

Fndc1 Cas9-CKO Strategy

Designer: Zihe Cui

Reviewer: Ruirui Zhang

Design Date: 2021-2-10

Project Overview

Project Name

Fndc1

Project type

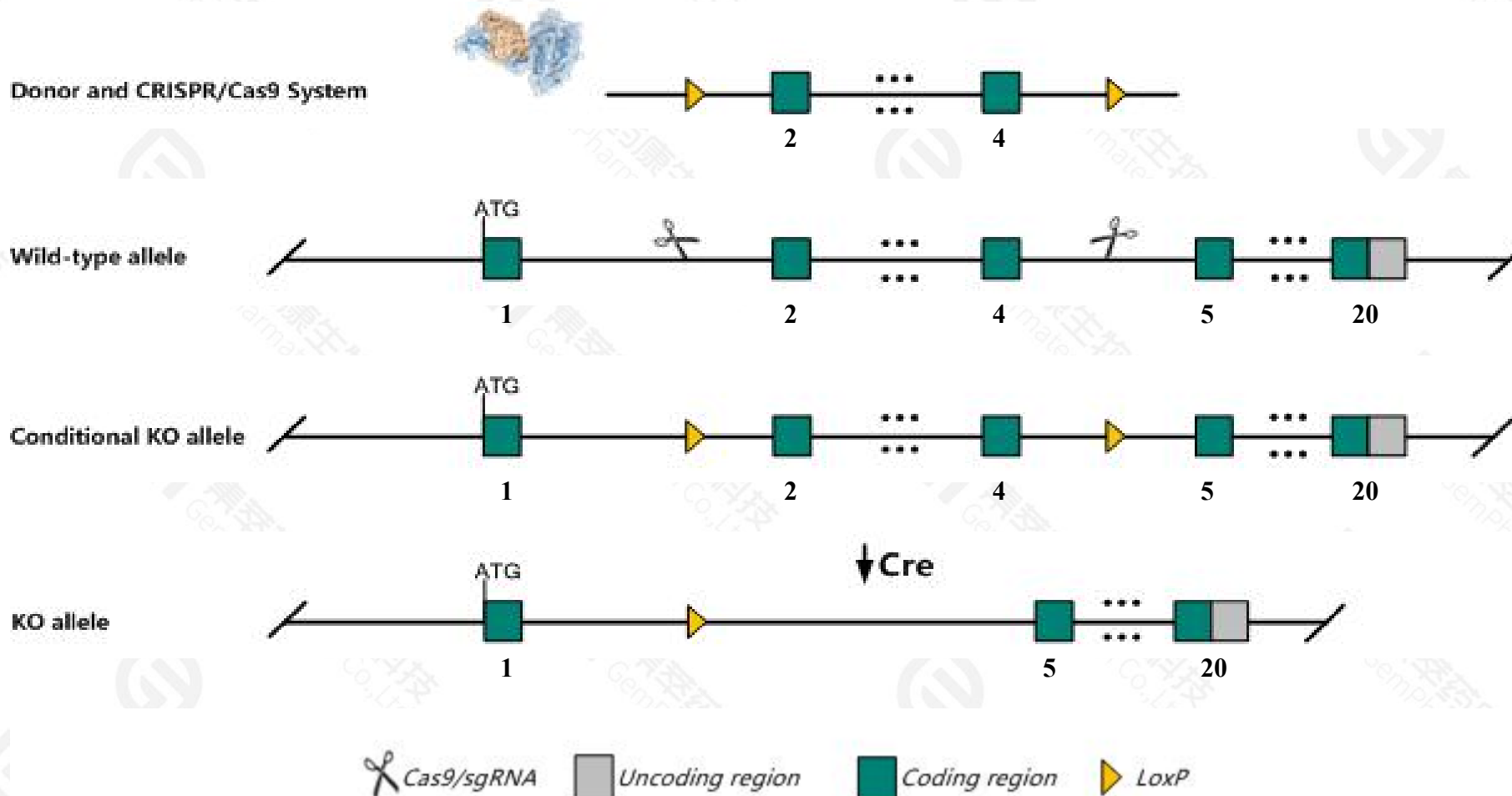
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fndc1* gene. The schematic diagram is as follows:



Technical routes

- The *Fndc1* gene has 5 transcripts. According to the structure of *Fndc1* gene, exon2-exon4 of *Fndc1*-202(ENSMUST00000097425.9) transcript is recommended as the knockout region. The region contains 424bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fndc1* 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.

- Transcript *Fndc1-201* and *Fndc1-203* may not be affected.
- The *Fndc1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Fndc1 fibronectin type III domain containing 1 [*Mus musculus* (house mouse)]

[Download Datasets](#)

Gene ID: 68655, updated on 17-Dec-2020

Summary



Official Symbol	Fndc1 provided by MGI
Official Full Name	fibronectin type III domain containing 1 provided by MGI
Primary source	MGI:MGI:1915905
See related	Ensembl:ENSMUSG00000071984
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	mKIAA1866; 1110027O12Rik; 1110051A18Rik
Expression	Broad expression in bladder adult (RPKM 10.6), limb E14.5 (RPKM 9.5) and 15 other tissues See more
Orthologs	human all

NEW

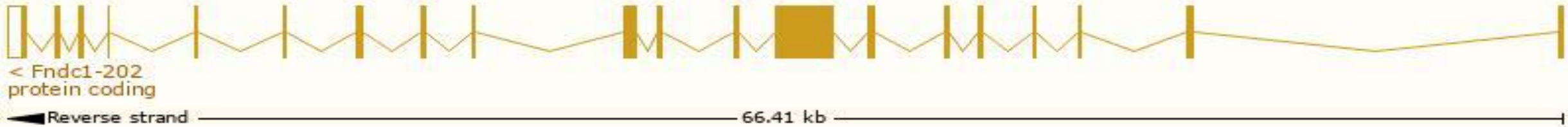
Try the new [Data Table](#) view

Transcript information (Ensembl)

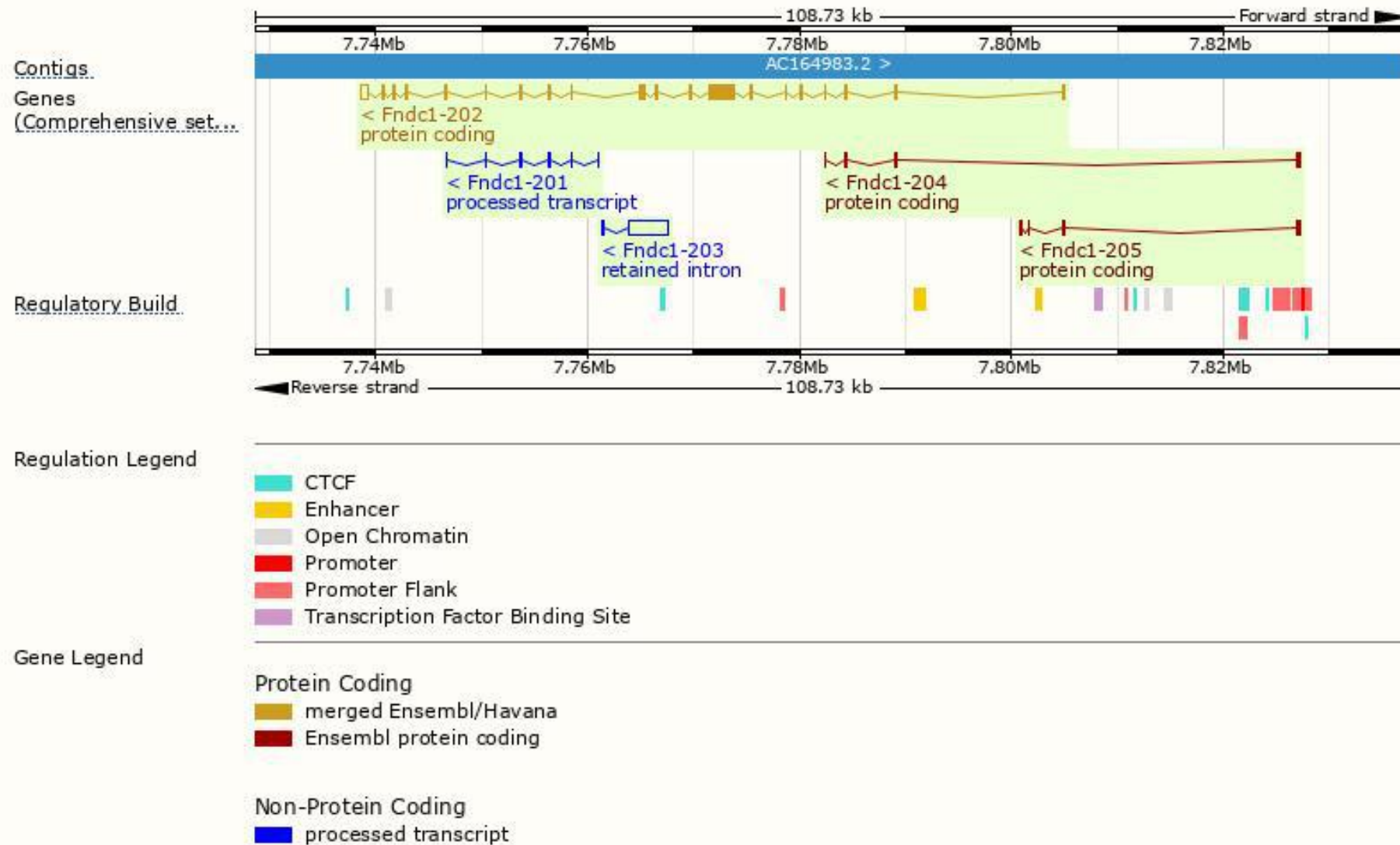
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fndc1-202	ENSMUST00000097425.9	5845	1732aa	Protein coding	CCDS37431	E9Q043	TSL:5 GENCODE basic APPRIS P1
Fndc1-205	ENSMUST00000169126.1	669	161aa	Protein coding	-	E9PXG4	CDS 3' incomplete TSL:3
Fndc1-204	ENSMUST00000167580.7	636	150aa	Protein coding	-	E9Q8V0	CDS 3' incomplete TSL:2
Fndc1-201	ENSMUST00000097424.2	602	No protein	Processed transcript	-	-	TSL:5
Fndc1-203	ENSMUST00000114579.3	4054	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Fndc1-202* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

Tel: 025-5864 1534

