Ndufs5 Cas9-CKO Strategy

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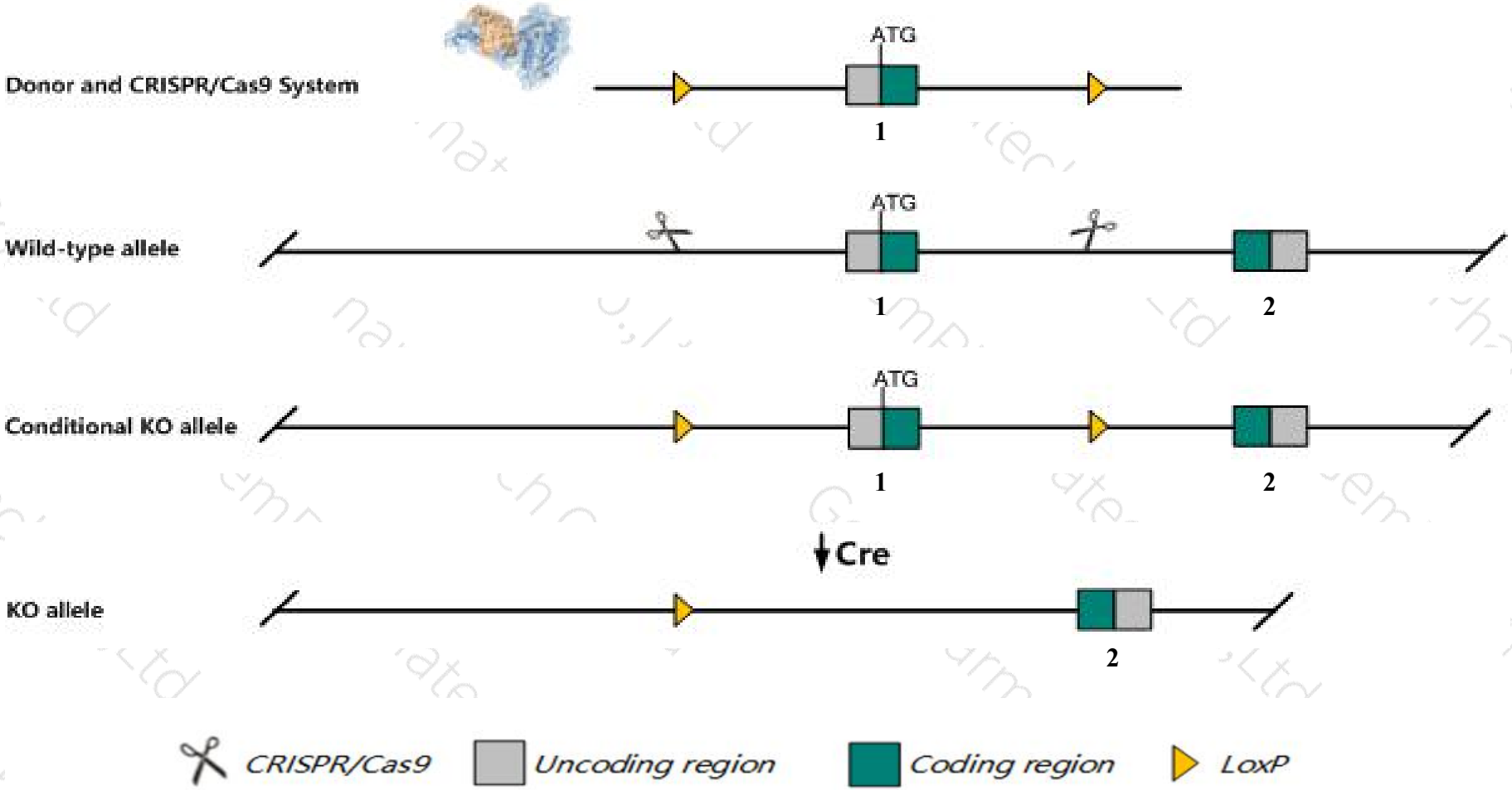
Project Overview

Project Name	***Ndufs5***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ndufs5* gene. The schematic diagram is as follows:



Technical routes

- The *Ndufs5* gene has 4 transcripts. According to the structure of *Ndufs5* gene, exon1 of *Ndufs5-203* (ENSMUST00000106207.7) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ndufs5* 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.

Notice

➢ The *Ndufs5* gene is located on the Chr4. 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）

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Ndufs5 NADH:ubiquinone oxidoreductase core subunit S5 [Mus musculus (house mouse)]

Gene ID: 595136, updated on 13-Mar-2020

Summary

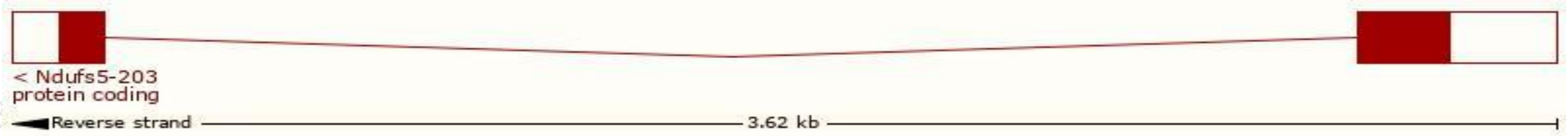
Official Symbol	Ndufs5 provided by MGI
Official Full Name	NADH:ubiquinone oxidoreductase core subunit S5 provided by MGI
Primary source	MGI:MGI:1890889
See related	Ensembl:ENSMUSG00000028648
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI256693
Expression	Ubiquitous expression in cerebellum adult (RPKM 103.8), CNS E18 (RPKM 84.0) and 23 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

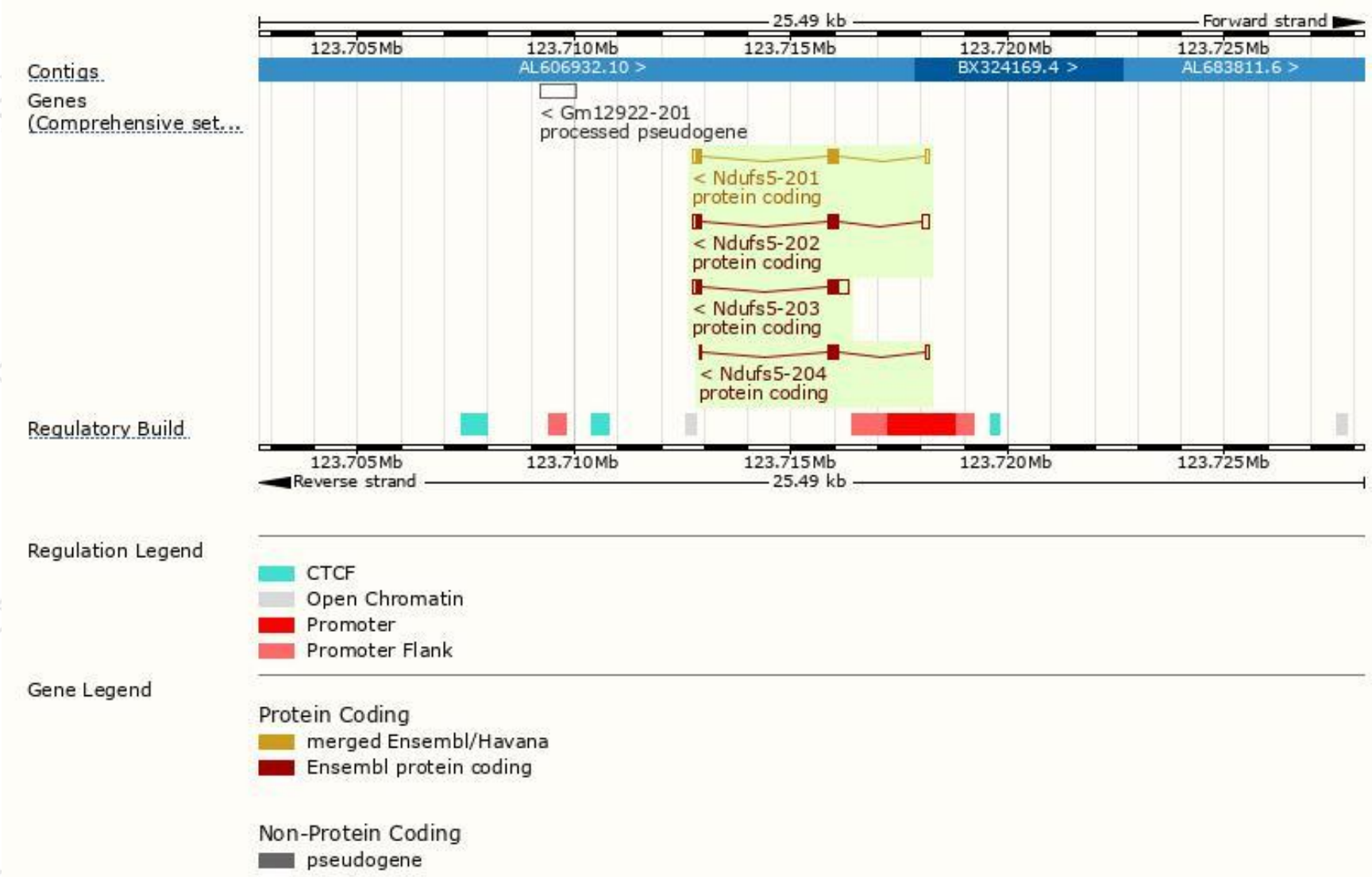
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ndufs5-203	ENSMUST00000106207.7	680	106aa	Protein coding	CCDS18618	Q99LY9	TSL:1 GENCODE basic APPRIS P1
Ndufs5-202	ENSMUST00000106206.7	599	106aa	Protein coding	CCDS18618	Q99LY9	TSL:3 GENCODE basic APPRIS P1
Ndufs5-201	ENSMUST00000030401.13	525	106aa	Protein coding	CCDS18618	Q99LY9	TSL:1 GENCODE basic APPRIS P1
Ndufs5-204	ENSMUST00000137312.1	350	91aa	Protein coding	-	B1ARW4	CDS 3' incomplete TSL:2

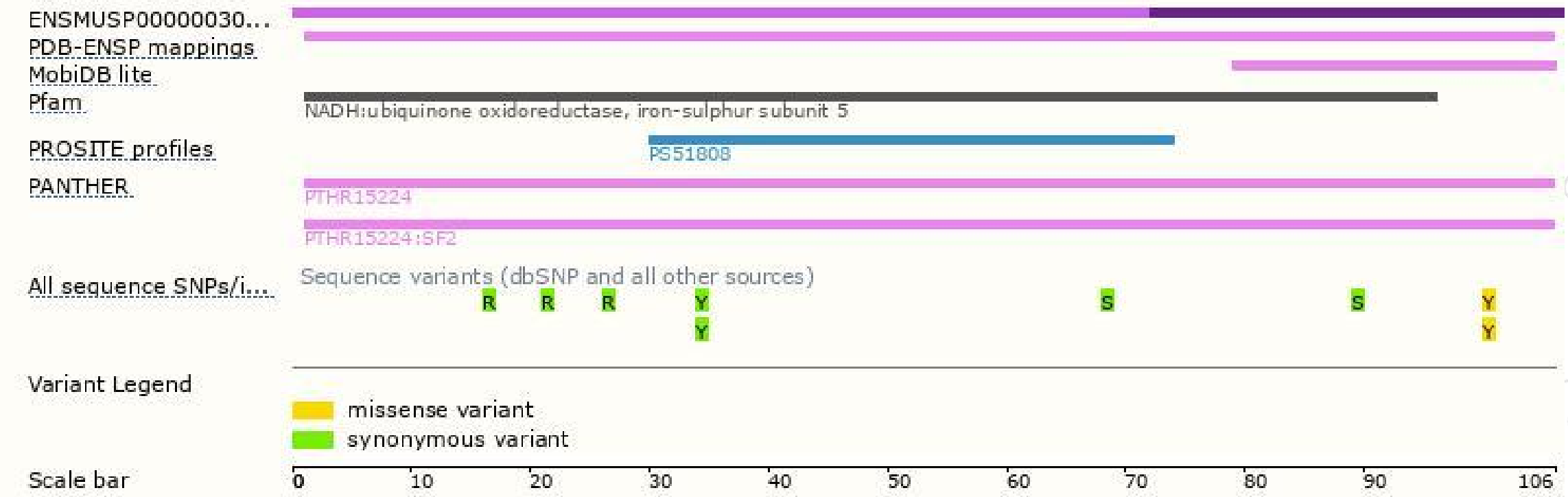
The strategy is based on the design of *Ndufs5-203* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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