Dnah17 Cas9-CKO Strategy

Designer: Xiaojing Li

Reviewer: JiaYu

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Project Overview

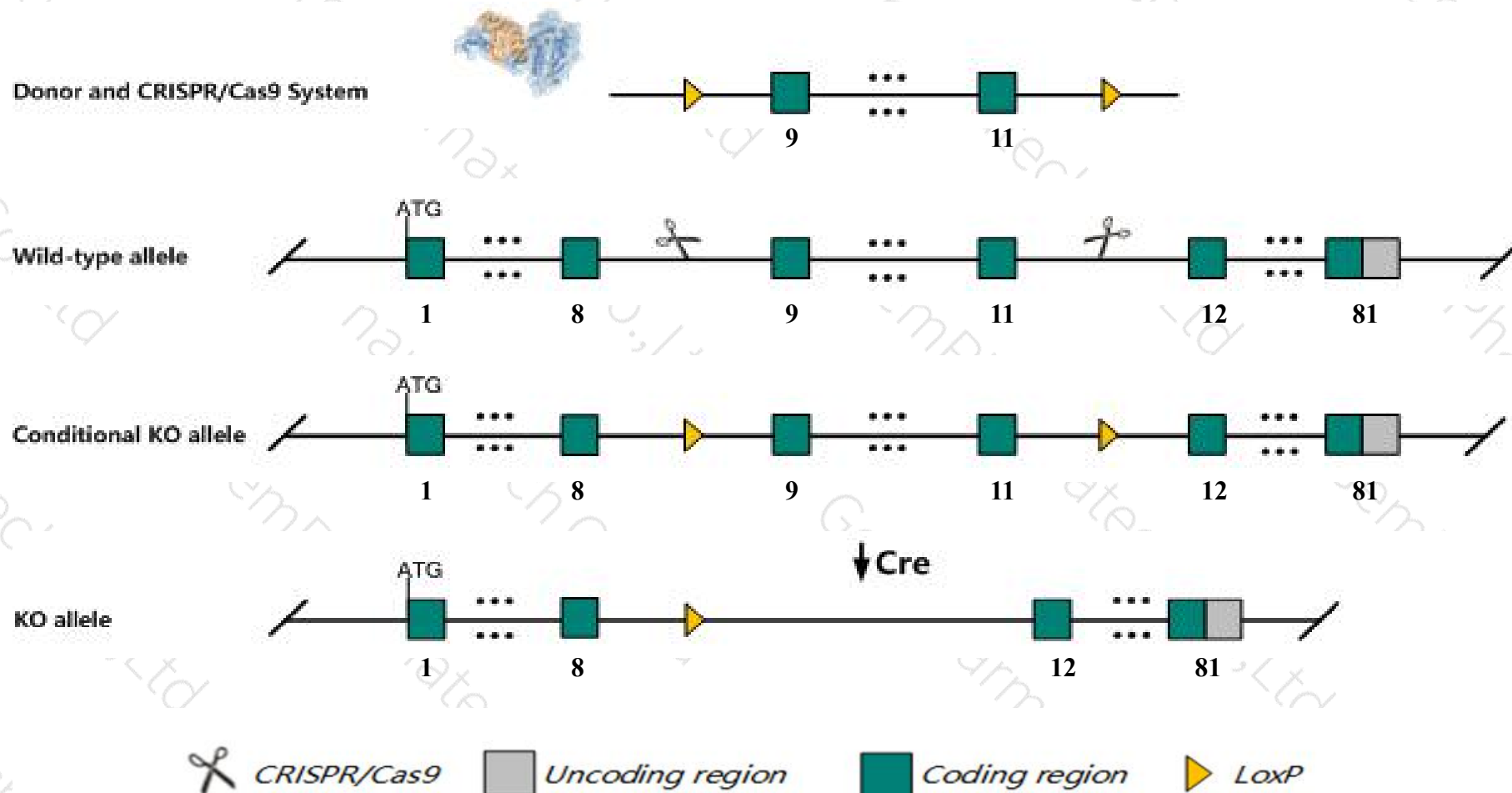|	
Project Name	*Dnah17*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dnah17* gene. The schematic diagram is as follows:

Technical routes

➤ The *Dnah17* gene has 5 transcripts. According to the structure of *Dnah17* gene, exon9-exon11 of *Dnah17-202* (ENSMUST00000084803.11) transcript is recommended as the knockout region.The region contains 551bp coding sequence. Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Dnah17* 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 *Dnah17* gene is located on the Chr11. 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）

Dnah17 dynein, axonemal, heavy chain 17 [Mus musculus (house mouse)]

Gene ID: 69926, updated on 13-Mar-2020

Summary

|	
Official Symbol	Dnah17 provided by MGI
Official Full Name	dynein, axonemal, heavy chain 17 provided by MGI
Primary source	MGI:MGI:1917176
See related	Ensembl:ENSMUSG00000033987
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	2810003K23Rik, Dnahc17, Dnahcl1, Gm1178, mKIAA3028
Expression	Biased expression in testis adult (RPKM 14.0), thymus adult (RPKM 1.2) and 1 other tissueSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dnah17-202	ENSMUST00000084803.11	14889	4453aa	Protein coding	CCDS48994	E9Q7P0	TSL:5 GENCODE basic APPRIS P2
Dnah17-203	ENSMUST0000106308.9	14973	4481aa	Protein coding	-	K3W4R0	TSL:5 GENCODE basic APPRIS ALT2
Dnah17-204	ENSMUST0000132685.8	13612	4459aa	Protein coding	-	A2A520	TSL:5 GENCODE basic APPRIS ALT2
Dnah17-201	ENSMUST00000018719.3	1361	No protein	Processed transcript	-	-	TSL:1
Dnah17-205	ENSMUST00000217584.1	762	No protein	Retained intron	-	-	TSL:3

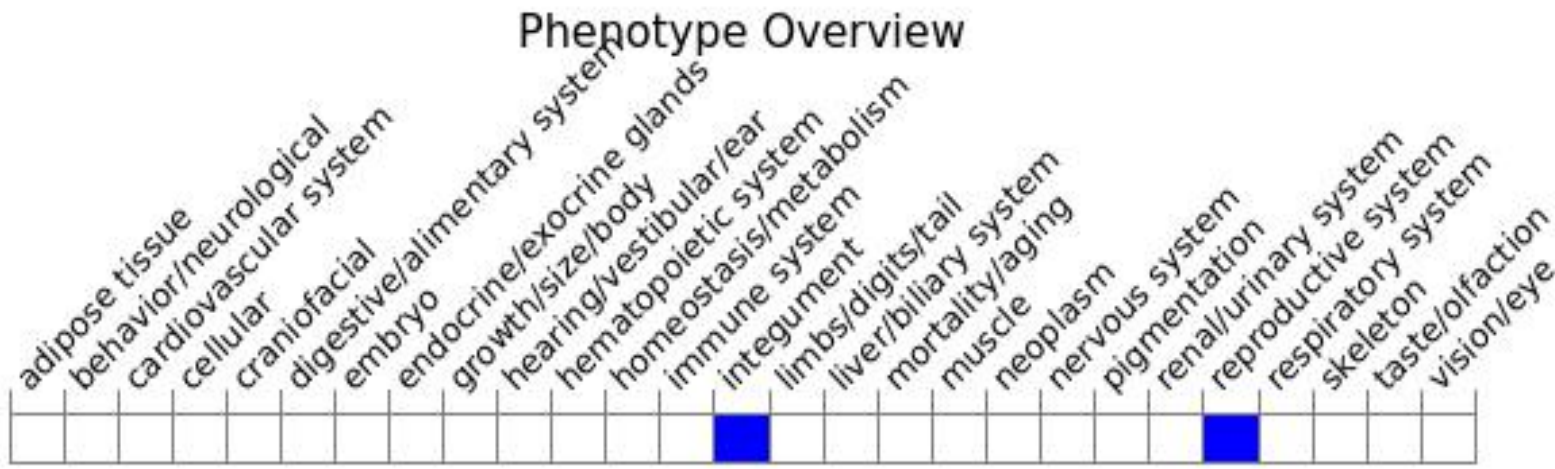The strategy is based on the design of *Dnah17-202* transcript,the transcription is shown below:

< Dnah17-202
protein coding

◀ Reverse strand — 107.50 kb
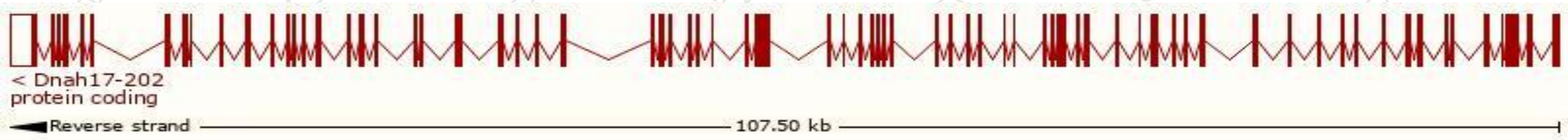
Genomic location distribution
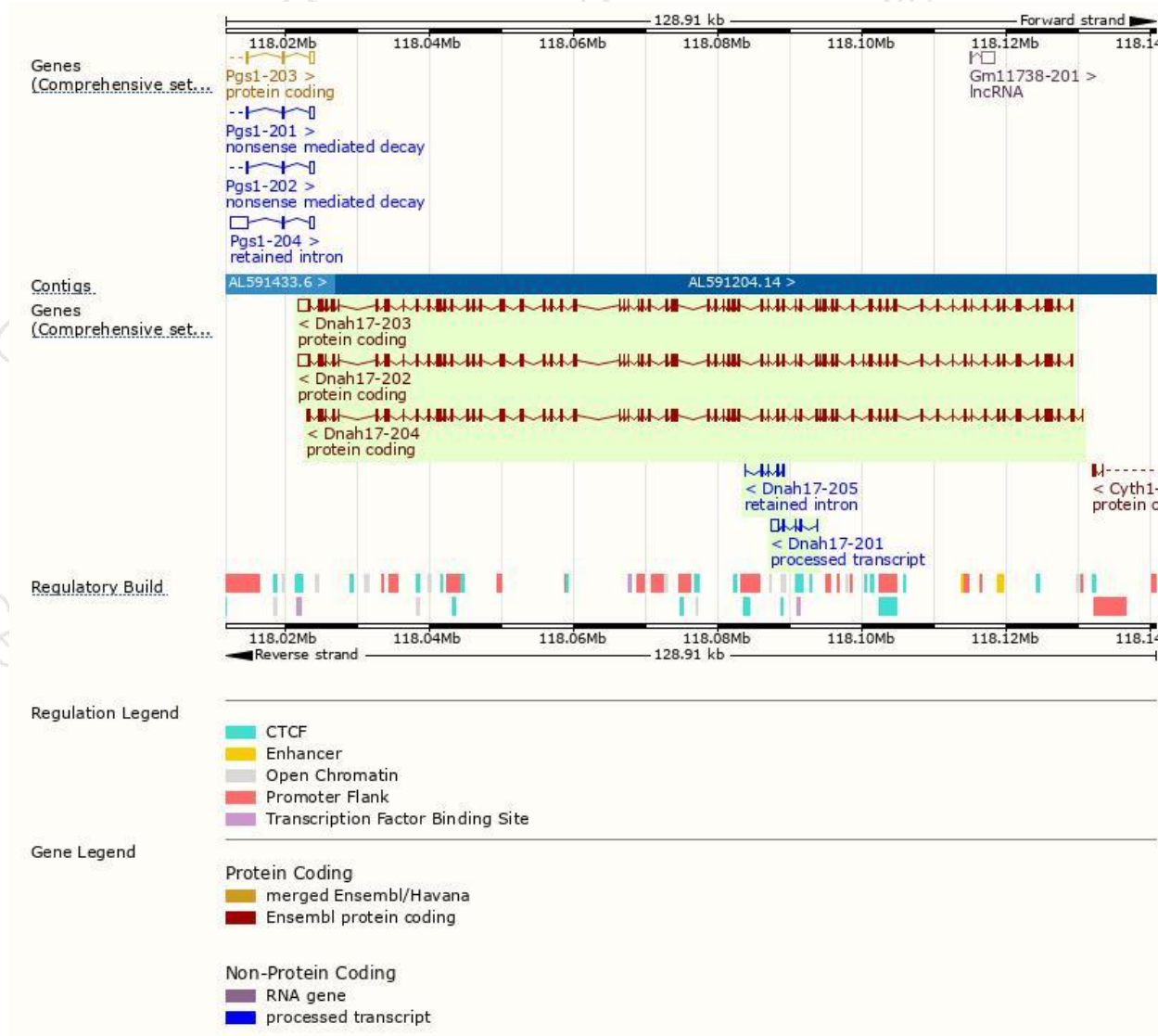
Protein domain

Mouse phenotype description(MGI)

Phenotype Overview

Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).