Ndufb1 Cas9-KO Strategy

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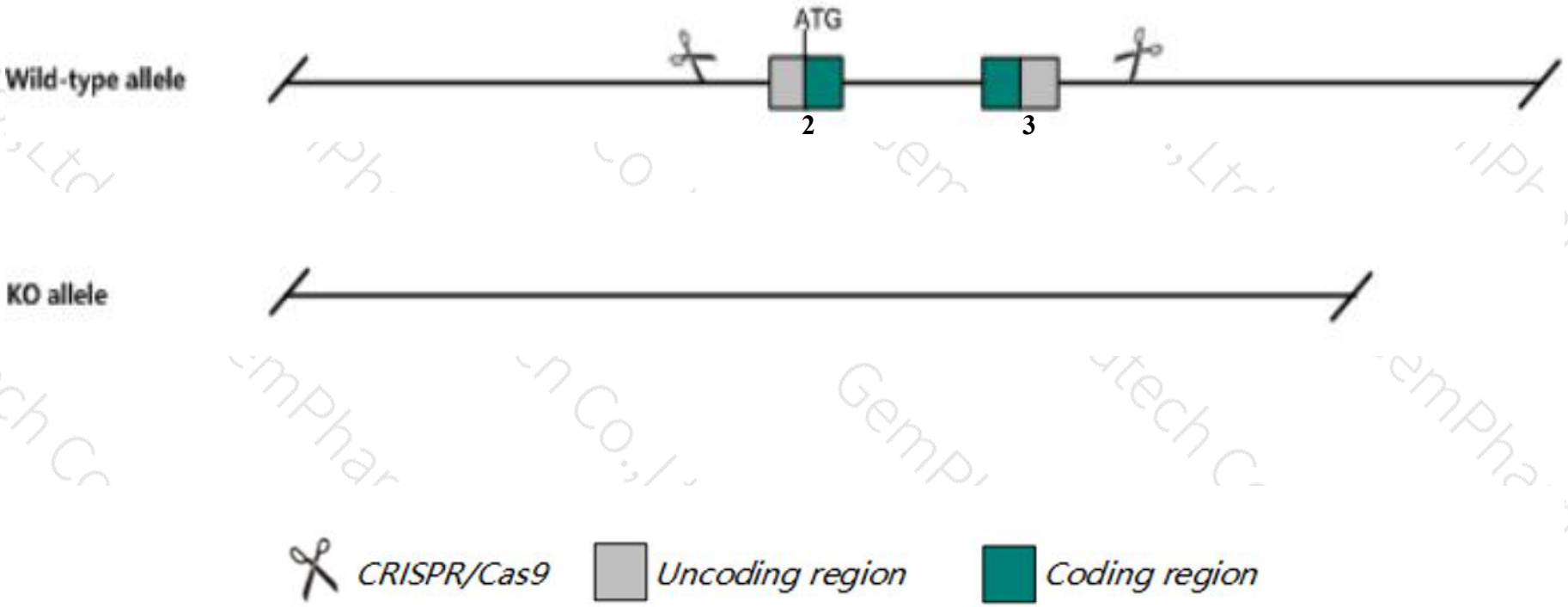
Design Date: 2020-9-7

Project Overview

Project Name	***Ndufb1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ndufb1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ndufb1* gene has 4 transcripts. According to the structure of *Ndufb1* gene, exon2-exon3 of *Ndufb1-ps-201*(ENSMUST00000221191.1) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ndufb1* 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.

Notice

➢ The *Ndufb1* gene is located on the Chr12. 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）

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Ndufb1 NADH:ubiquinone oxidoreductase subunit B1 [Mus musculus (house mouse)]

Gene ID: 102631912, updated on 13-Mar-2020

Summary

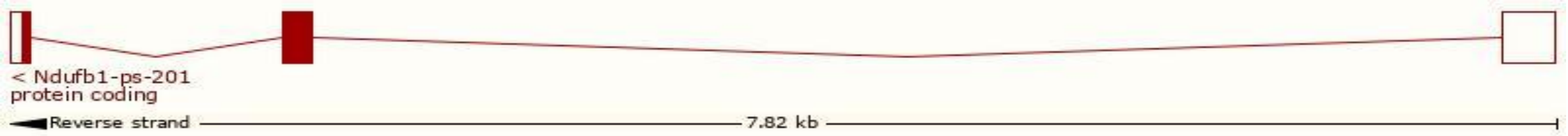
Official Symbol	Ndufb1 provided by MGI
Official Full Name	NADH:ubiquinone oxidoreductase subunit B1 provided byMGI
Primary source	MGI:MGI:3780865
See related	Ensembl:ENSMUSG00000113902
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	100040297, CI-MNLL, Gm2695, Ndufb1-ps
Expression	Ubiquitous expression in heart adult (RPKM 23.3), bladder adult (RPKM 22.7) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

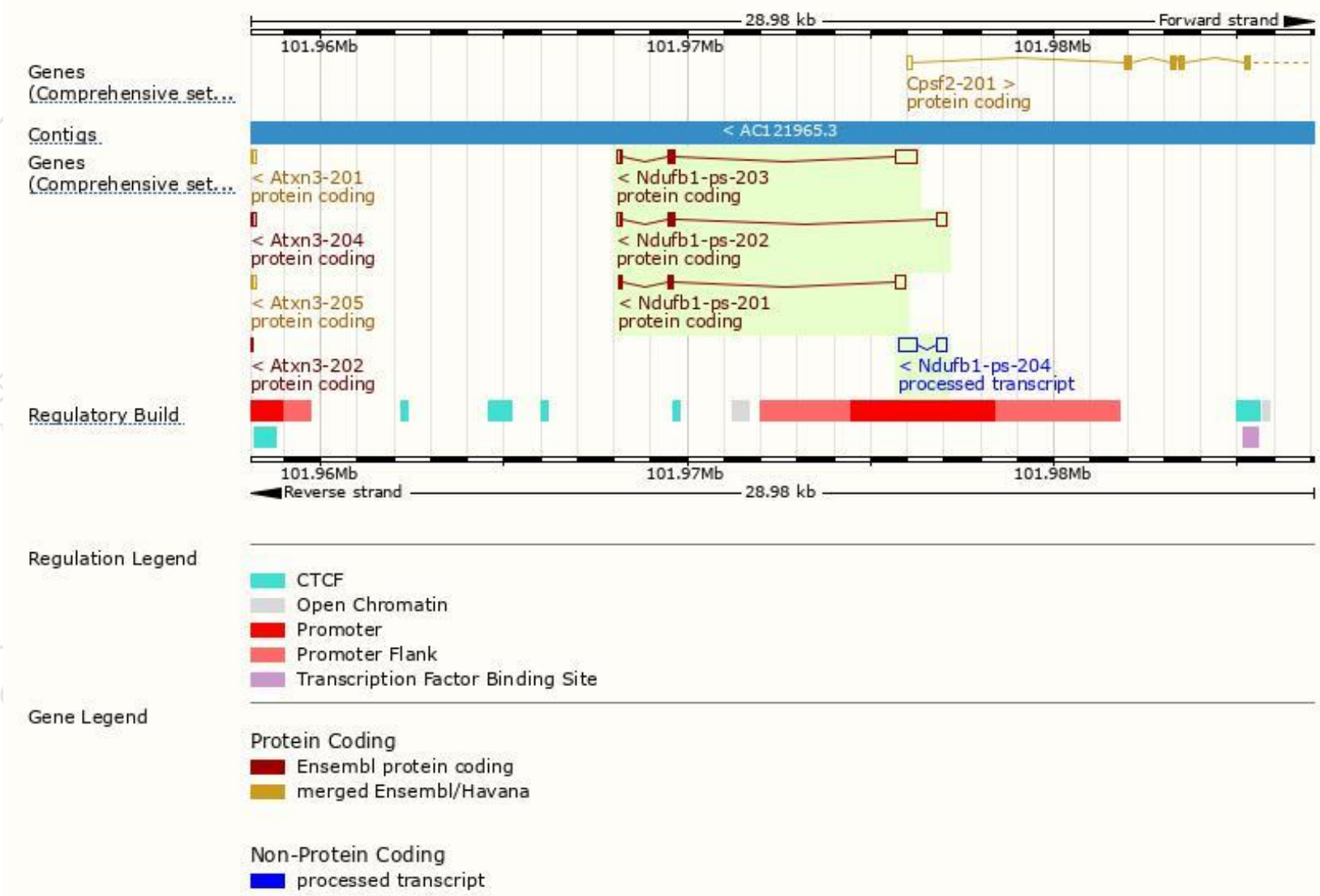
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ndufb1-ps-203	ENSMUST00000221422.1	861	57aa	Protein coding	-	P0DN34	TSL:1 GENCODE basic APPRIS P1
Ndufb1-ps-202	ENSMUST00000221227.1	535	57aa	Protein coding	-	P0DN34	TSL:3 GENCODE basic APPRIS P1
Ndufb1-ps-201	ENSMUST00000221191.1	511	57aa	Protein coding	-	P0DN34	TSL:2 GENCODE basic APPRIS P1
Ndufb1-ps-204	ENSMUST00000222608.1	799	No protein	Processed transcript	-	-	TSL:2

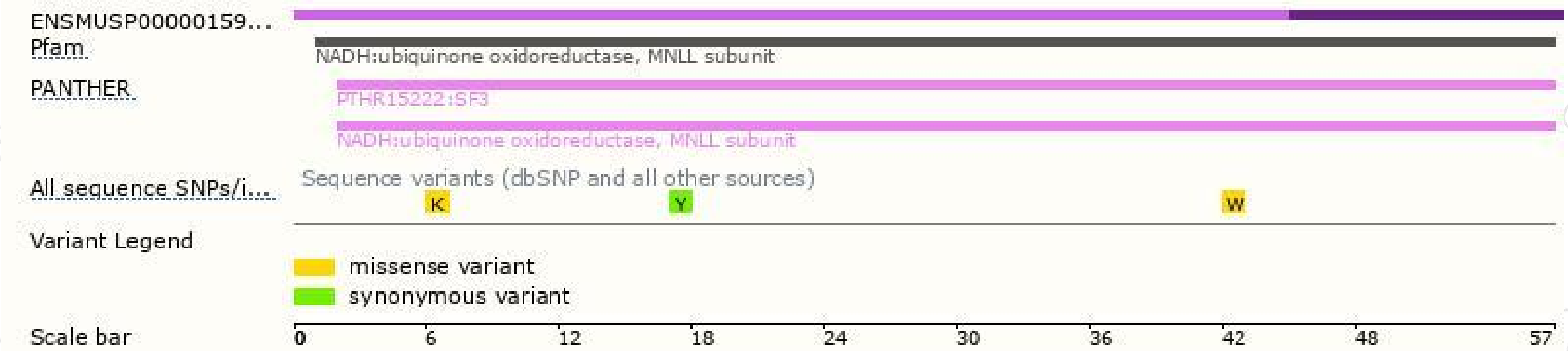
The strategy is based on the design of *Ndufb1-ps-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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