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Dnajc17 Cas9-CKO Strategy

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Design Date: 2023-12-5

Overview

Target Gene Name

- Dnajc17

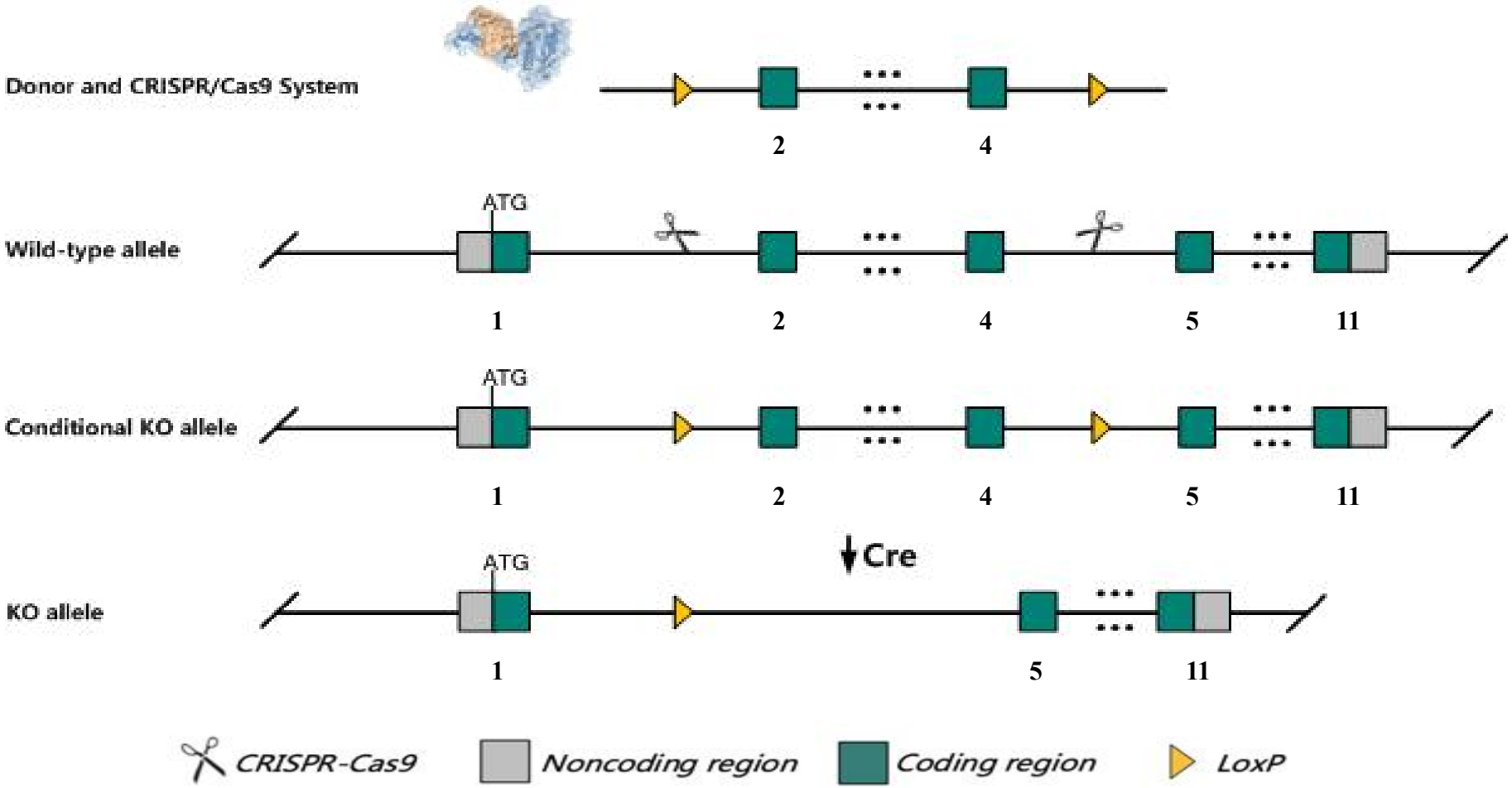
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Dnajc17* gene.

Technical Information

- The *Dnajc17* gene has 3 transcripts. According to the structure of *Dnajc17* gene, exon2-exon4 of *Dnajc17*-201 (ENSMUST00000038439.4) transcript is recommended as the knockout region. The region contains 217bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Dnajc17* 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- 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.

Gene Information

Dnajc17 DnaJ heat shock protein family (Hsp40) member C17 [Mus musculus (house mouse)]

Gene ID: 69408, updated on 12-Apr-2023

Summary

Official Symbol	Dnajc17 provided by MGI
Official Full Name	DnaJ heat shock protein family (Hsp40) member C17 provided by MGI
Primary source	MGI:MGI:1916658
See related	Ensembl:ENSMUSG00000034278
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	1700025B16Rik, D9Bwg1371e
Summary	Predicted to enable RNA binding activity. Acts upstream of or within negative regulation of transcription by RNA polymerase II and toxin transport. Predicted to be located in cytoplasm and nucleus. Is expressed in brain; thyroid gland; and thyroid primordium. Orthologous to human DNAJC17 (DnaJ heat shock protein family (Hsp40) member C17). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Ubiquitous expression in CNS E11.5 (RPKM 9.6), CNS E14 (RPKM 7.1) and 28 other tissues See more
Orthologs	human all

Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

The gene has 3 transcripts,all transcripts are shown below:

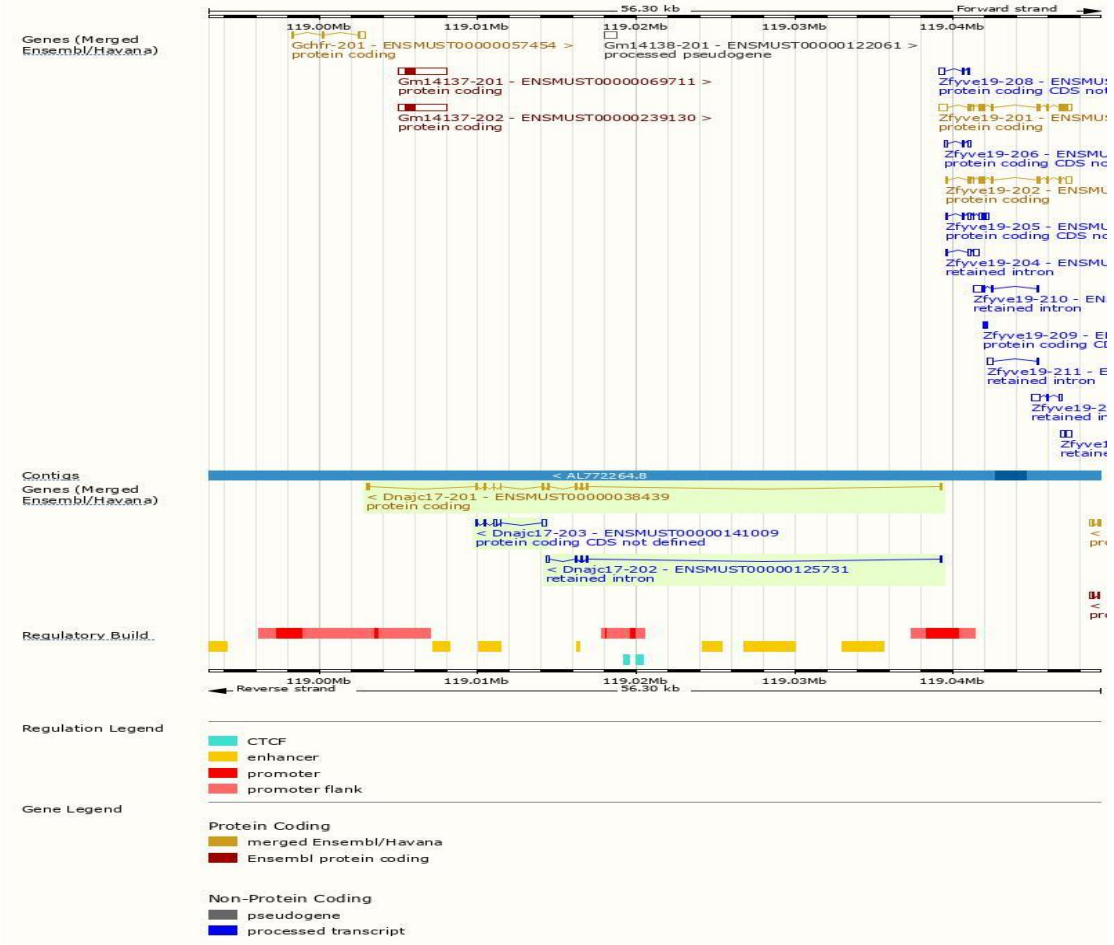
Show/hide columns (1 hidden) Filter

Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000038439.4	Dnajc17-201	1008	303aa	Protein coding	CCDS16593	Q91WT4	Ensembl Canonical GENCODE basic APPRIS P1 TSL:1
ENSMUST00000141009.2	Dnajc17-203	616	No protein	Protein coding CDS not defined		-	TSL:3
ENSMUST00000125731.2	Dnajc17-202	450	No protein	Retained intron		-	TSL:2

The strategy is based on the design of *Dnajc17*-201 transcript, the transcription is shown below:

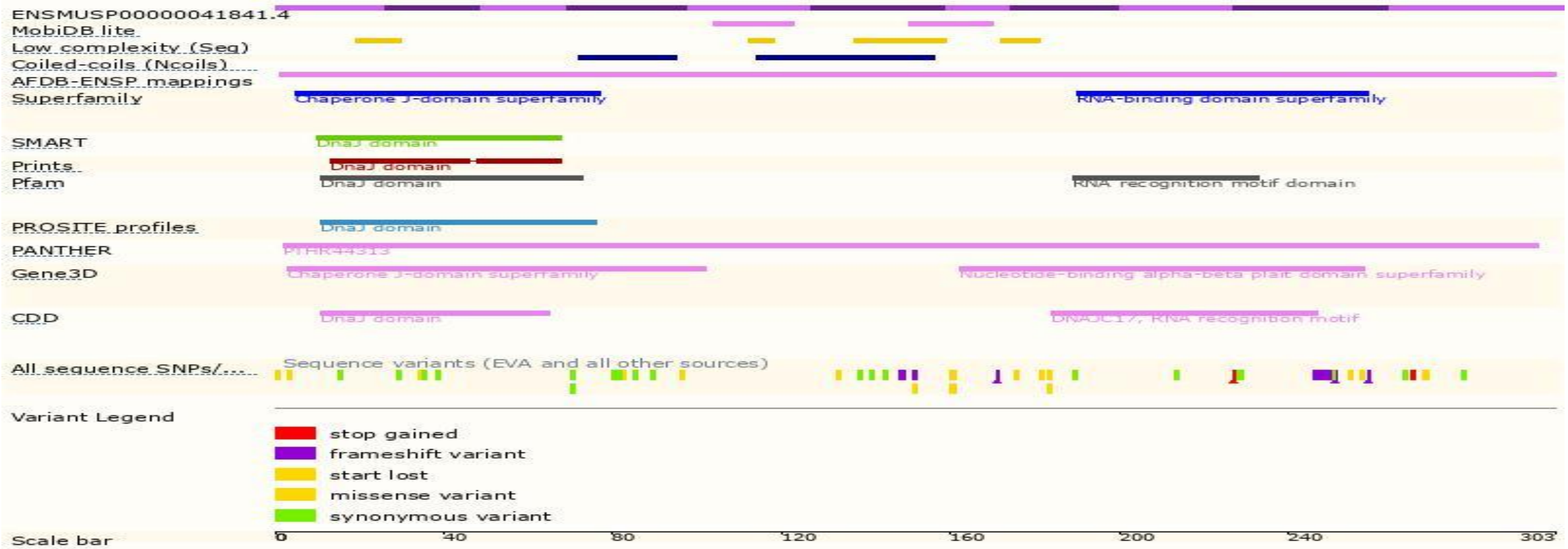
Source: https://www.ensembl.org

Genomic Information



Source: : https://www.ensembl.org

Protein Information



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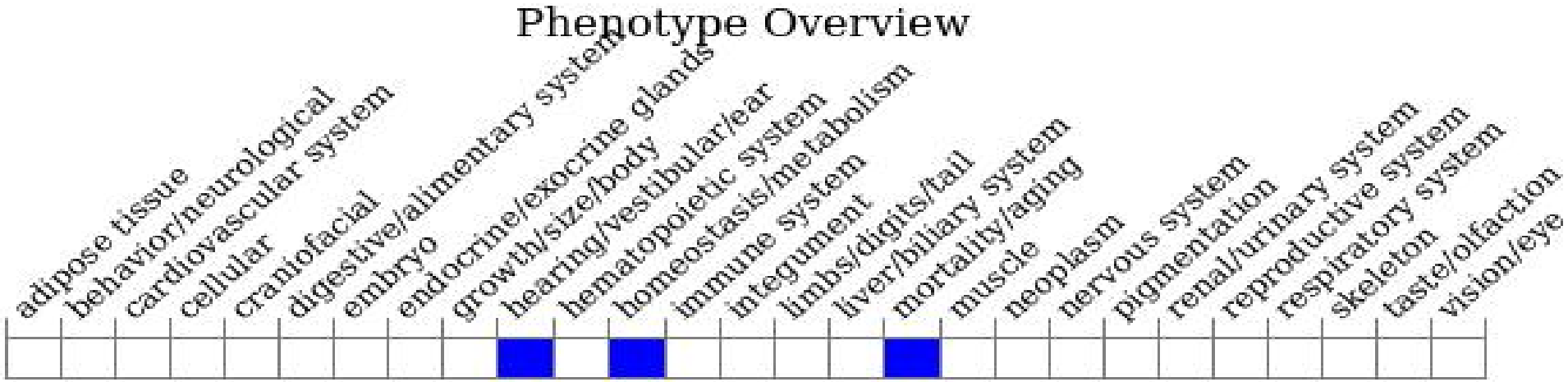
Source: : https://www.ensembl.org

Mouse Phenotype Information (MGI)



- Mice homozygous for a gene trapped allele die before implantation.

Source: https://www.informatics.jax.org

Important Information

- According to the existing MGI data, mice homozygous for a gene trapped allele die before implantation.
- The strategy may destroy the 5-terminal regulation function of *Gm14138*.
- *Dnajc17* is located on Chr2. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 the existing technology level.