

***Dnal4* Cas9-CKO Strategy**

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Project Overview

Project Name

Dnal4

Project type

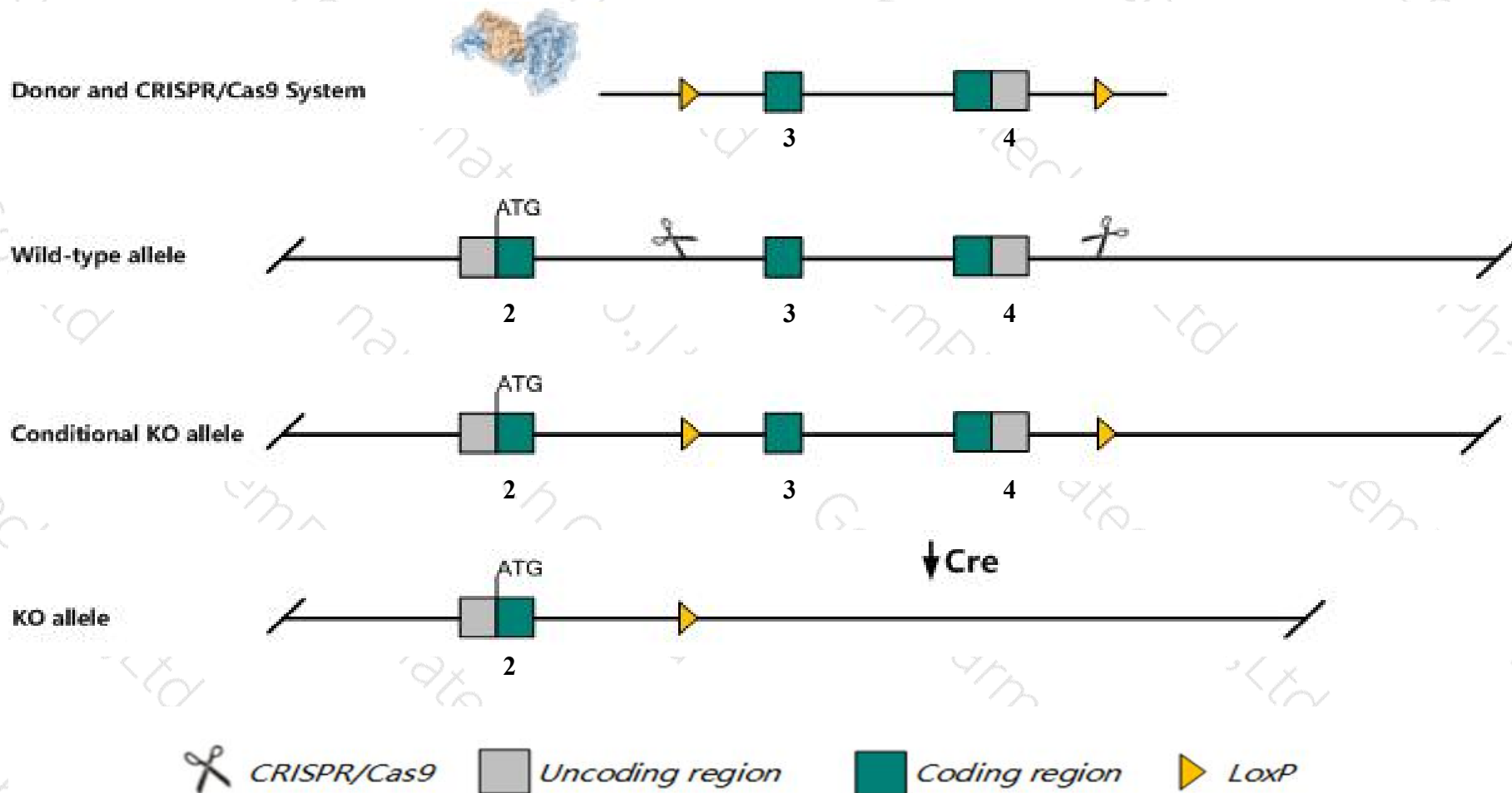
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dnal4* gene. The schematic diagram is as follows:



- The *Dnal4* gene has 6 transcripts. According to the structure of *Dnal4* gene, exon3-exon4 of *Dnal4*-201 (ENSMUST00000023055.7) transcript is recommended as the knockout region. The region contains most 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 *Dnal4* 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 *Dnal4* gene is located on the Chr15. 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)

Dnal4 dynein, axonemal, light chain 4 [Mus musculus (house mouse)]

Gene ID: 54152, updated on 13-Mar-2020

Summary



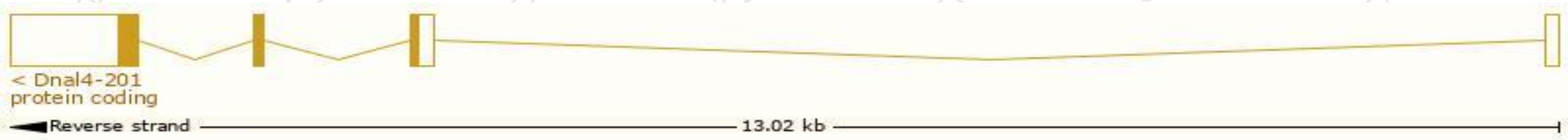
Official Symbol	Dnal4 provided by MGI
Official Full Name	dynein, axonemal, light chain 4 provided by MGI
Primary source	MGI:MGI:1859217
See related	Ensembl:ENSMUSG00000022420
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	D15Ert424e, Dnal4
Expression	Ubiquitous expression in testis adult (RPKM 61.0), whole brain E14.5 (RPKM 24.4) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

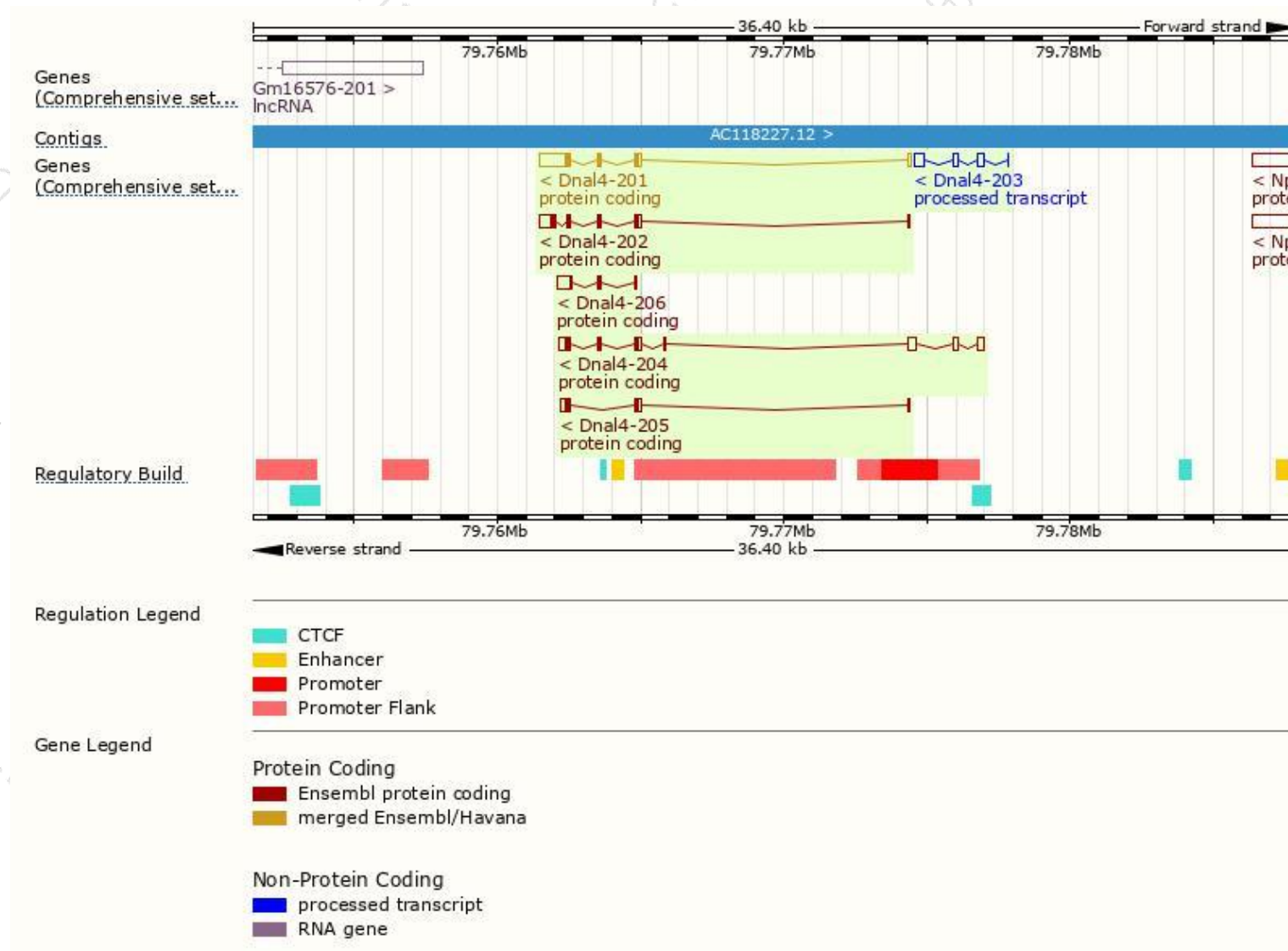
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dnal4-201	ENSMUST00000023055.7	1472	105aa	Protein coding	CCDS27650	Q9DCM4	TSL:1 GENCODE basic APPRIS P1
Dnal4-204	ENSMUST00000162713.8	1357	105aa	Protein coding	CCDS27650	Q9DCM4	TSL:3 GENCODE basic APPRIS P1
Dnal4-202	ENSMUST00000069877.11	1011	139aa	Protein coding	-	Q8CDT8	TSL:5 GENCODE basic
Dnal4-206	ENSMUST00000230645.1	660	59aa	Protein coding	-	A0A2R8W6G8	CDS 5' incomplete
Dnal4-205	ENSMUST00000229644.1	600	77aa	Protein coding	-	A0A2R8VI05	GENCODE basic
Dnal4-203	ENSMUST00000161646.1	695	No protein	Processed transcript	-	-	TSL:5

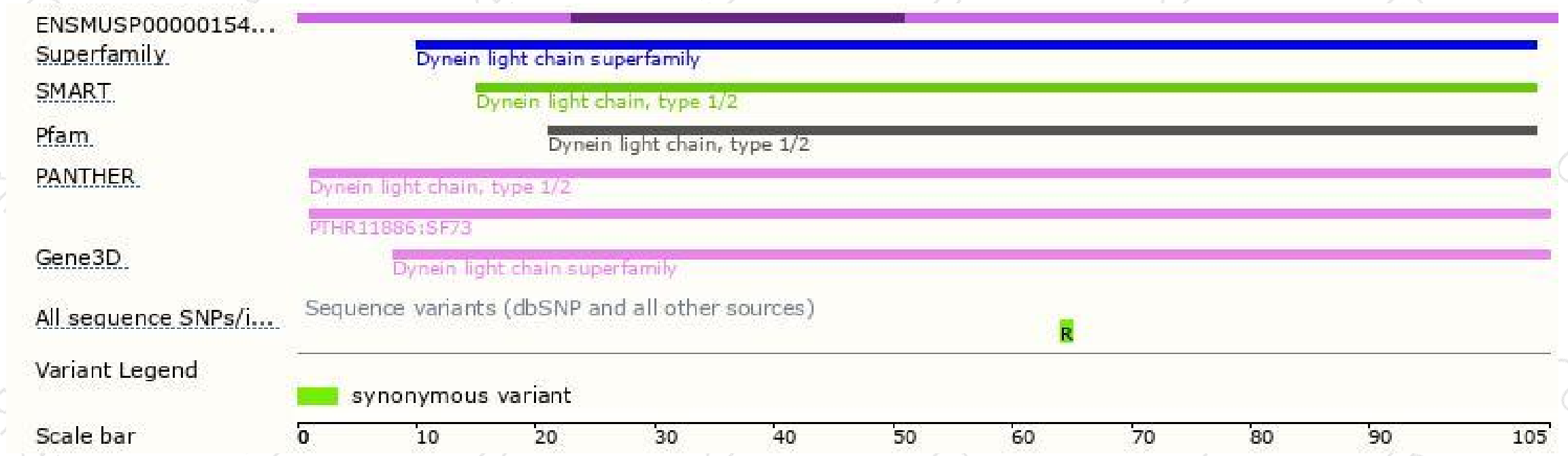
The strategy is based on the design of *Dnal4-201* transcript,the transcription is shown below:



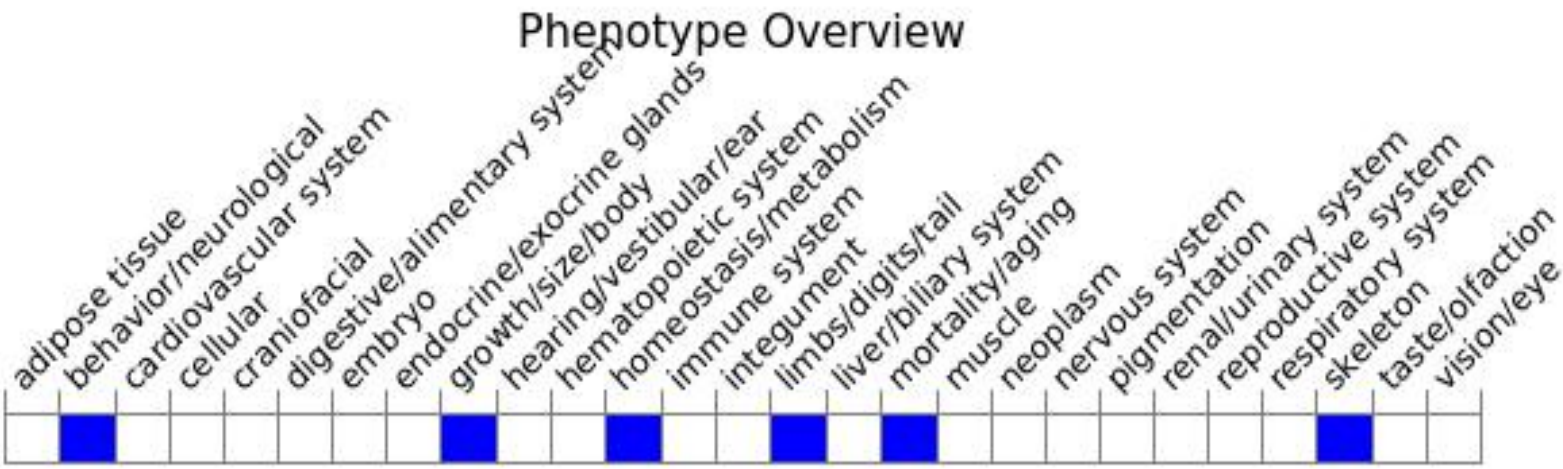
Genomic location distribution



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/>).

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

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