

Nup43 Cas9-CKO Strategy

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Project Overview

Project Name

Nup43

Project type

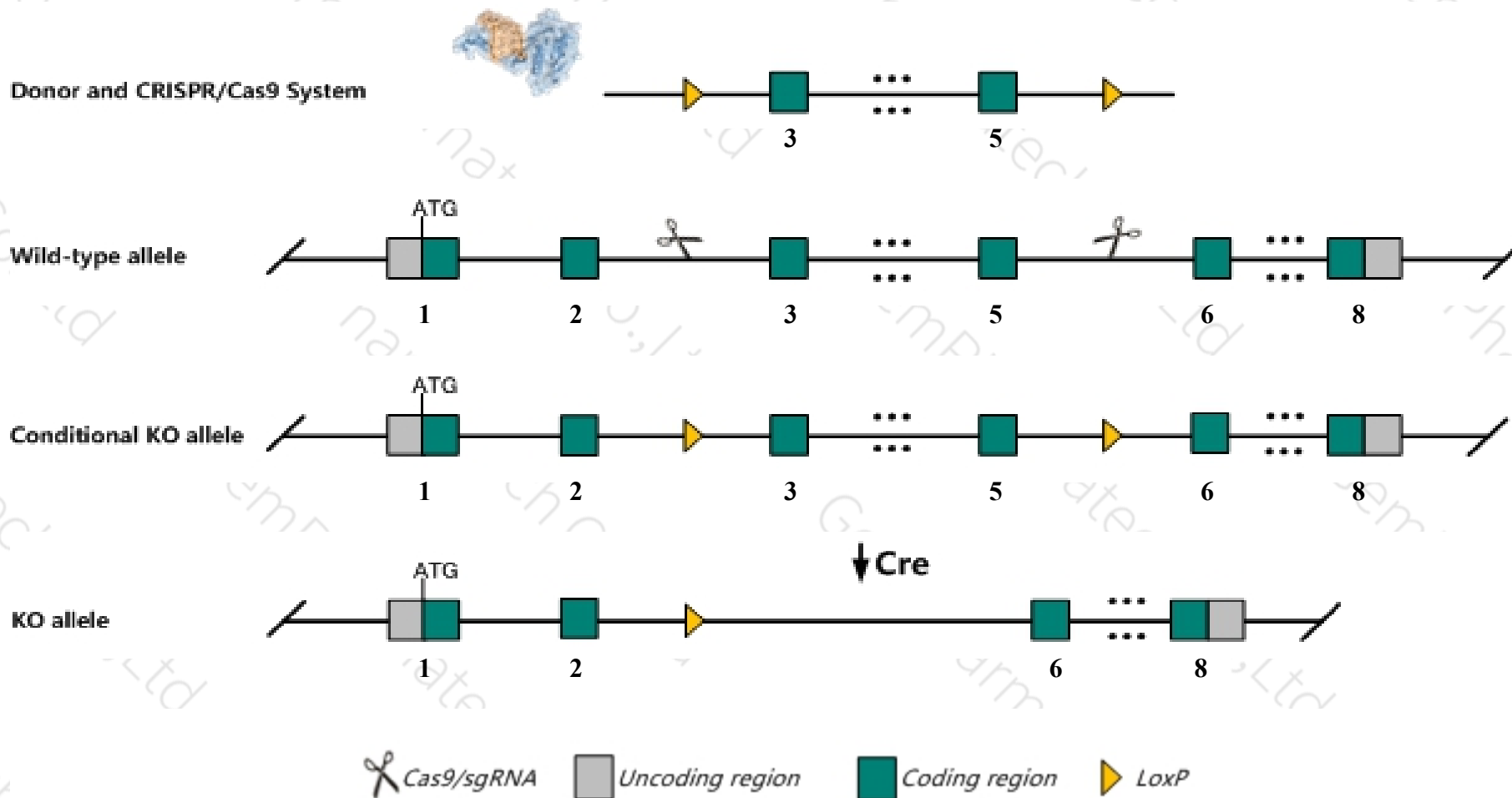
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nup43* gene. The schematic diagram is as follows:



Technical routes

- The *Nup43* gene has 4 transcripts. According to the structure of *Nup43* gene, exon3-exon5 of *Nup43-201*(ENSMUST00000040135.8) transcript is recommended as the knockout region. The region contains 395bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nup43* 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 *Nup43* gene is located on the Chr10. 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.
- The flox region is in the intron of the *Pcmt1* gene, which may affect the regulation of this gene.
- 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)

Nup43 nucleoporin 43 [Mus musculus (house mouse)]

Gene ID: 69912, updated on 13-Mar-2020

Summary



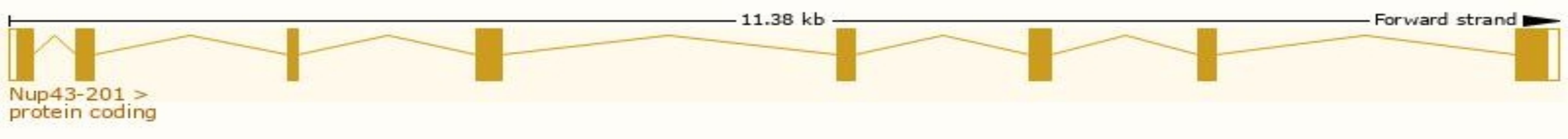
Official Symbol	Nup43 provided by MGI
Official Full Name	nucleoporin 43 provided by MGI
Primary source	MGI:MGI:1917162
See related	Ensembl:ENSMUSG00000040034
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2610016K01Rik, 2610529I12Rik, AA409950, p42
Expression	Broad expression in CNS E11.5 (RPKM 15.7), placenta adult (RPKM 13.6) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

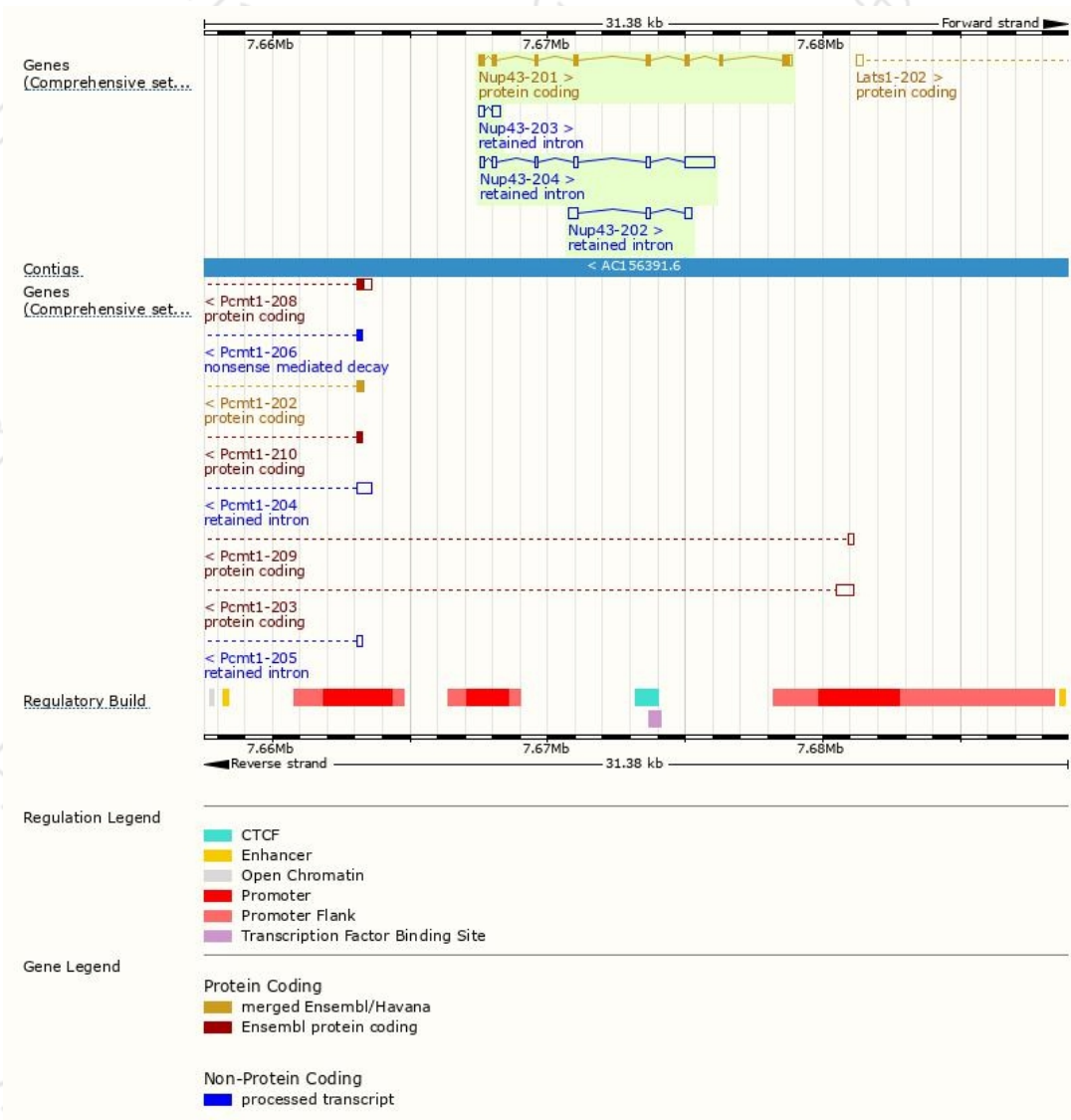
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nup43-201	ENSMUST00000040135.8	1286	380aa	Protein coding	CCDS48493	P59235	TSL:1 GENCODE basic APPRIS P1
Nup43-204	ENSMUST00000162527.7	1735	No protein	Retained intron	-	-	TSL:2
Nup43-202	ENSMUST00000161060.1	750	No protein	Retained intron	-	-	TSL:2
Nup43-203	ENSMUST00000162346.1	458	No protein	Retained intron	-	-	TSL:2

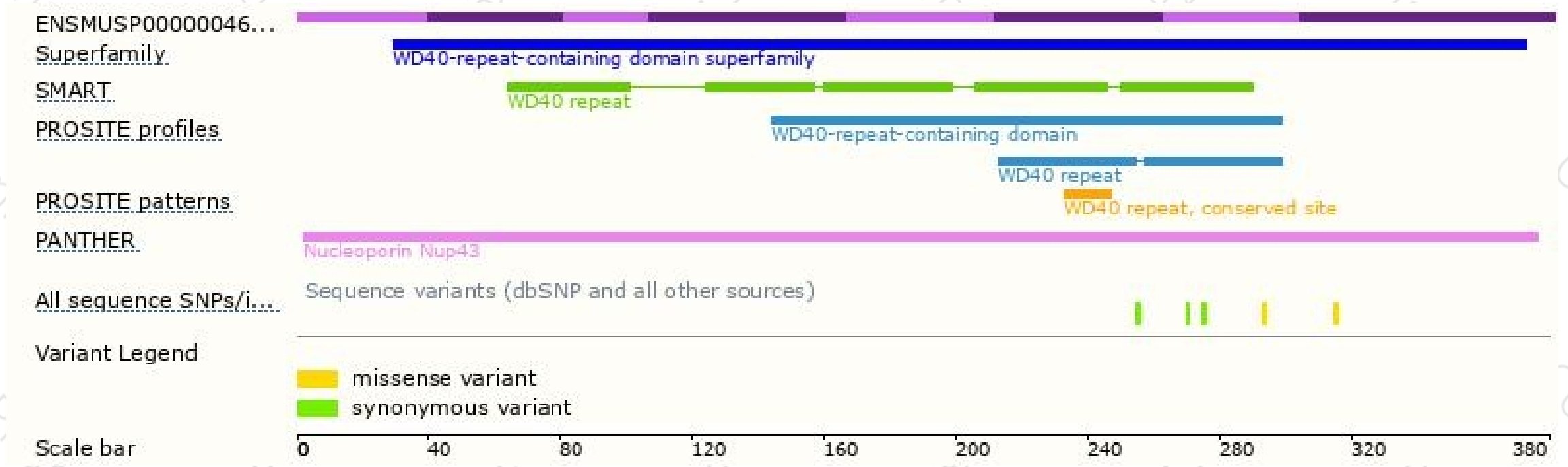
The strategy is based on the design of *Nup43-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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