

Zzef1 Cas9-CKO Strategy

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Reviewer: JiaYu

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Project Overview

Project Name

Zzef1

Project type

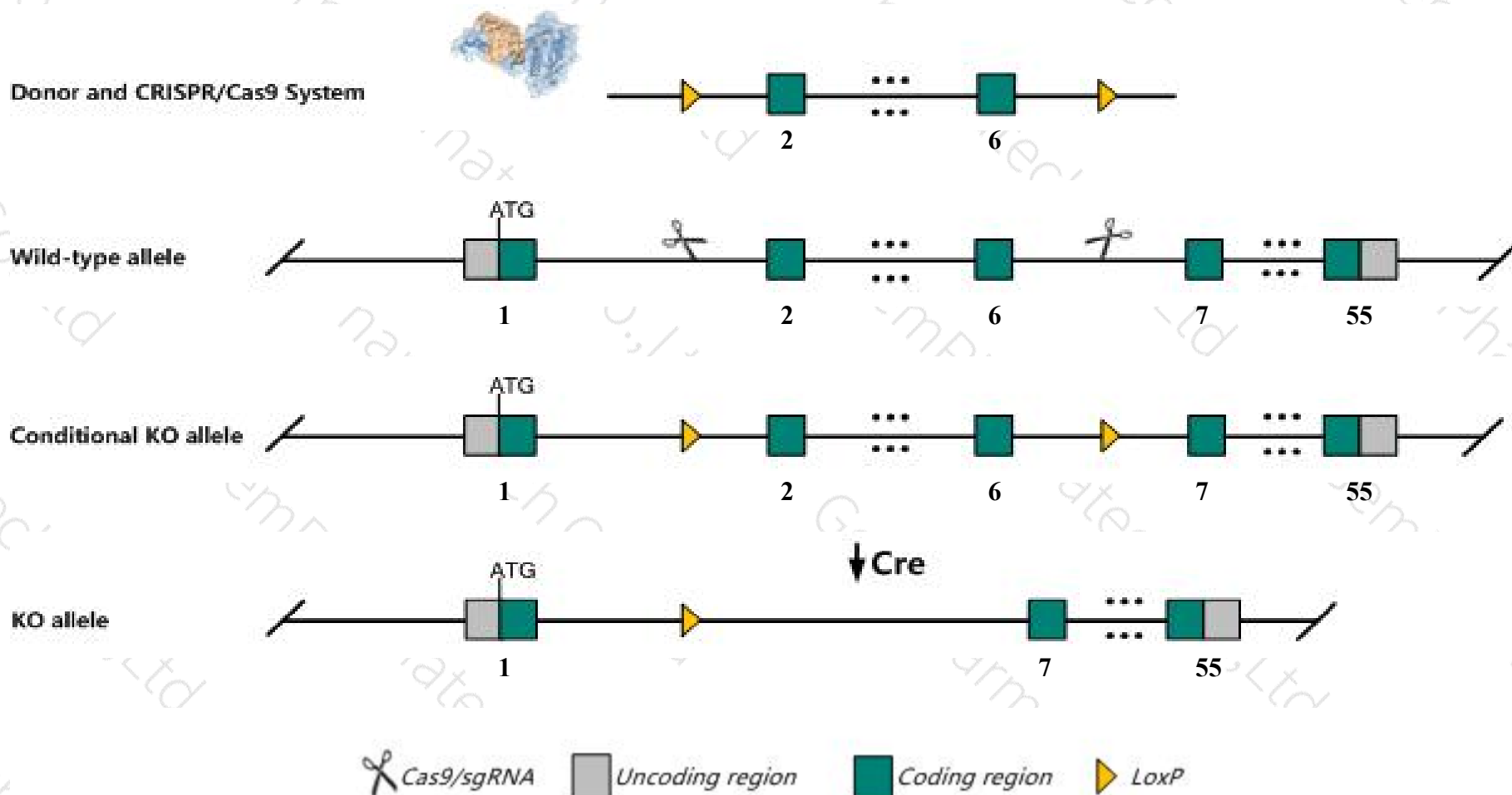
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Zzef1* gene has 8 transcripts. According to the structure of *Zzef1* gene, exon2-exon6 of *Zzef1*-201(ENSMUST00000069395.6) transcript is recommended as the knockout region. The region contains 923bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Zzef1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- The *Zzef1* gene is located on the Chr11. 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)

Zzef1 zinc finger, ZZ-type with EF hand domain 1 [Mus musculus (house mouse)]

Gene ID: 195018, updated on 13-Mar-2020

Summary



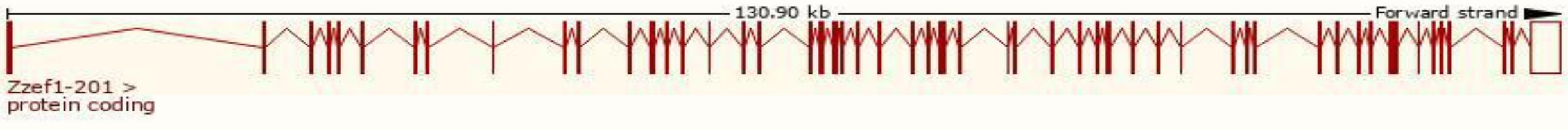
Official Symbol	Zzef1 provided by MGI
Official Full Name	zinc finger, ZZ-type with EF hand domain 1 provided by MGI
Primary source	MGI:MGI:2444286
See related	Ensembl:ENSMUSG00000055670
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	8430405D05Rik, BC051585, C130099L13Rik, C85424, NSPA, mKIAA0399
Expression	Ubiquitous expression in large intestine adult (RPKM 16.1), small intestine adult (RPKM 15.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

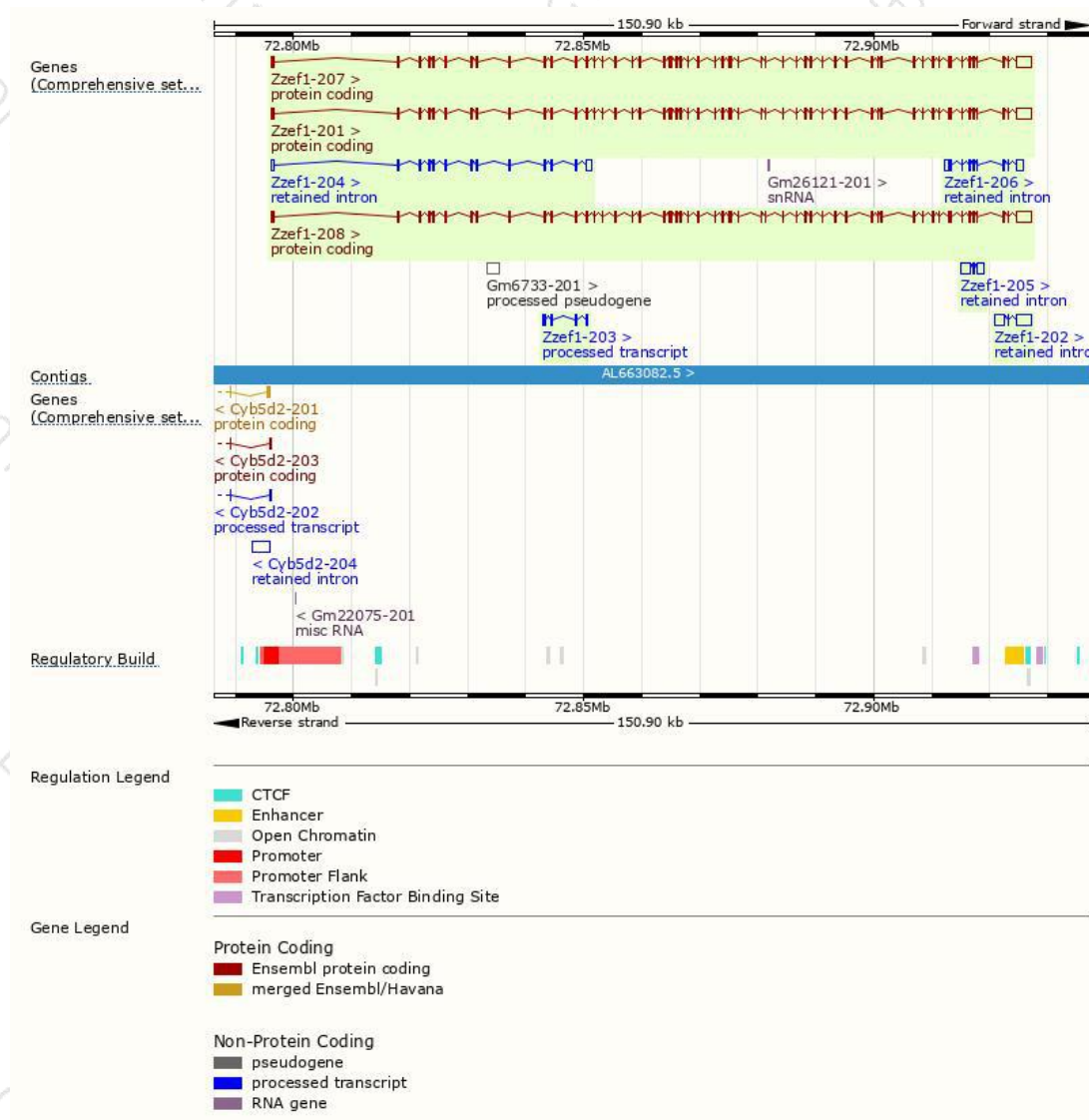
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zzef1-201	ENSMUST00000069395.6	11150	2891aa	Protein coding	CCDS36218	Q5SSH7	TSL:5 GENCODE basic APPRIS P2
Zzef1-208	ENSMUST00000207107.1	11306	2953aa	Protein coding	-	A0A140LJ04	TSL:5 GENCODE basic APPRIS ALT2
Zzef1-207	ENSMUST00000172220.7	11249	2924aa	Protein coding	-	E9Q5W5	TSL:5 GENCODE basic APPRIS ALT2
Zzef1-203	ENSMUST00000145393.1	672	No protein	Processed transcript	-	-	TSL:2
Zzef1-202	ENSMUST00000125122.1	4197	No protein	Retained intron	-	-	TSL:1
Zzef1-205	ENSMUST00000152063.1	2937	No protein	Retained intron	-	-	TSL:1
Zzef1-204	ENSMUST00000150551.7	2918	No protein	Retained intron	-	-	TSL:5
Zzef1-206	ENSMUST00000152481.7	2800	No protein	Retained intron	-	-	TSL:5

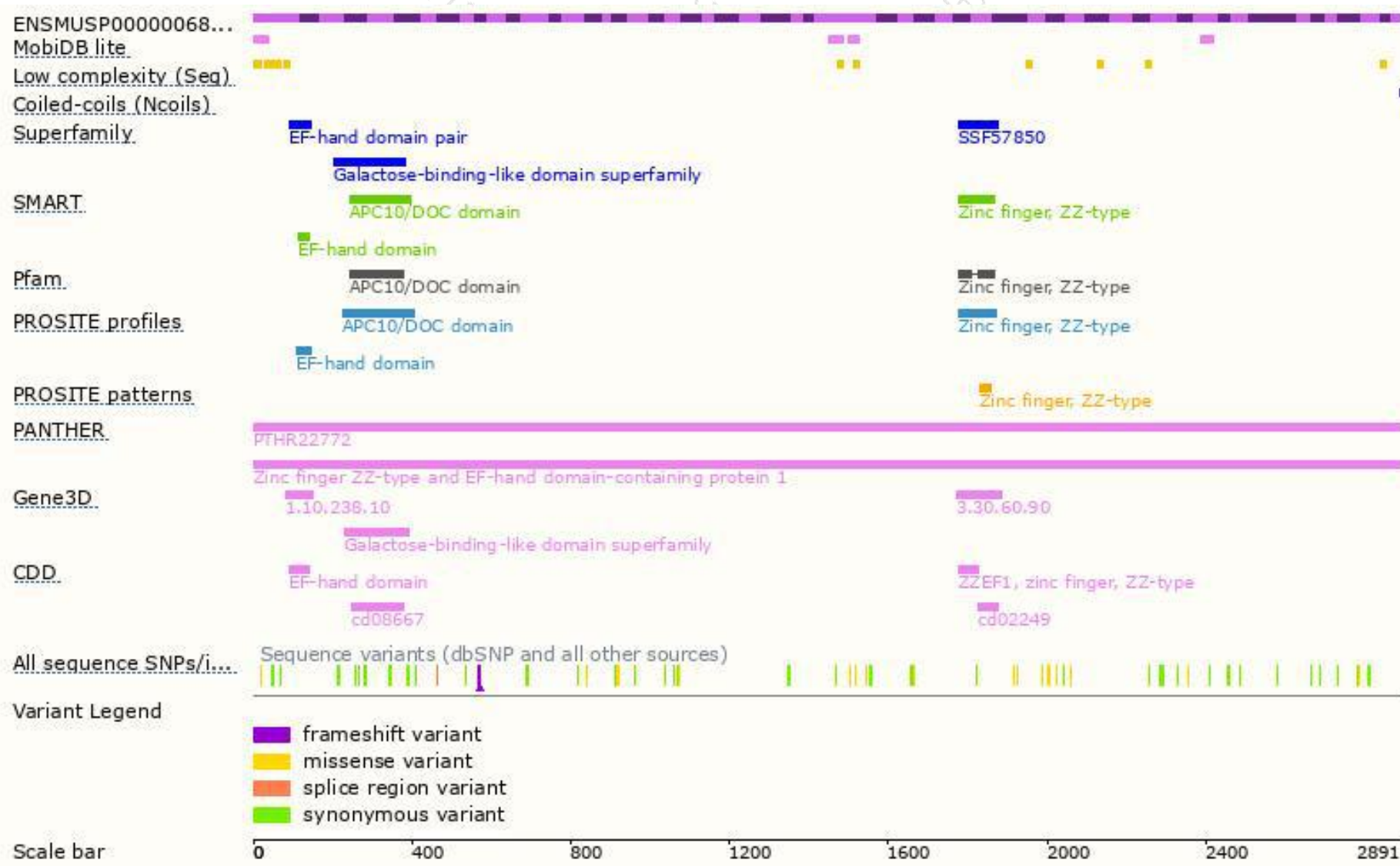
The strategy is based on the design of *Zzef1-201* transcript,the transcription is shown below:



Genomic location distribution

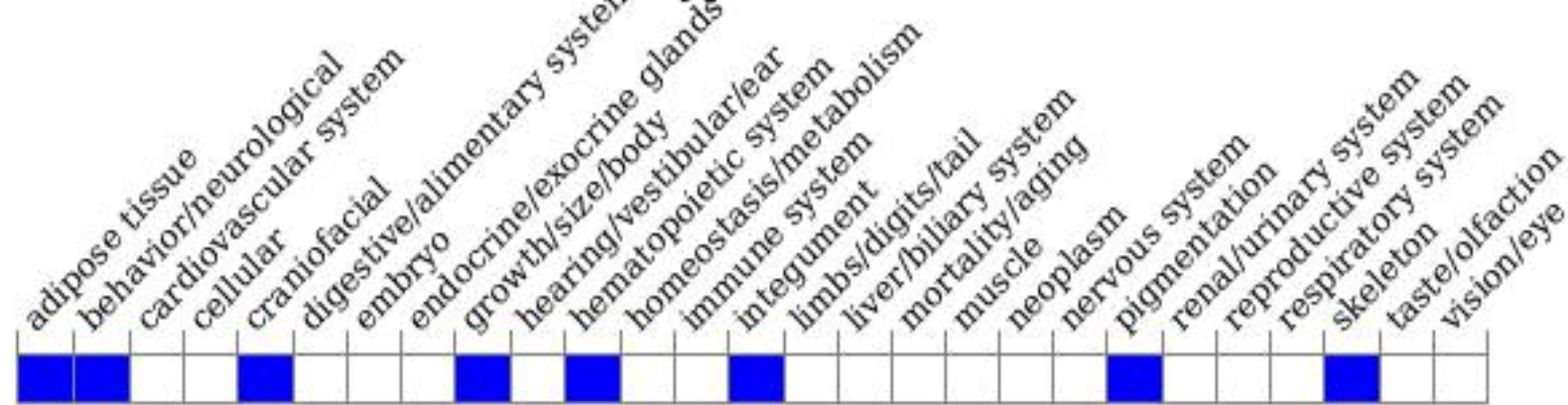


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

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

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