

***Zfp410* Cas9-CKO Strategy**

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Project Overview

Project Name

Zfp410

Project type

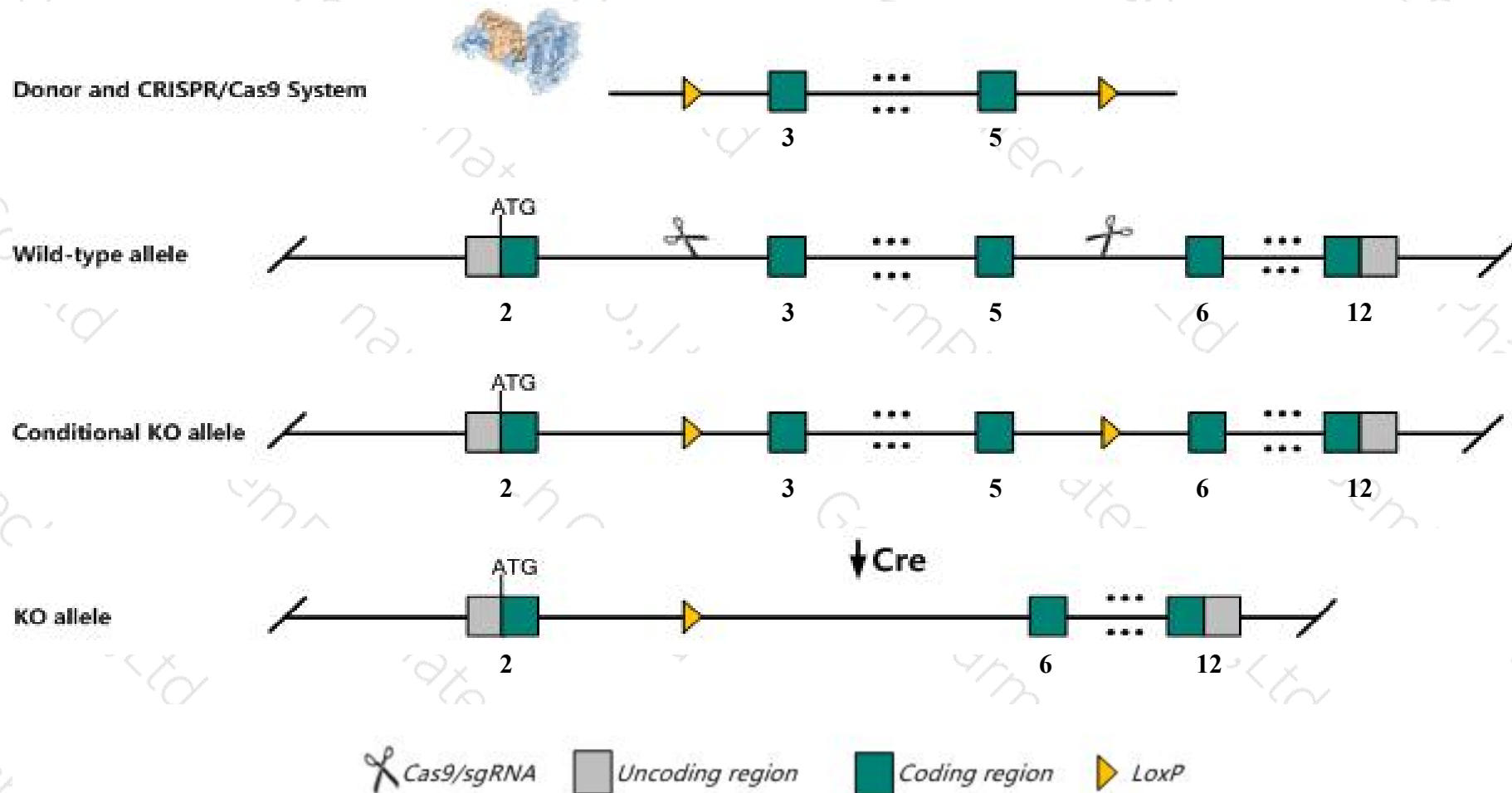
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zfp410* gene. The schematic diagram is as follows:



Technical routes

- The *Zfp410* gene has 18 transcripts. According to the structure of *Zfp410* gene, exon3-exon5 of *Zfp410-201*(ENSMUST00000045931.11) transcript is recommended as the knockout region. The region contains 547bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Zfp410* 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 *Zfp410* gene is located on the Chr12. 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)

Zfp410 zinc finger protein 410 [Mus musculus (house mouse)]

Gene ID: 52708, updated on 13-Mar-2020

Summary



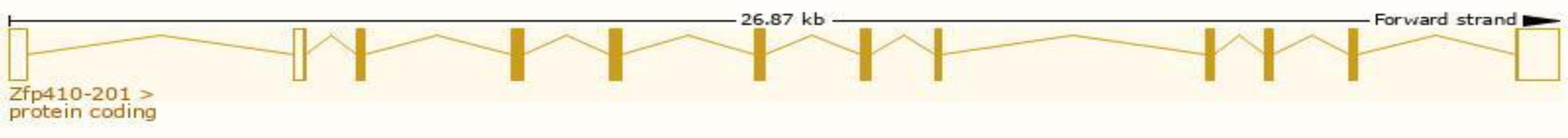
Official Symbol	Zfp410 provided by MGI
Official Full Name	zinc finger protein 410 provided by MGI
Primary source	MGI:MGI:1289280
See related	Ensembl:ENSMUSG00000042472
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Apa1, D12Ert748e, Znf410
Expression	Ubiquitous expression in CNS E11.5 (RPKM 7.5), CNS E14 (RPKM 5.7) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

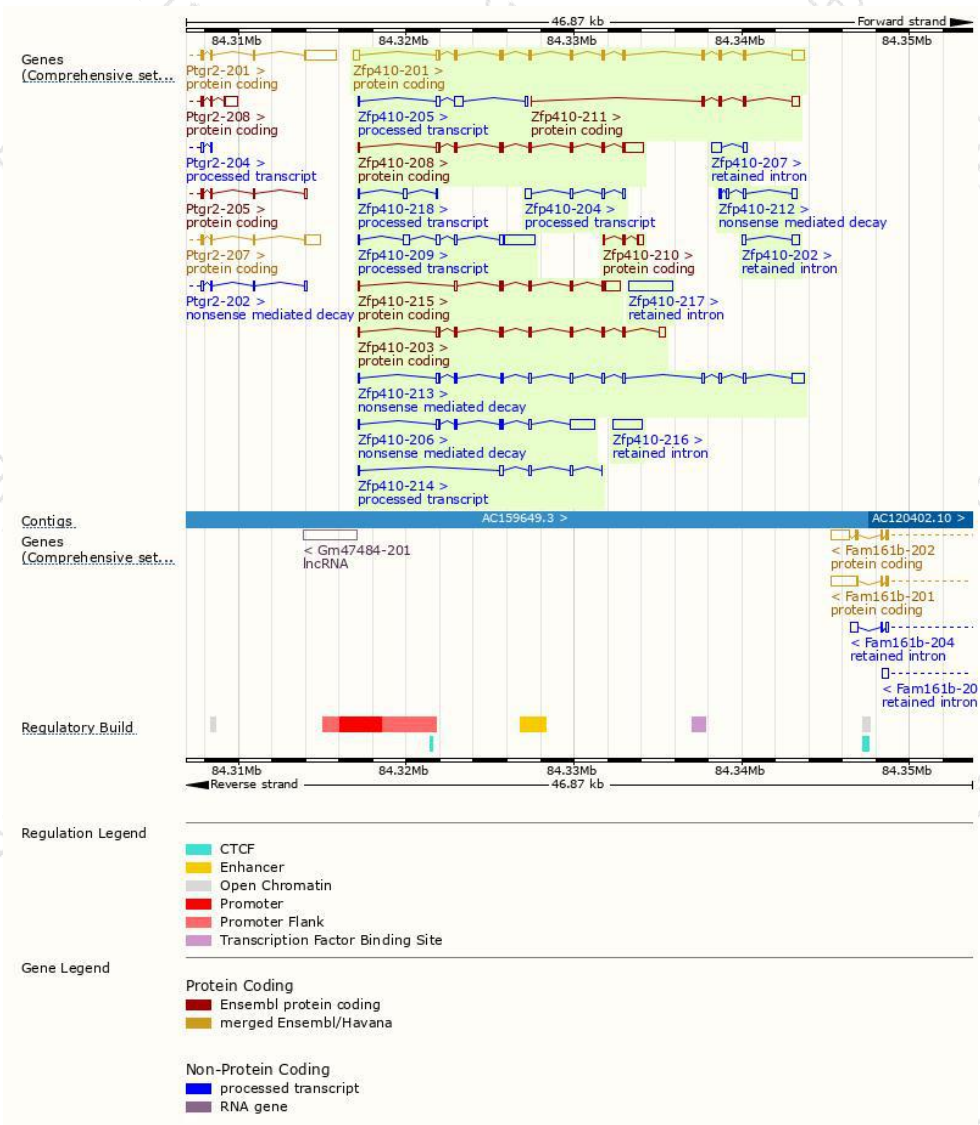
The gene has 18 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zfp410-201	ENSMUST00000045931.1	2597	478aa	Protein coding	CCDS26042	Q8BKX7	TSL:1 GENCODE basic APPRIS P1
Zfp410-208	ENSMUST00000222258.1	2329	347aa	Protein coding	-	Q8BKX7	TSL:1 GENCODE basic
Zfp410-215	ENSMUST00000222832.1	1859	278aa	Protein coding	-	A0A1Y7VM57	TSL:2 GENCODE basic
Zfp410-203	ENSMUST00000220931.1	1569	345aa	Protein coding	-	Q8BKX7	TSL:1 GENCODE basic
Zfp410-211	ENSMUST00000222471.1	889	154aa	Protein coding	-	A0A1Y7VKU6	CDS 5' incomplete TSL:3
Zfp410-210	ENSMUST00000222450.1	454	71aa	Protein coding	-	A0A1Y7VLK1	CDS 5' incomplete TSL:3
Zfp410-213	ENSMUST00000222606.1	2284	96aa	Nonsense mediated decay	-	A0A1Y7VIW1	TSL:1
Zfp410-206	ENSMUST00000221656.1	2228	130aa	Nonsense mediated decay	-	A0A1Y7VP44	TSL:2
Zfp410-212	ENSMUST00000222506.1	711	44aa	Nonsense mediated decay	-	A0A1Y7VLP7	CDS 5' incomplete TSL:3
Zfp410-209	ENSMUST00000222431.1	2730	No protein	Processed transcript	-	-	TSL:1
Zfp410-205	ENSMUST00000221490.1	916	No protein	Processed transcript	-	-	TSL:5
Zfp410-204	ENSMUST00000220955.1	780	No protein	Processed transcript	-	-	TSL:3
Zfp410-214	ENSMUST00000222773.1	655	No protein	Processed transcript	-	-	TSL:3
Zfp410-218	ENSMUST00000223355.1	342	No protein	Processed transcript	-	-	TSL:3
Zfp410-217	ENSMUST00000223130.1	2630	No protein	Retained intron	-	-	TSL:NA
Zfp410-216	ENSMUST00000222875.1	1734	No protein	Retained intron	-	-	TSL:NA
Zfp410-207	ENSMUST00000221867.1	841	No protein	Retained intron	-	-	TSL:1
Zfp410-202	ENSMUST00000220832.1	661	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Zfp410-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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