

Dnaic2 Cas9-KO Strategy

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Project Overview

Project Name

Dnaic2

Project type

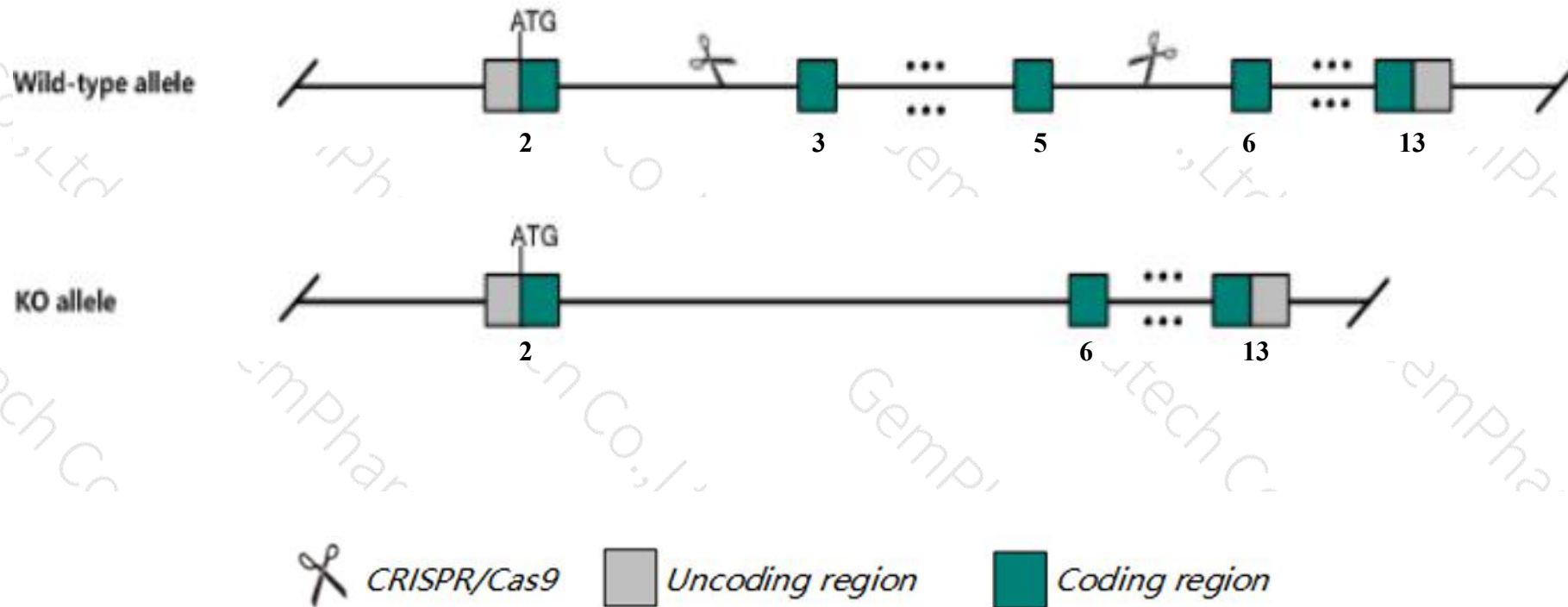
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dnaic2* gene. The schematic diagram is as follows:



- The *Dnaic2* gene has 7 transcripts. According to the structure of *Dnaic2* gene, exon3-exon5 of *Dnaic2-201* (ENSMUST00000069325.13) transcript is recommended as the knockout region. The region contains 427bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dnaic2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, mice homozygous for an enu-induced mutation exhibit situs inversus totalis and immotile respiratory cilia.
- The *Dnaic2* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Dnaic2 dynein, axonemal, intermediate chain 2 [Mus musculus (house mouse)]

Gene ID: 432611, updated on 13-Mar-2020

Summary



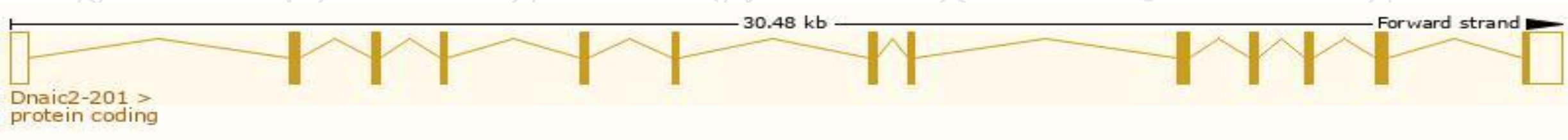
Official Symbol	Dnaic2 provided by MGI
Official Full Name	dynein, axonemal, intermediate chain 2 provided by MGI
Primary source	MGI:MGI:2685574
See related	Ensembl:ENSMUSG000000034706
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C030015H18Rik, Dnai2, Gm728, b2b3405Clo
Expression	Biased expression in testis adult (RPKM 13.1), ovary adult (RPKM 3.3) and 2 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

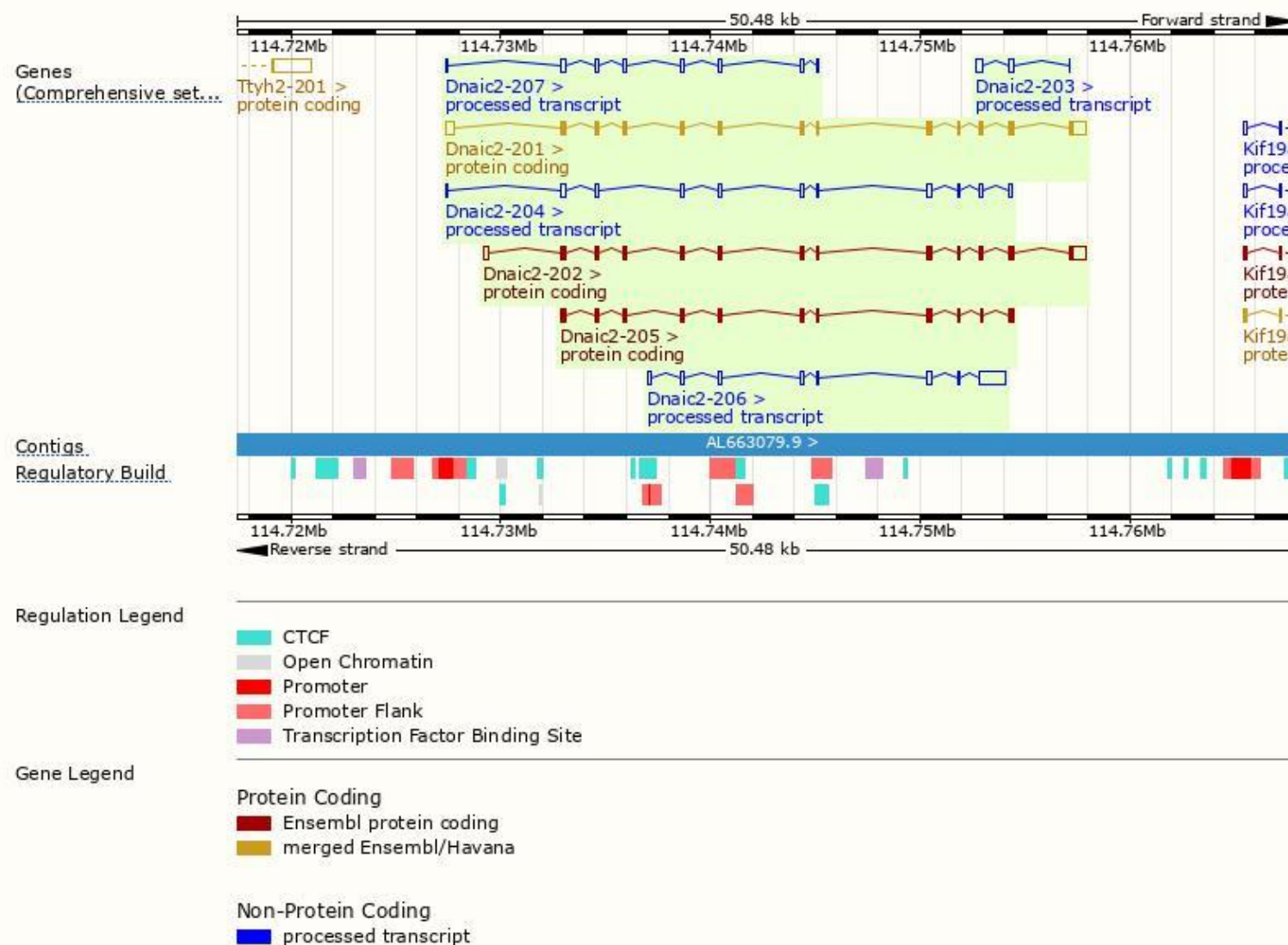
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dnaic2-201	ENSMUST00000069325.13	2874	623aa	Protein coding	CCDS36366	A2AC93	TSL:5 GENCODE basic APPRIS P1
Dnaic2-202	ENSMUST00000092469.10	2799	623aa	Protein coding	CCDS36366	A2AC93	TSL:5 GENCODE basic APPRIS P1
Dnaic2-205	ENSMUST00000141762.2	1704	562aa	Protein coding	-	R4GML5	CDS 3' incomplete TSL:5
Dnaic2-206	ENSMUST00000144872.1	2247	No protein	Processed transcript	-	-	TSL:1
Dnaic2-204	ENSMUST00000136403.7	1579	No protein	Processed transcript	-	-	TSL:5
Dnaic2-207	ENSMUST00000151053.7	1065	No protein	Processed transcript	-	-	TSL:5
Dnaic2-203	ENSMUST00000130692.1	597	No protein	Processed transcript	-	-	TSL:3

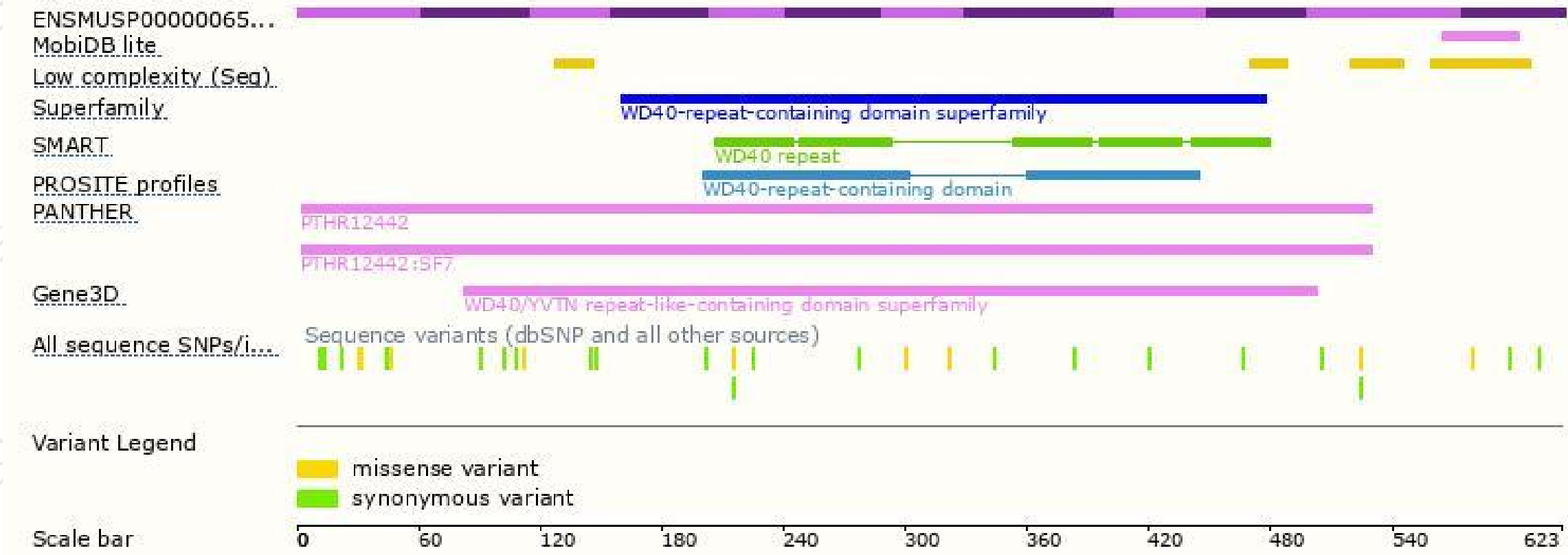
The strategy is based on the design of *Dnaic2-201* transcript,the transcription is shown below:



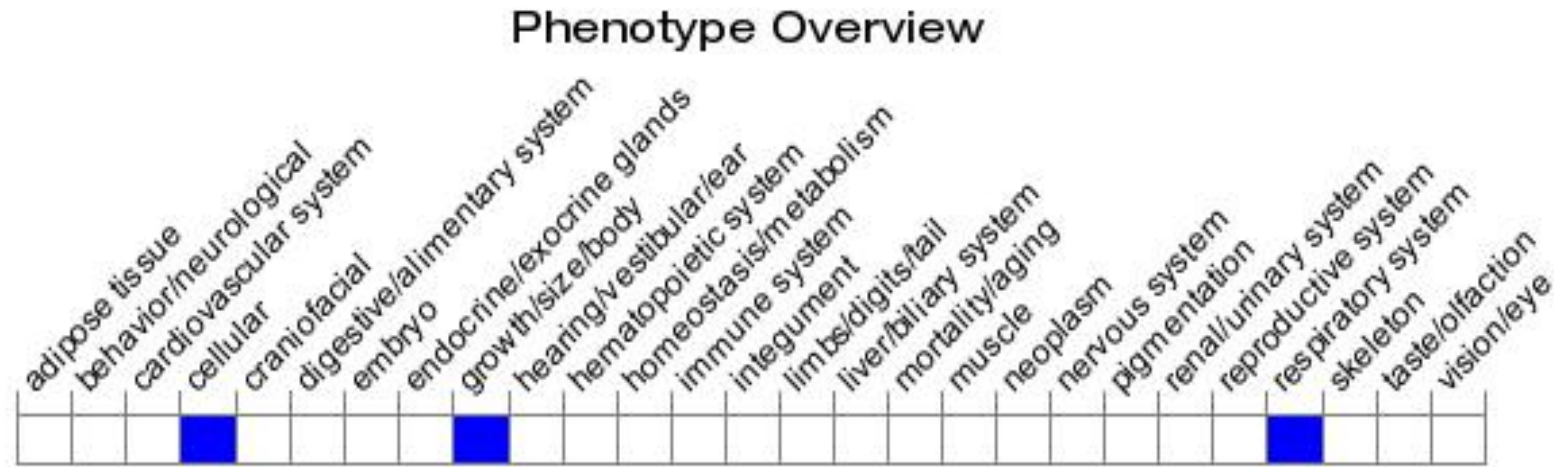
Genomic location distribution



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/>).

According to the existing MGI data, mice homozygous for an ENU-induced mutation exhibit situs inversus totalis and immotile respiratory cilia.

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

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