

Ndufaf7 Cas9-KO Strategy

Designer: Yun Li

Reviewer: Shuang Zhang

Design Date: 2021-4-6

Project Overview

Project Name

Ndufaf7

Project type

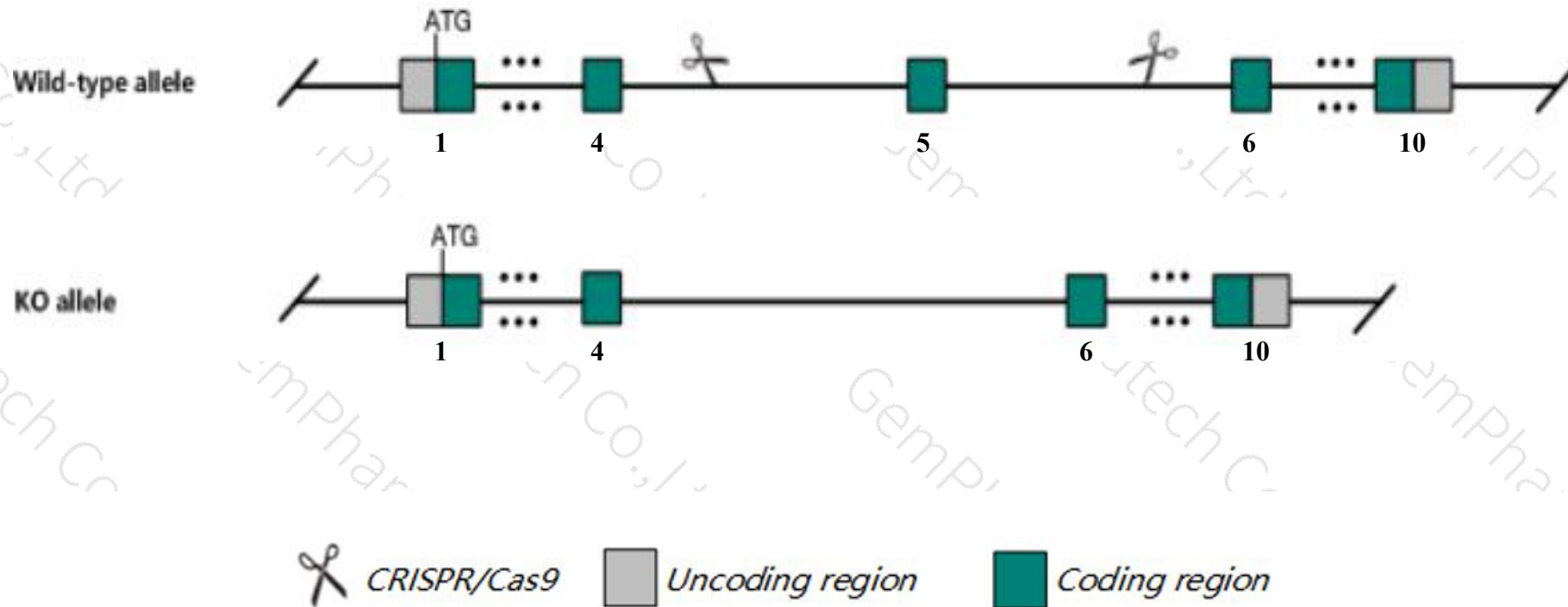
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ndufa7* gene. The schematic diagram is as follows:



- The *Ndufaf7* gene has 8 transcripts. According to the structure of *Ndufaf7* gene, exon5 of *Ndufaf7*-201(ENSMUST00000024887.5) transcript is recommended as the knockout region. The region contains 214bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ndufaf7* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, embryos homozygous for a gene trap mutation die prenatally.
- The *Ndufaf7* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Ndufaf7 NADH:ubiquinone oxidoreductase complex assembly factor 7 [Mus musculus (house mouse)]

Gene ID: 73694, updated on 13-Mar-2020

Summary



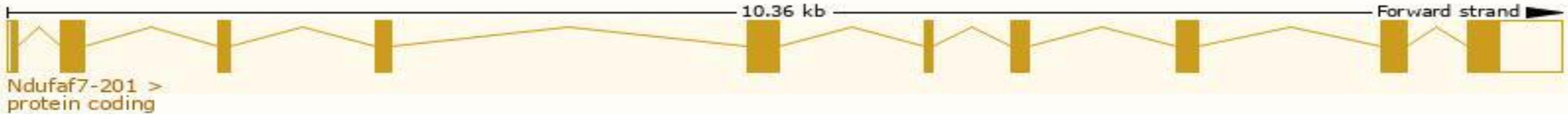
Official Symbol	Ndufaf7 provided by MGI
Official Full Name	NADH:ubiquinone oxidoreductase complex assembly factor 7 provided by MGI
Primary source	MGI:MGI:1920944
See related	Ensembl:ENSMUSG00000024082
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2410091C18Rik, AL033374, PRO1853
Expression	Ubiquitous expression in CNS E18 (RPKM 7.7), cortex adult (RPKM 7.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

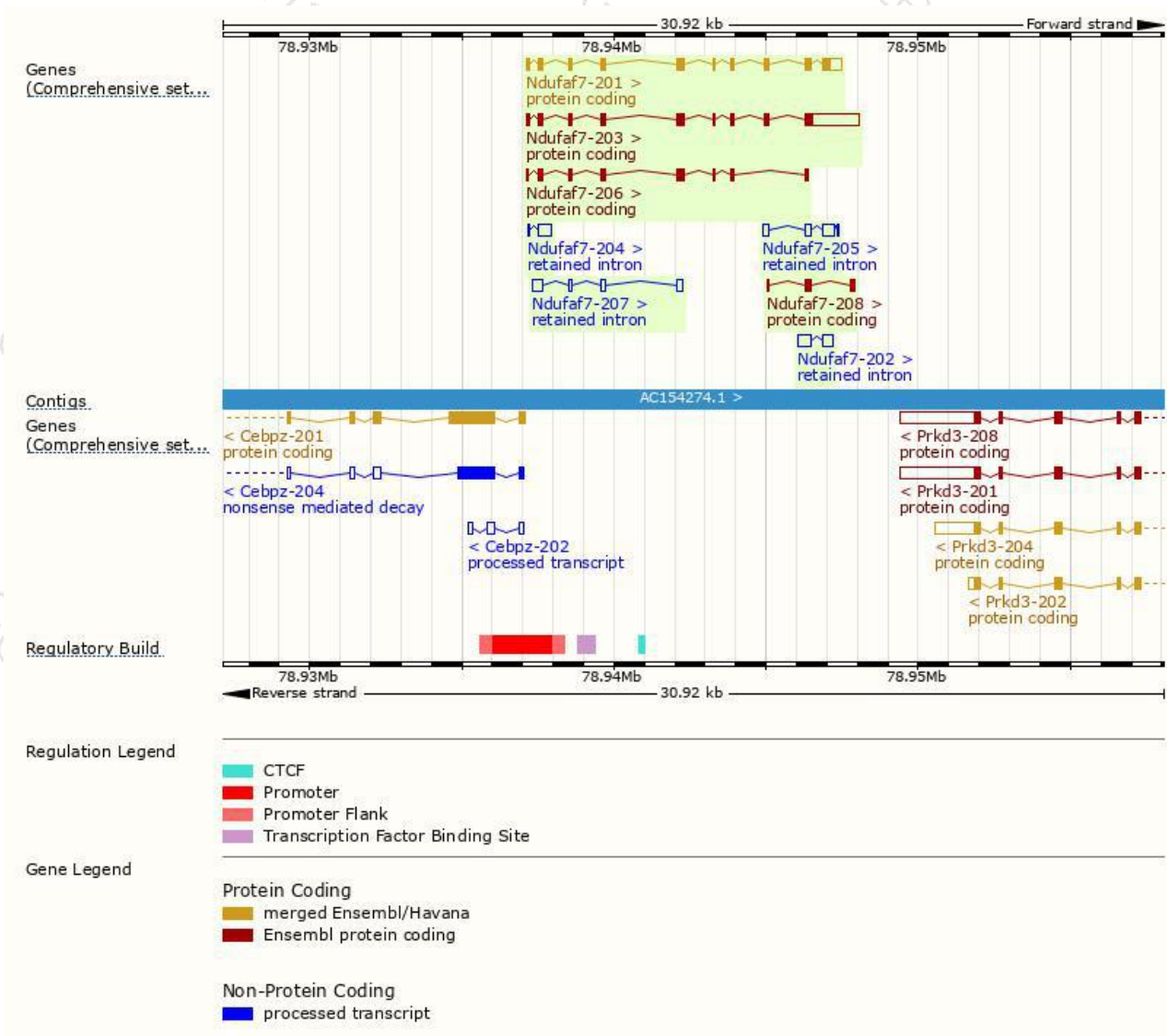
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ndufaf7-201	ENSMUST00000024887.5	1749	436aa	Protein coding	CCDS28982	Q9CWG8	TSL:1 GENCODE basic APPRIS P2
Ndufaf7-203	ENSMUST00000233068.1	2706	383aa	Protein coding	-	Q9CWG8	GENCODE basic APPRIS ALT2
Ndufaf7-206	ENSMUST00000233777.1	881	288aa	Protein coding	-	A0A3B2WD93	CDS 3' incomplete
Ndufaf7-208	ENSMUST00000233935.1	392	117aa	Protein coding	-	A0A3B2WD28	CDS 5' incomplete
Ndufaf7-205	ENSMUST00000233168.1	777	No protein	Retained intron	-	-	
Ndufaf7-202	ENSMUST00000232821.1	741	No protein	Retained intron	-	-	
Ndufaf7-207	ENSMUST00000233787.1	729	No protein	Retained intron	-	-	
Ndufaf7-204	ENSMUST00000233138.1	514	No protein	Retained intron	-	-	

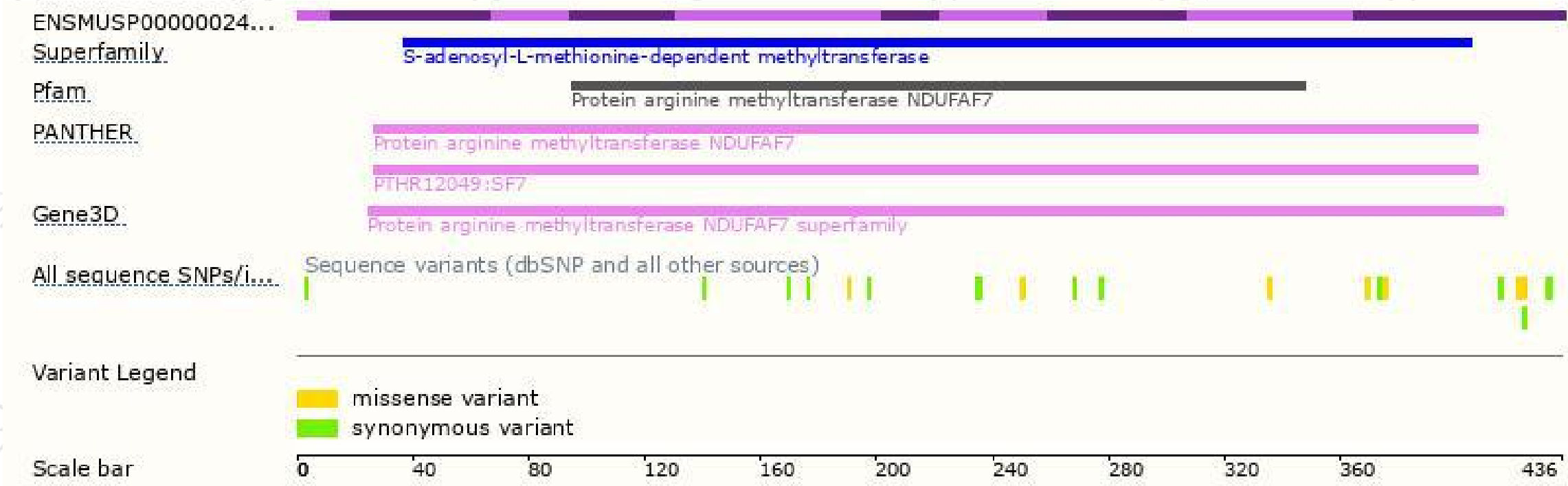
The strategy is based on the design of *Ndufaf7-201* transcript,the transcription is shown below:



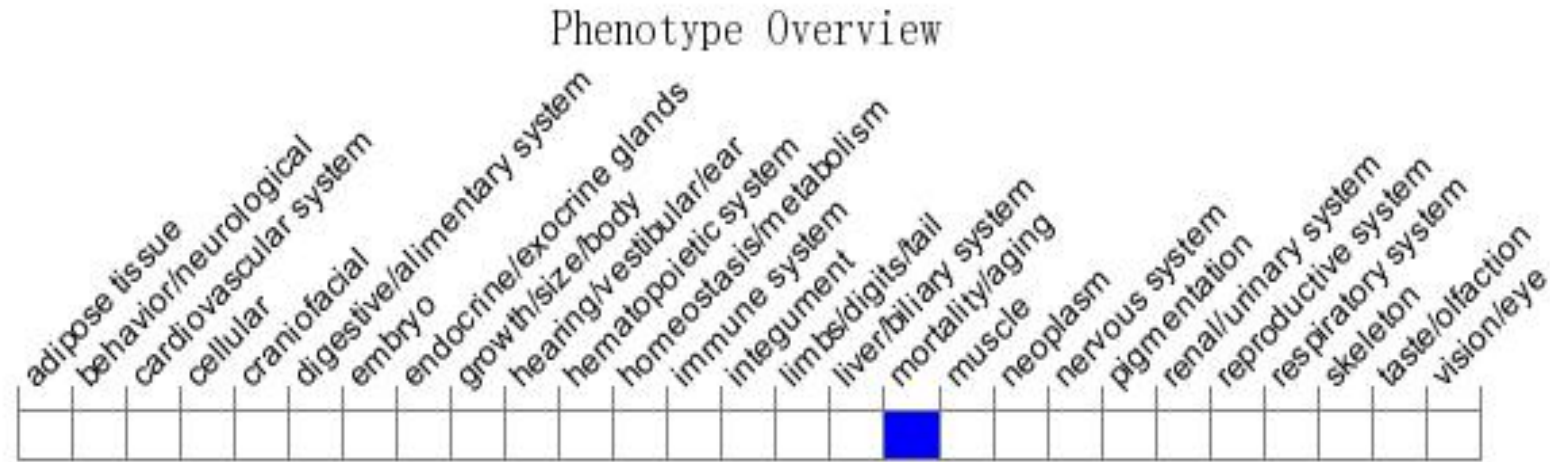
Genomic location distribution



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, embryos homozygous for a gene trap mutation die prenatally.

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

Tel: 400-9660890

