

Ncoa3 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Ncoa3

Project type

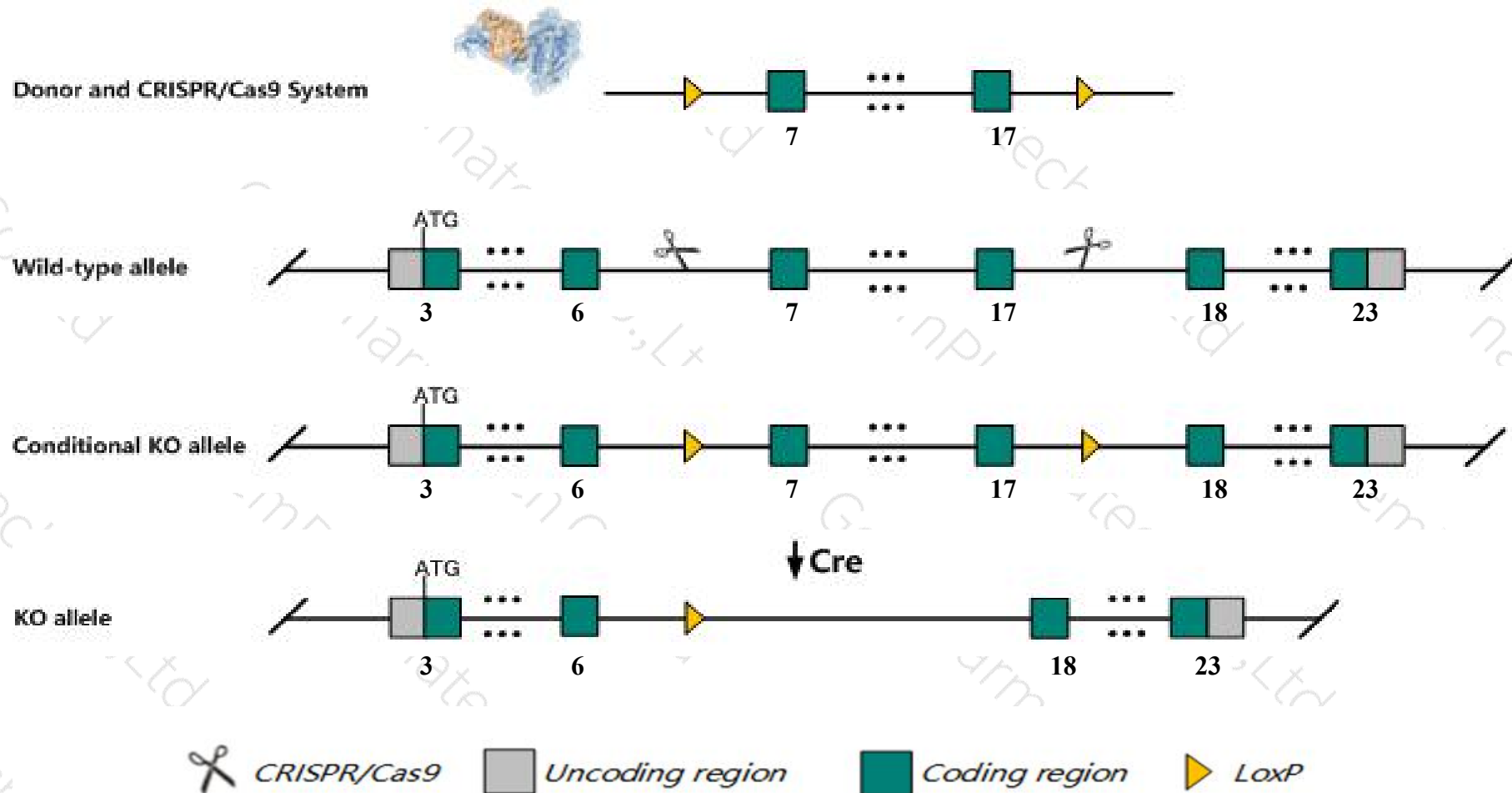
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ncoa3* gene. The schematic diagram is as follows:



Technical routes

- The *Ncoa3* gene has 5 transcripts. According to the structure of *Ncoa3* gene, exon7-exon17 of *Ncoa3-201* (ENSMUST00000088095.5) transcript is recommended as the knockout region. The region contains 2750bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ncoa3* 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, Nullizygous mice exhibit growth defects and reduced serum IGF-1 levels and may show impaired proliferative responses to various factors, delayed mammary gland growth and puberty, reproductive dysfunction, susceptibility to endotoxin shock, altered lymphopoiesis, and protection against obesity.
- The *Ncoa3* gene is located on the Chr2. 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)

Ncoa3 nuclear receptor coactivator 3 [Mus musculus (house mouse)]

Gene ID: 17979, updated on 5-Mar-2019

Summary



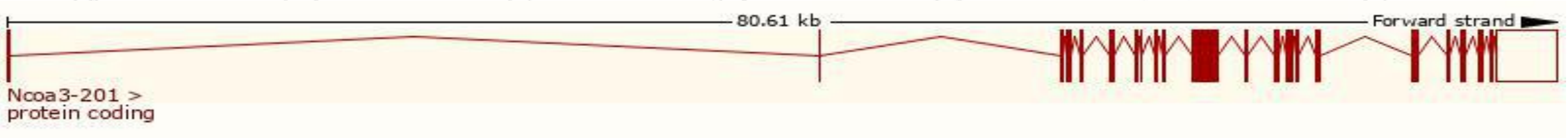
Official Symbol	Ncoa3 provided by MGI
Official Full Name	nuclear receptor coactivator 3 provided by MGI
Primary source	MGI:MGI:1276535
See related	Ensembl:ENSMUSG000000027678
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2010305B15Rik, AW321064, Actr, Aib1, KAT13B, Rac3, Src3, Tram-1, Tram1, bHLHe42, p/Cip, pCip
Expression	Ubiquitous expression in spleen adult (RPKM 20.4), thymus adult (RPKM 16.8) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

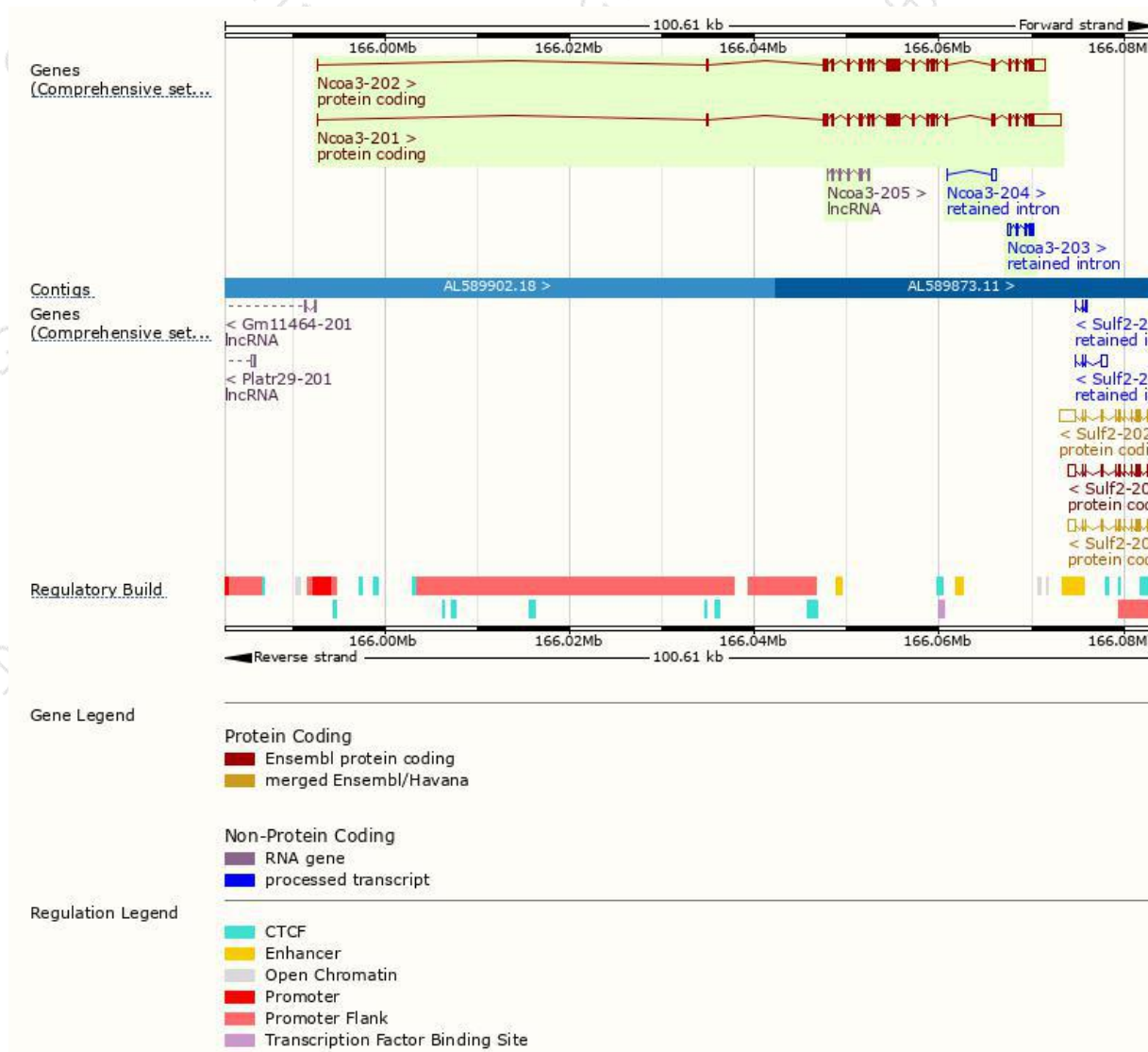
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ncoa3-201	ENSMUST00000088095.5	7531	1403aa	Protein coding	CCDS38333	Q05BA5	TSL:1 GENCODE basic APPRIS P2
Ncoa3-202	ENSMUST00000109252.7	5757	1402aa	Protein coding	-	A2A468	TSL:5 GENCODE basic APPRIS ALT 2
Ncoa3-203	ENSMUST00000139394.1	822	No protein	Retained intron	-	-	TSL:2
Ncoa3-204	ENSMUST00000139658.1	554	No protein	Retained intron	-	-	TSL:3
Ncoa3-205	ENSMUST00000153507.1	717	No protein	lncRNA	-	-	TSL:5

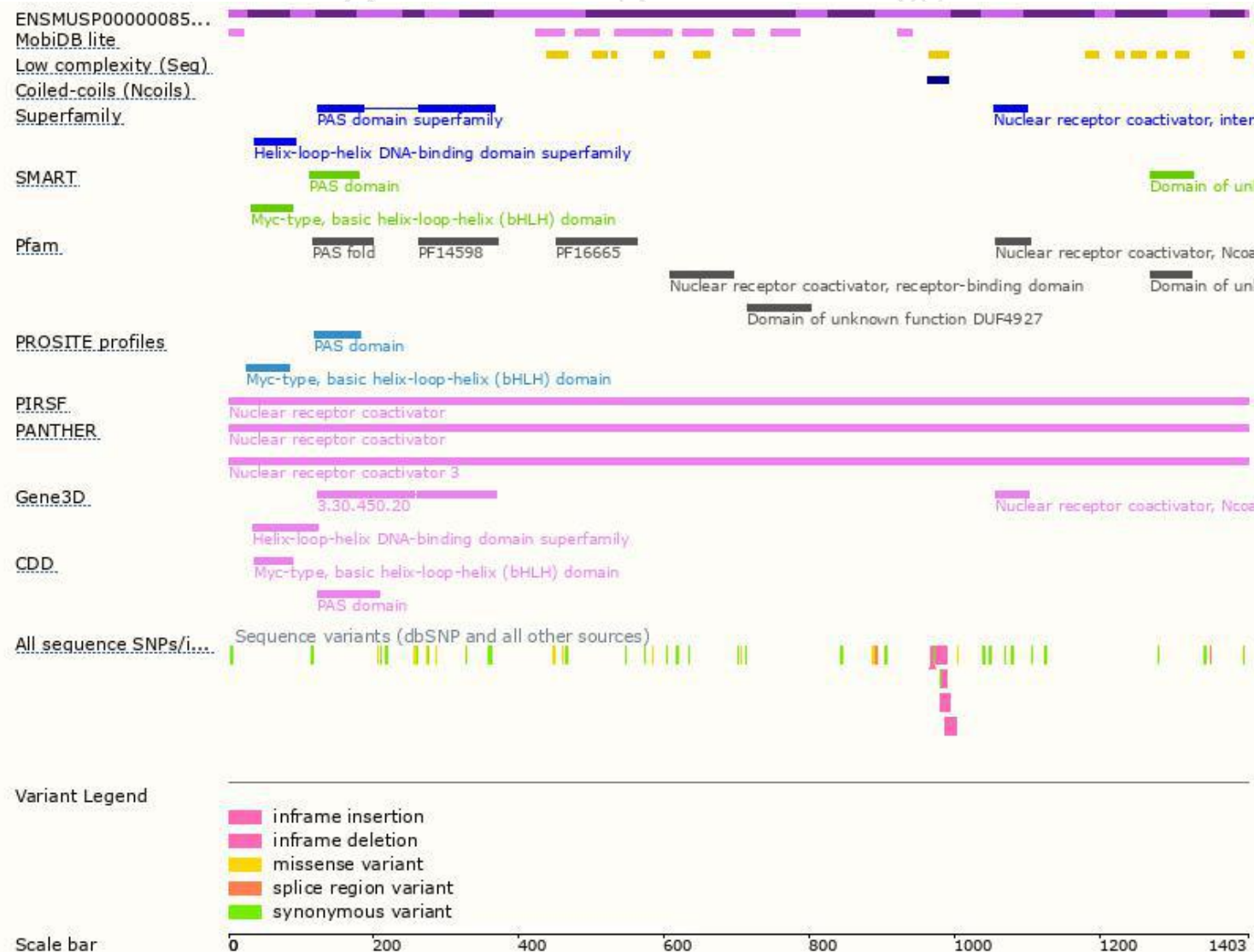
The strategy is based on the design of *Ncoa3-201* transcript,The transcription is shown below



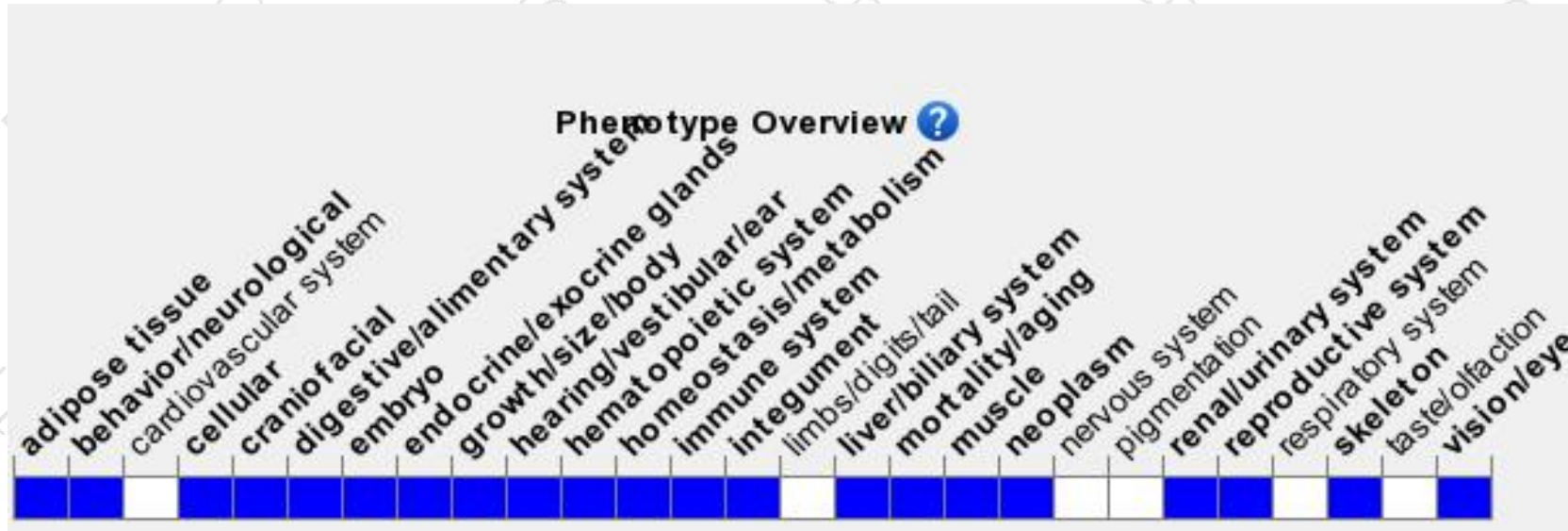
Genomic location distribution



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/>).

According to the existing MGI data, Nullizygous mice exhibit growth defects and reduced serum IGF-1 levels and may show impaired proliferative responses to various factors, delayed mammary gland growth and puberty, reproductive dysfunction, susceptibility to endotoxin shock, altered lymphopoiesis, and protection against obesity.

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

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