

***Fndc5* Cas9-CKO Strategy**

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Reviewer:

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Design Date:

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Project Overview

Project Name

Fndc5

Project type

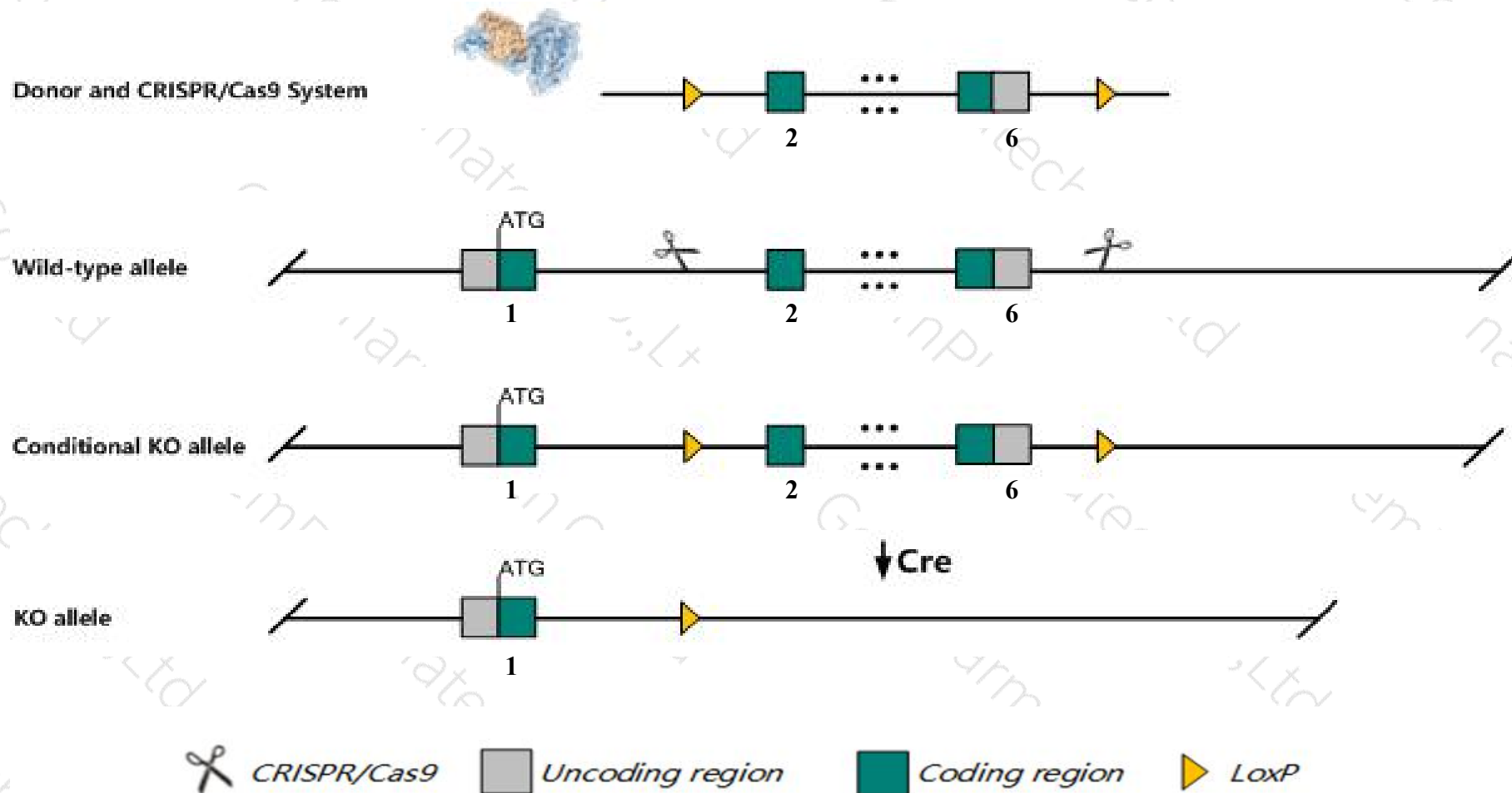
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fndc5* gene. The schematic diagram is as follows:



- The *Fndc5* gene has 1 transcript. According to the structure of *Fndc5* gene, exon2-exon6 of *Fndc5-201* (ENSMUST00000102600.3) transcript is recommended as the knockout region. The region contains 545bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fndc5* 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.

Notice

- The *Fndc5* gene is located on the Chr4. 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)

Fndc5 fibronectin type III domain containing 5 [Mus musculus (house mouse)]

Gene ID: 384061, updated on 5-Mar-2019

Summary



Official Symbol Fndc5 provided by [MGI](#)

Official Full Name fibronectin type III domain containing 5 provided by [MGI](#)

Primary source [MGI:MGI:1917614](#)

See related [Ensembl:ENSMUSG00000001334](#)

Gene type protein coding

RefSeq status REVIEWED

Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as 1500001L03Rik, A1836596, C87088, PeP, Pxp

Summary This gene encodes a type I transmembrane protein containing fibronectin type III repeat. The encoded transmembrane protein undergoes proteolytic processing to generate a soluble hormone named irisin that is secreted into the bloodstream. The expression of this gene followed by the secretion of irisin from skeletal muscle is induced by exercise. The ectopic expression of the encoded protein in mice causes an elevation of irisin in blood and improves metabolic health. [provided by RefSeq, Jul 2016]

Expression Biased expression in heart adult (RPKM 86.3), cerebellum adult (RPKM 47.9) and 6 other tissues [See more](#)

Orthologs [human](#) [all](#)

Transcript information (Ensembl)

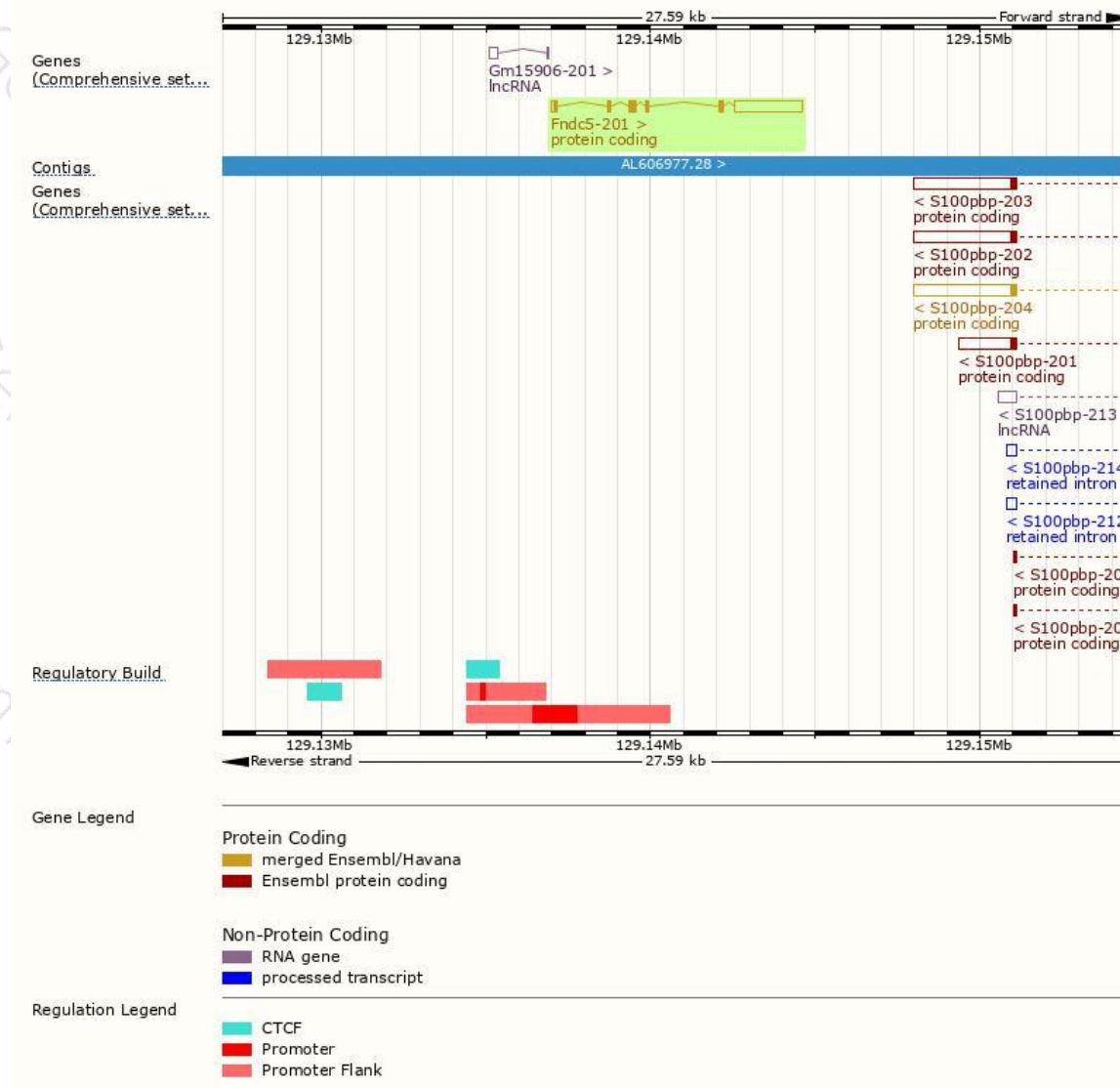
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fndc5-201	ENSMUST00000102600.3	2763	209aa	Protein coding	CCDS18683	Q8K4Z2	TSL:1 GENCODE basic APPRIS P1

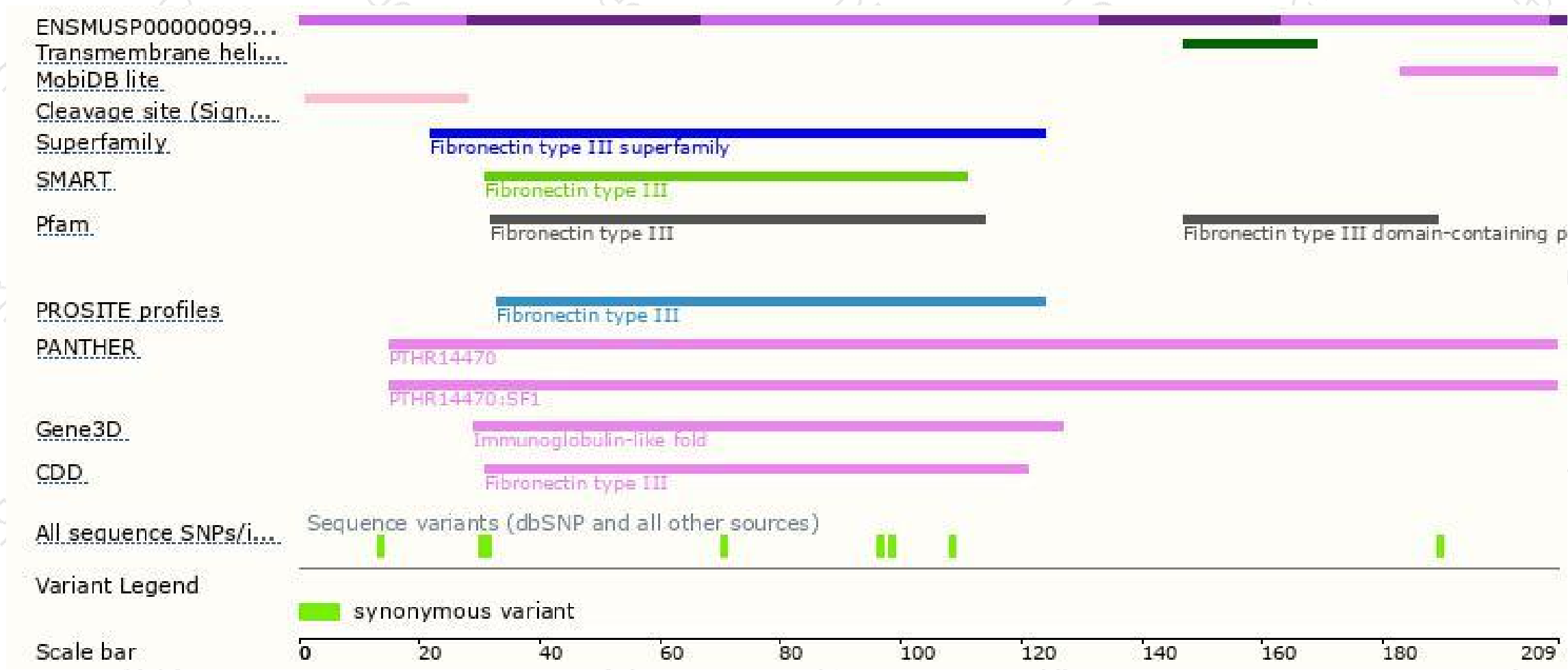
The strategy is based on the design of *Fndc5-201* transcript, The transcription is shown below



Genomic location distribution



Protein domain



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

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