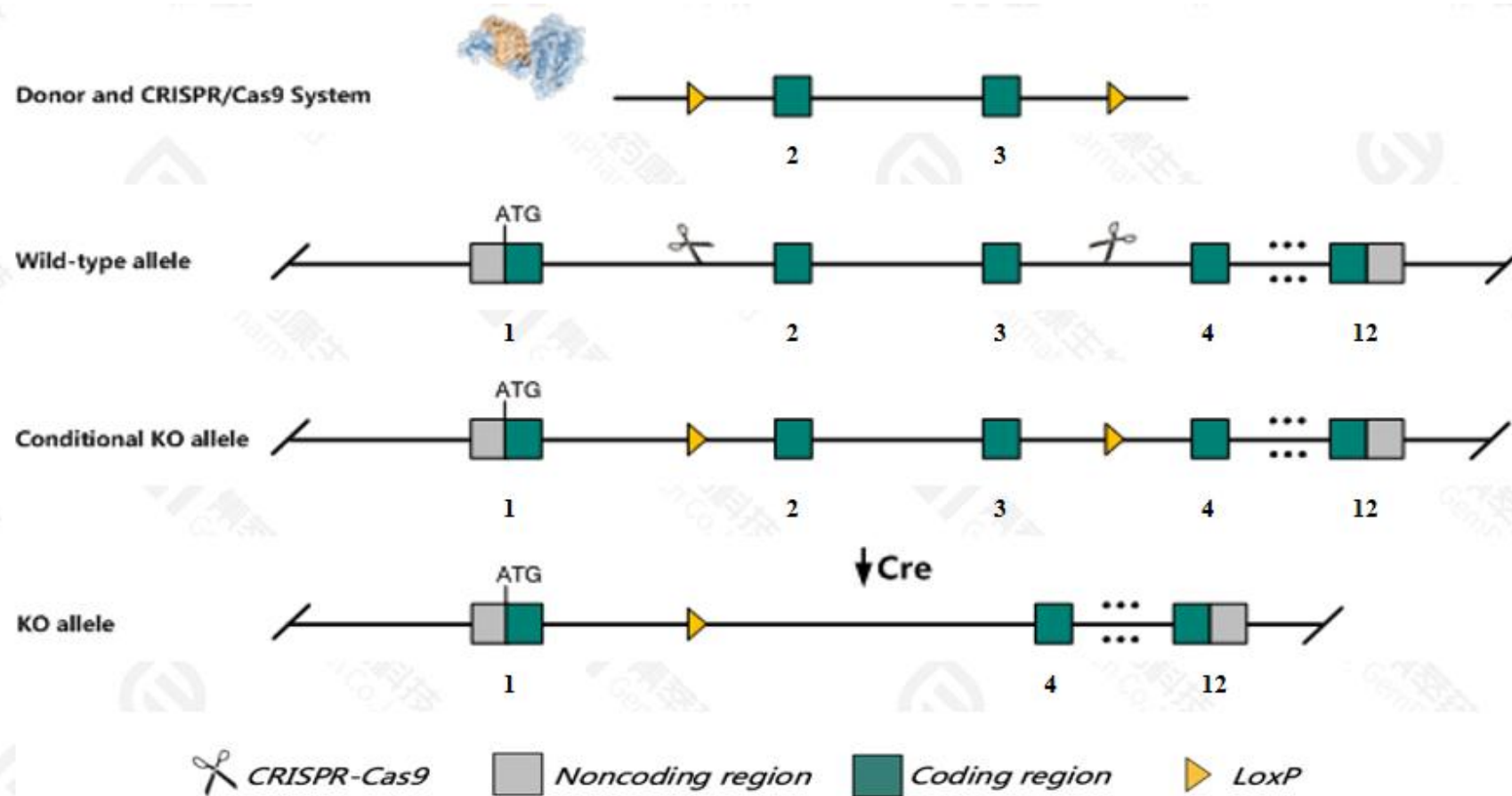
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Dpf2* gene.

Technical Information

- ➤ The *Dpf2* gene has 10 transcripts. According to the structure of *Dpf2* gene, exon2-exon3 of *Dpf2-202*(ENSMUST00000118623.2) transcript is recommended as the knockout region. The region contains 269bp coding sequence. Knock out the region will result in disruption of protein function.
 - In this project we use CRISPR-Cas9 technology to modify *Dpf2* 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.

Gene Information

Dpf2 double PHD fingers 2 [*Mus musculus* (house mouse)]

Gene ID: 19708, updated on 4-Apr-2023

[Download Datasets](#)

Summary

Official Symbol	Dpf2 provided by MGI
Official Full Name	double PHD fingers 2 provided by MGI
Primary source	MGI:MGI:109529
See related	Ensembl:ENSMUSG00000024826 AllianceGenome:MGI:109529
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	Req; BAF45D; ubi-d4; 2210010M07Rik
Summary	Predicted to enable H3K9me3 modified histone binding activity; lysine-acetylated histone binding activity; and transcription coregulator activity. Predicted to be involved in negative regulation of myeloid progenitor cell differentiation; nervous system development; and regulation of transcription, DNA-templated. Predicted to act upstream of or within apoptotic process and chromatin organization. Located in cytoplasm and nucleus. Is expressed in several structures, including alimentary system; central nervous system; genitourinary system; integumental system; and sensory organ. Orthologous to human DPF2 (double PHD fingers 2). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Ubiquitous expression in thymus adult (RPKM 38.7), limb E14.5 (RPKM 38.1) and 28 other tissues See more
Orthologs	human all
NEW	Try the new Gene table Try the new Transcript table

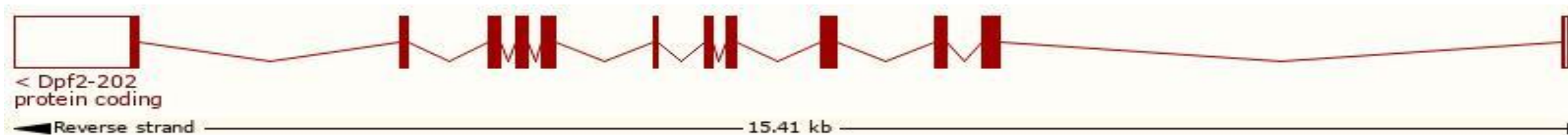
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

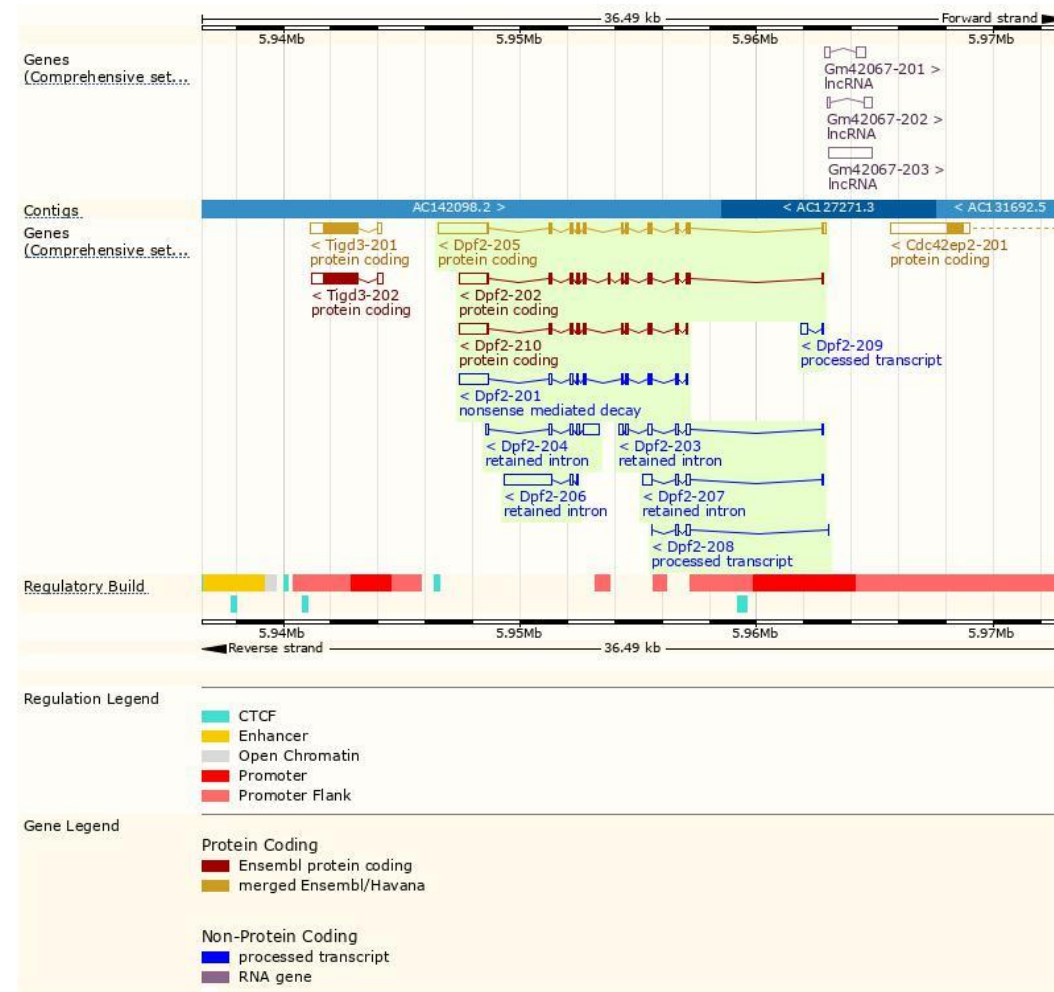
The gene has 10 transcripts, all transcripts are shown below:

Show/hide columns (1 hidden)							Filter	
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags	
ENSMUST00000025746.14	Dpf2-201	2153	214aa	Nonsense mediated decay		F8WIP7	TSL:1	CDS 5' incomplete
ENSMUST00000118623.2	Dpf2-202	2406	405aa	Protein coding	CCDS70920	D3Z5N6	Ensembl Canonical	GENCODE basic TSL:5
ENSMUST00000123029.8	Dpf2-203	735	No protein	Retained intron		-	TSL:2	
ENSMUST00000129816.8	Dpf2-204	1115	No protein	Retained intron		-	TSL:2	
ENSMUST00000136983.8	Dpf2-205	3314	391aa	Protein coding	CCDS37892	Q61103	GENCODE basic	APPRIS P1 TSL:1
ENSMUST00000137465.2	Dpf2-206	2167	No protein	Retained intron		-	TSL:2	
ENSMUST00000142995.8	Dpf2-207	725	No protein	Retained intron		-	TSL:2	
ENSMUST00000154365.2	Dpf2-208	314	No protein	Protein coding CDS not defined		-	TSL:5	
ENSMUST00000155937.2	Dpf2-209	370	No protein	Protein coding CDS not defined		-	TSL:1	
ENSMUST00000236970.2	Dpf2-210	2217	349aa	Protein coding		A0A494BBF7	CDS 5' incomplete	

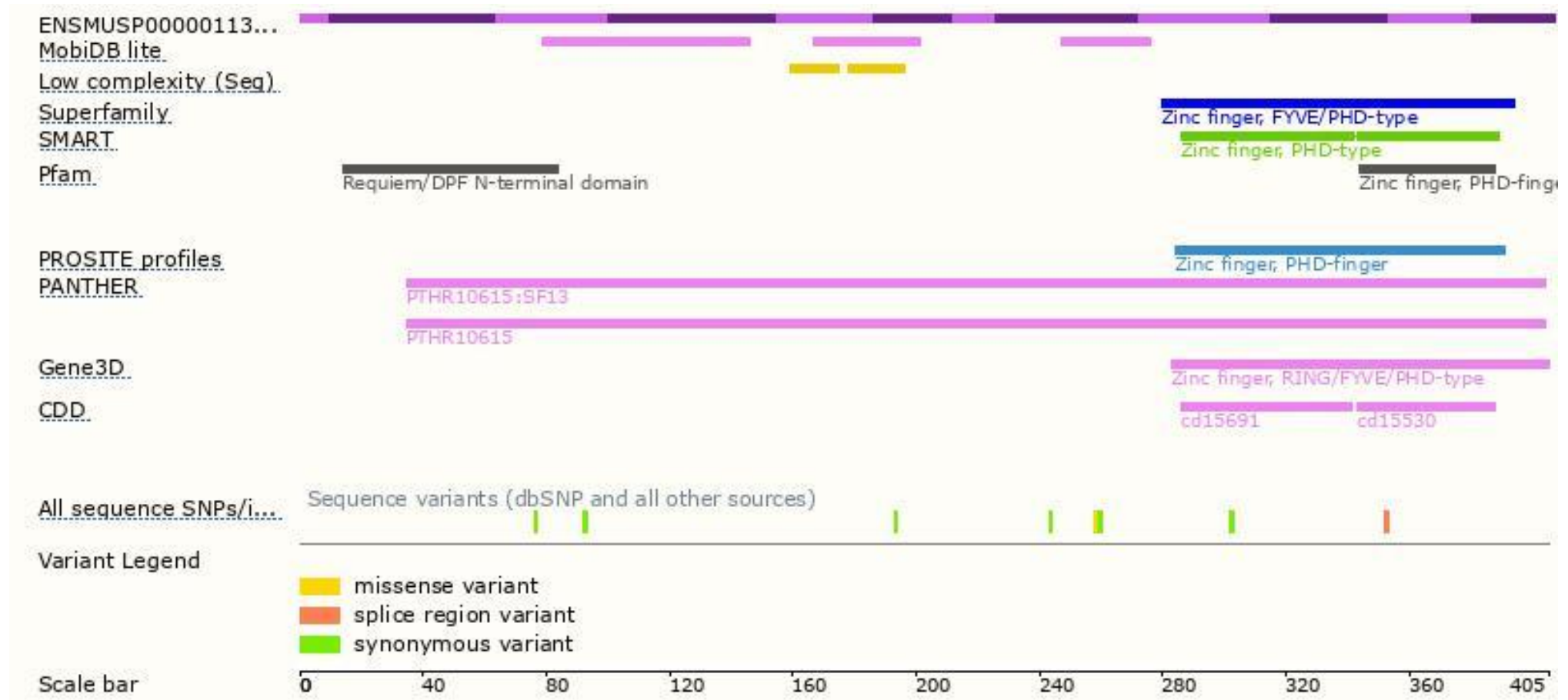
The strategy is based on the design of *Dpf2*-202 transcript, the transcription is shown below:



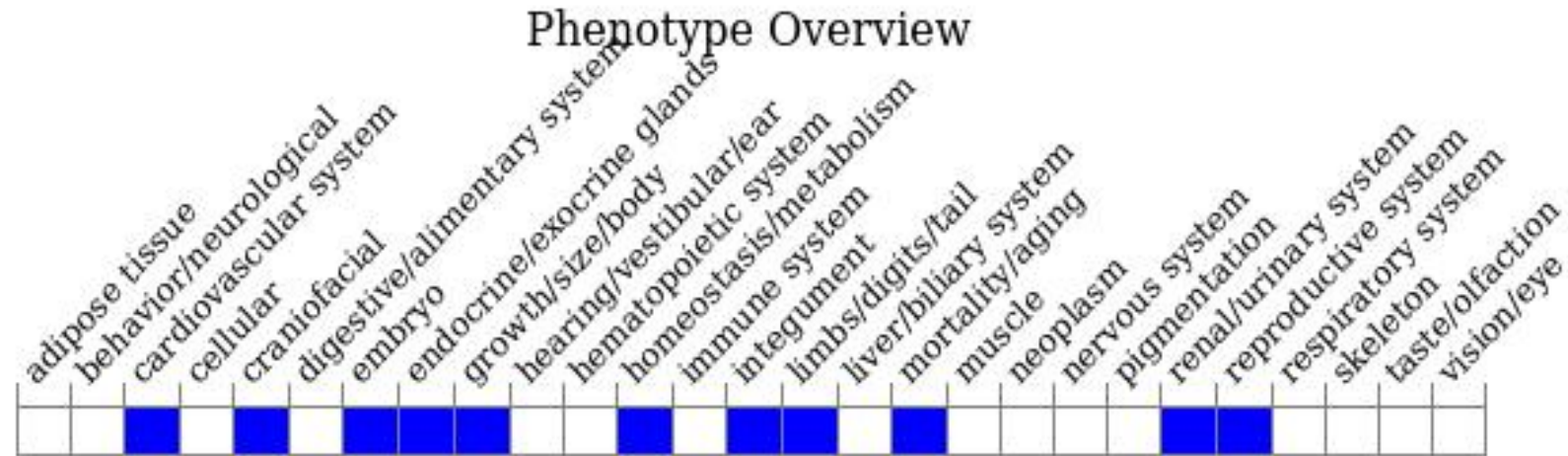
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



According to the existing MGI data, mice homozygous for a floxed allele are viable and fertile.

Important Information

- According to the existing MGI data, mice homozygous for a floxed allele are viable and fertile.
- The effect of transcript *Dpf2*-204 (ENSMUST00000129816.8) 、 *Dpf2*-206 (ENSMUST00000137465.2) 、 *Dpf2*-209 (ENSMUST00000155937.2) 、 *Dpf2*-210 (ENSMUST00000236970.2) is unknown.
- The *Dpf2* gene is located on the Chr19. 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.