

Nfatc3 Cas9-CKO Strategy

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Reviewer:

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Date:

2019/11/11

Project Overview

Project Name

Nfatc3

Project type

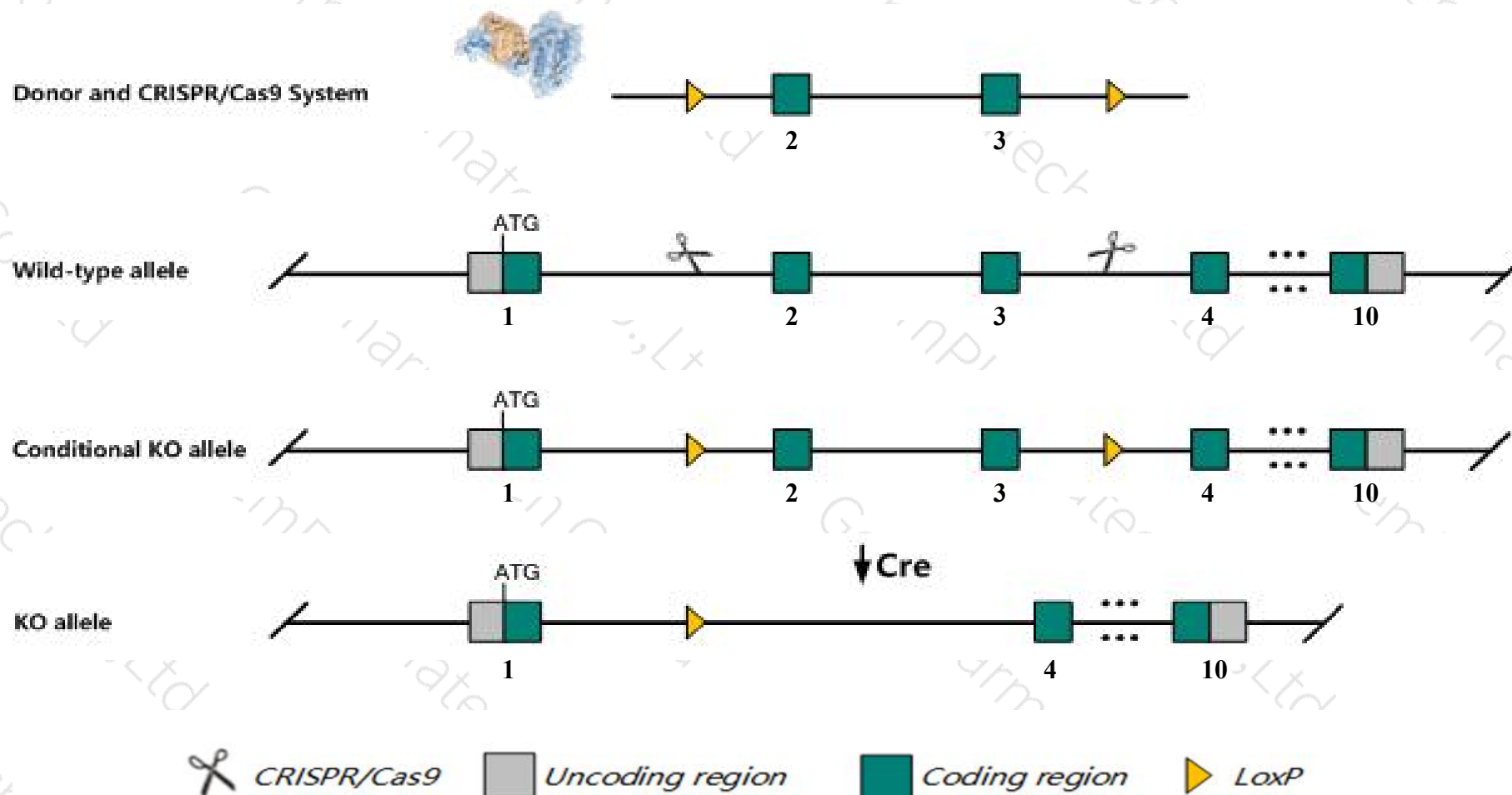
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nfatc3* gene. The schematic diagram is as follows:



- The *Nfatc3* gene has 7 transcripts. According to the structure of *Nfatc3* gene, exon2-exon3 of *Nfatc3-201* (ENSMUST00000109308.2) transcript is recommended as the knockout region. The region contains 1301bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nfatc3* 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.

- According to the existing MGI data, Mice homozygous for disruptions in this gene experience some embryonic lethality and reduced body size. Developmental defects also exist in the immune system, skeletal muscle, vasculature, heart, and sensory nerves.
- The *Nfatc3* gene is located on the Chr8. 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)

Nfatc3 nuclear factor of activated T cells, cytoplasmic, calcineurin dependent 3 [Mus musculus (house mouse)]

Gene ID: 18021, updated on 19-Mar-2019

Summary



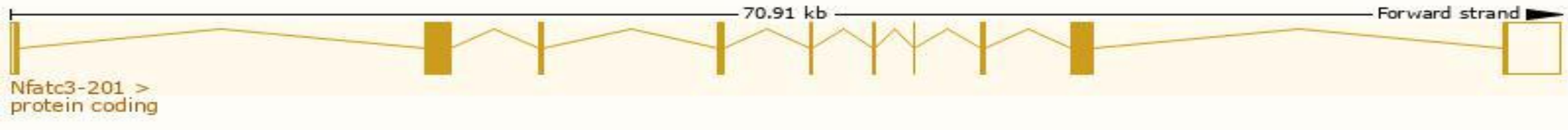
Official Symbol	Nfatc3 provided by MGI
Official Full Name	nuclear factor of activated T cells, cytoplasmic, calcineurin dependent 3 provided by MGI
Primary source	MGI:MGI:103296
See related	Ensembl:ENSMUSG000000031902
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C80703, D8Erd281e, NFAT4, NFATx
Expression	Broad expression in thymus adult (RPKM 43.7), spleen adult (RPKM 12.4) and 25 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

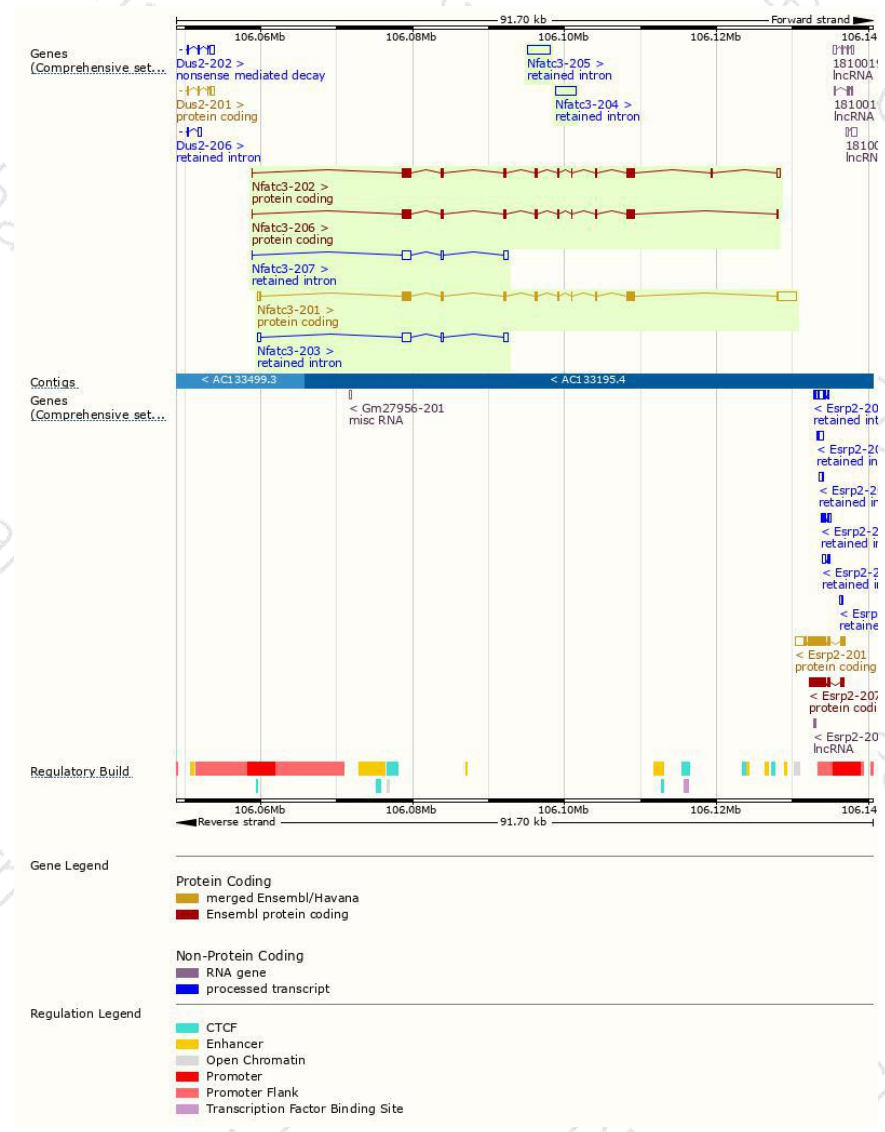
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nfatc3-201	ENSMUST00000109308.2	5984	1076aa	Protein coding	CCDS22628	Q3UZ64	TSL:1 GENCODE basic APPRIS P2
Nfatc3-202	ENSMUST00000211991.1	3712	1060aa	Protein coding	-	B5B2U1	TSL:1 GENCODE basic APPRIS ALT 2
Nfatc3-206	ENSMUST00000212742.1	3207	1068aa	Protein coding	-	B5B2U2	TSL:1 GENCODE basic APPRIS ALT 2
Nfatc3-205	ENSMUST00000212691.1	2863	No protein	Retained intron	-	-	TSL:NA
Nfatc3-204	ENSMUST00000212671.1	2721	No protein	Retained intron	-	-	TSL:NA
Nfatc3-203	ENSMUST00000212577.1	2207	No protein	Retained intron	-	-	TSL:1
Nfatc3-207	ENSMUST00000212936.1	1925	No protein	Retained intron	-	-	TSL:1

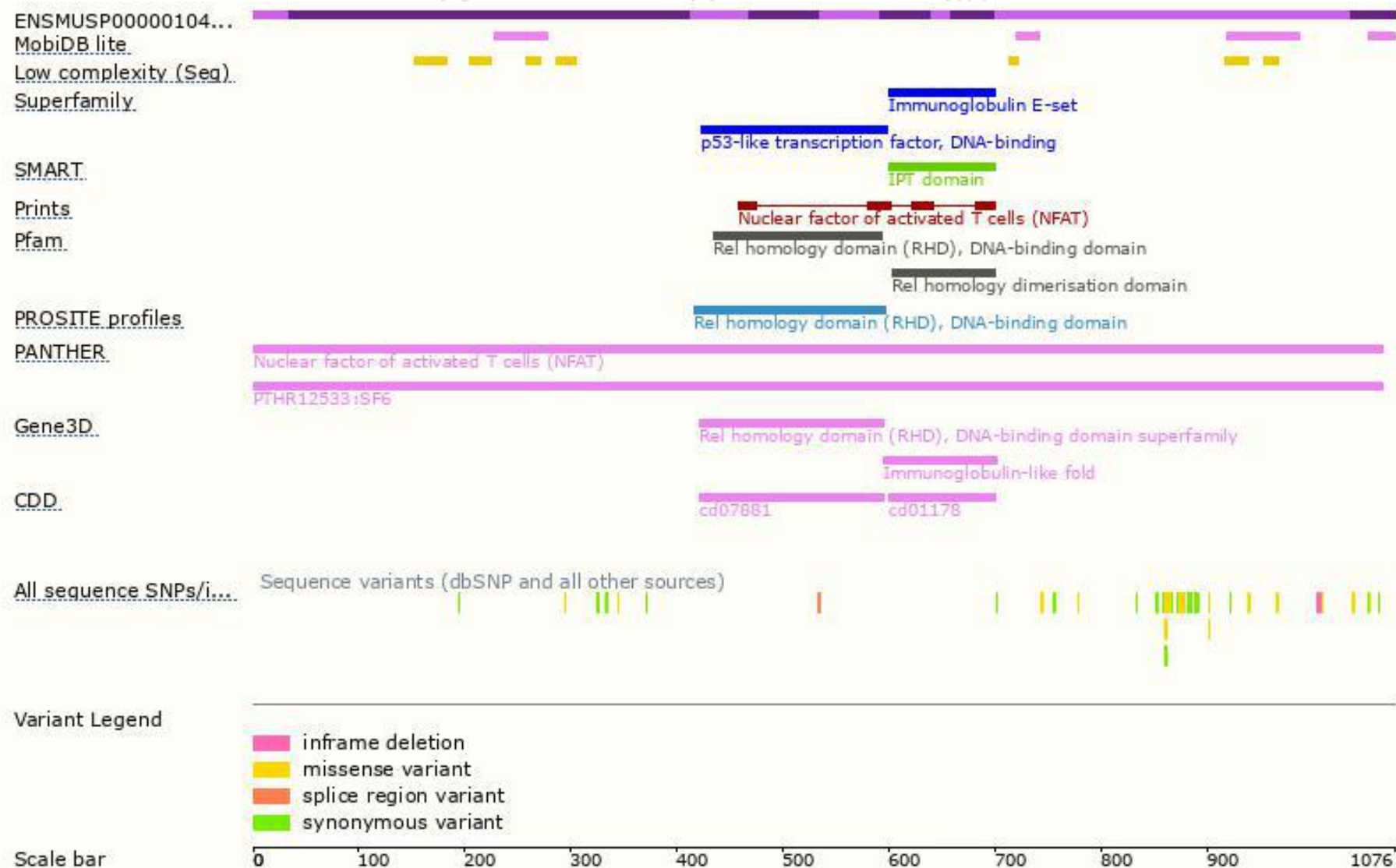
The strategy is based on the design of *Nfatc3-201* transcript,The transcription is shown below



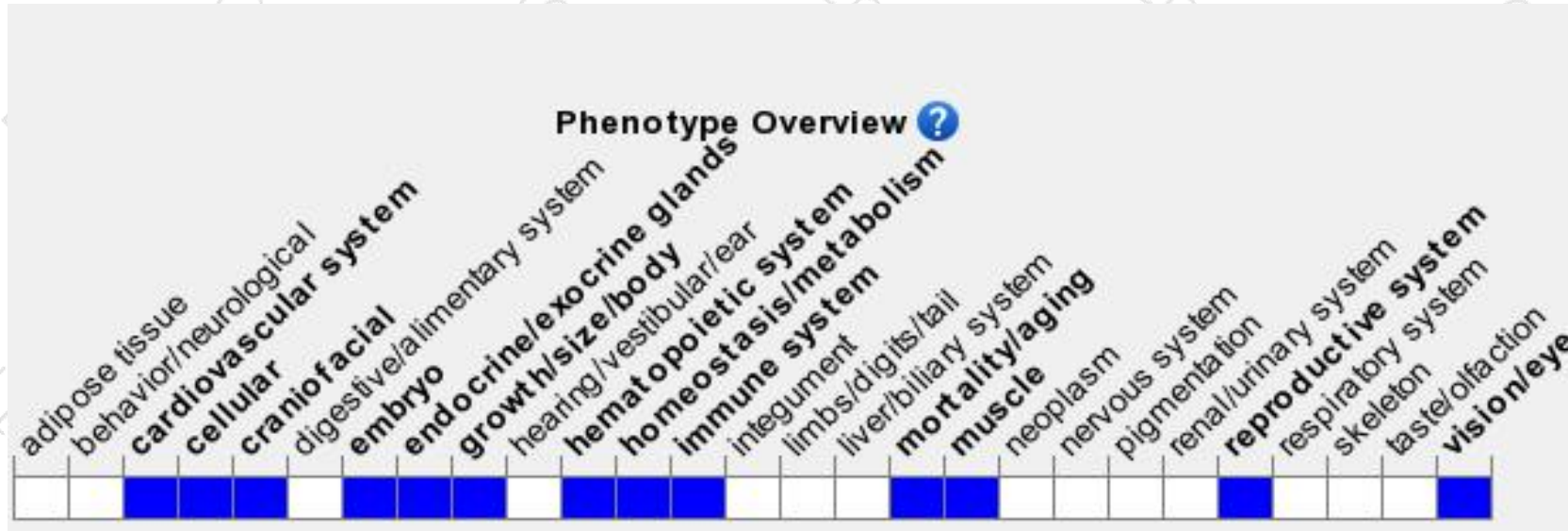
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



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

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

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