

Dapk2 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Dapk2

Project type

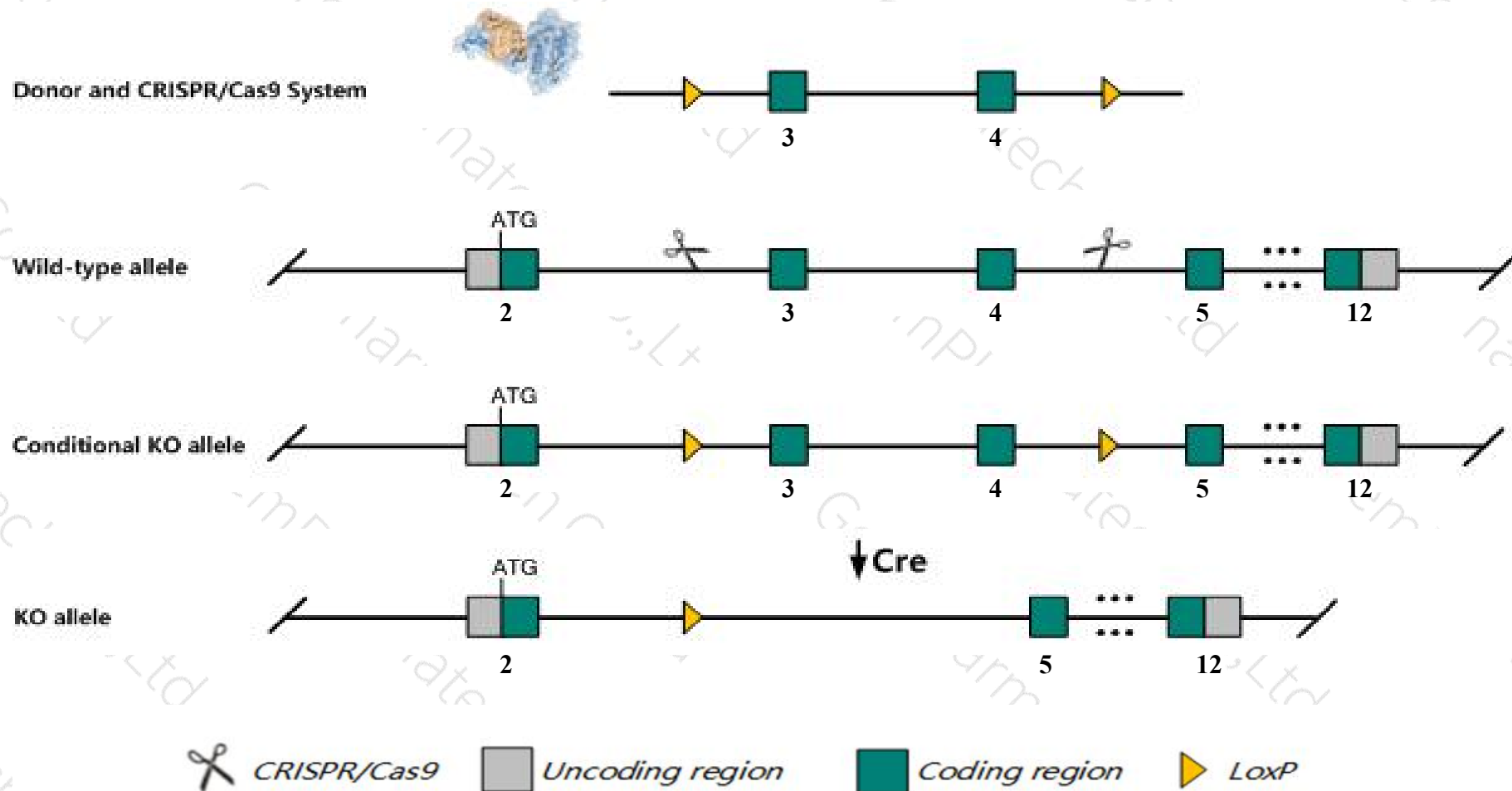
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dapk2* gene. The schematic diagram is as follows:



Technical routes

- The *Dapk2* gene has 5 transcripts. According to the structure of *Dapk2* gene, exon3-exon4 of *Dapk2-201* (ENSMUST00000034944.8) transcript is recommended as the knockout region. The region contains 361bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dapk2* 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 *Dapk2* gene is located on the Chr9. 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.

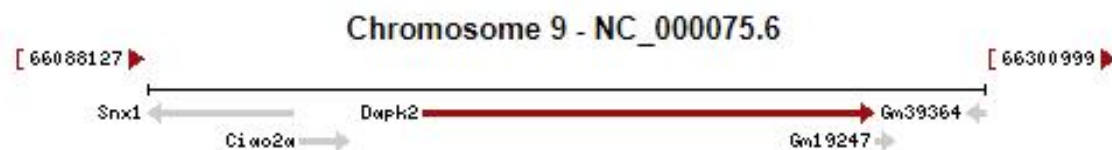
Gene information (NCBI)

Dapk2 death-associated protein kinase 2 [*Mus musculus* (house mouse)]

Gene ID: 13143, updated on 12-Aug-2019

Summary

Official Symbol	Dapk2 provided by MGI
Official Full Name	death-associated protein kinase 2 provided by MGI
Primary source	MGI:MGI:1341297
See related	Ensembl:ENSMUSG00000032380
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
Expression	Broad expression in lung adult (RPKM 10.8), placenta adult (RPKM 9.0) and 22 other tissues See more
Orthologs	human all

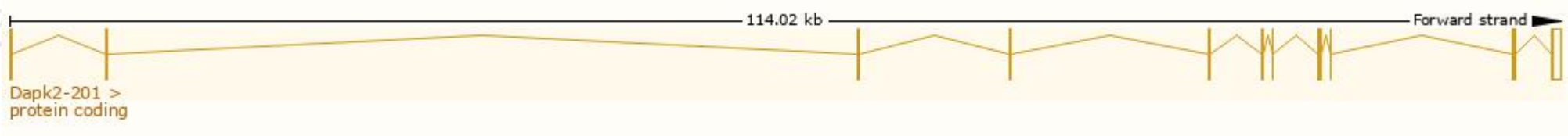


Transcript information (Ensembl)

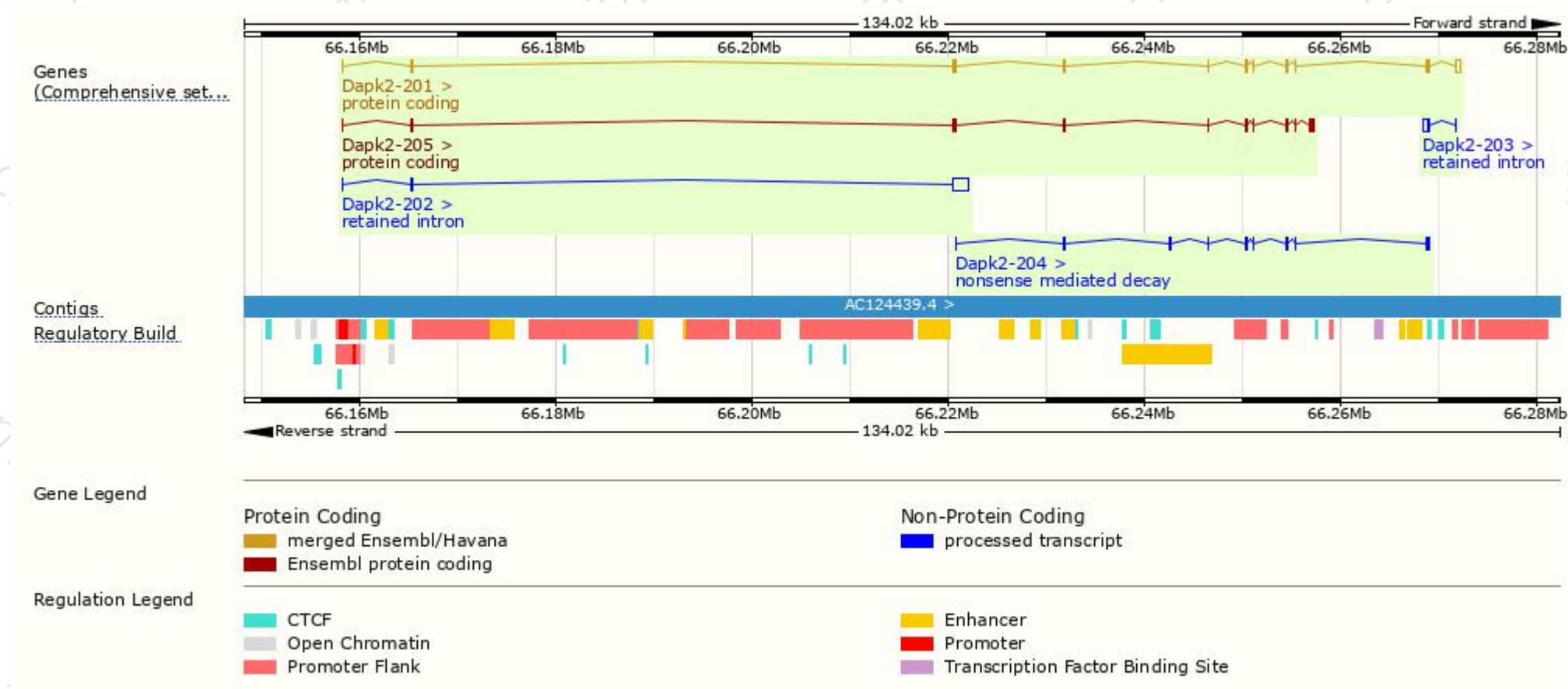
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dapk2-201	ENSMUST00000034944.8	1772	370aa	Protein coding	CCDS23303	Q8VDF3	TSL:1 GENCODE basic APPRIS P1
Dapk2-205	ENSMUST00000238682.1	1594	490aa	Protein coding	-	E9JGN0	GENCODE basic
Dapk2-204	ENSMUST00000132987.7	837	55aa	Nonsense mediated decay	-	F6YX98	CDS 5' incomplete TSL:5
Dapk2-202	ENSMUST00000129442.1	1751	No protein	Retained intron	-	-	TSL:1
Dapk2-203	ENSMUST00000129778.1	568	No protein	Retained intron	-	-	TSL:2

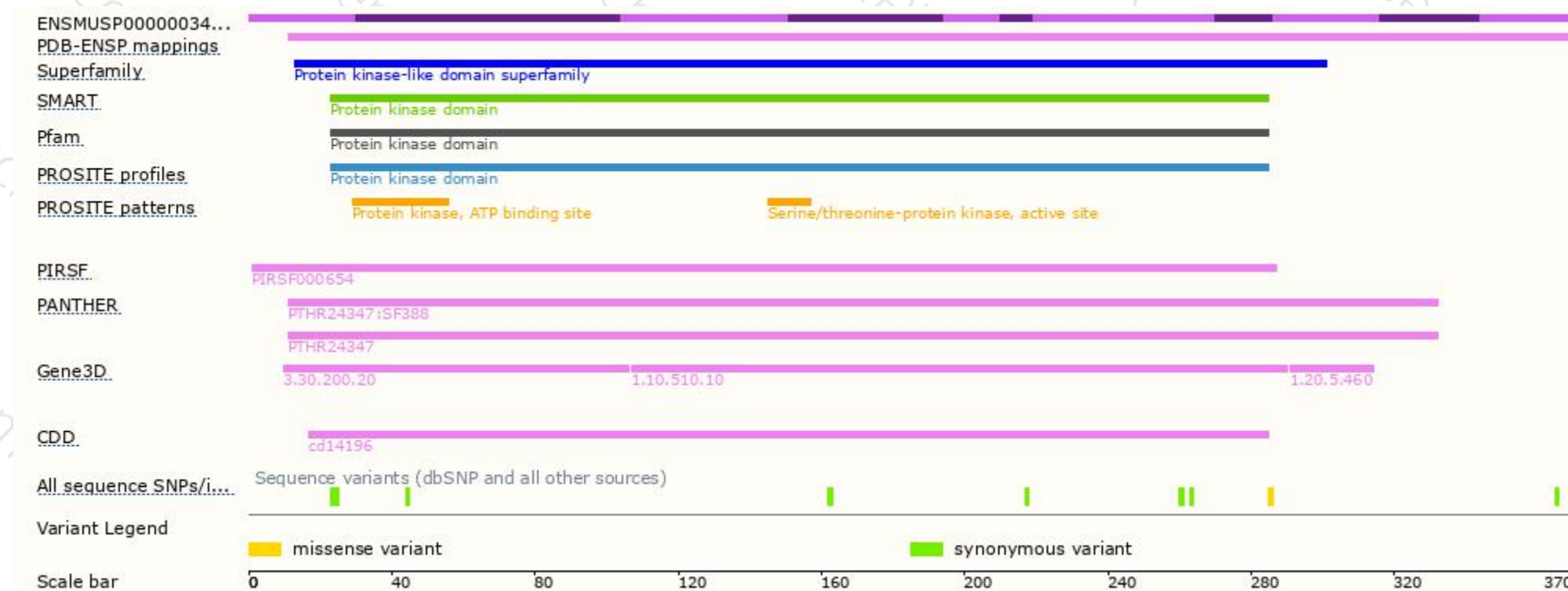
The strategy is based on the design of *Dapk2-201* transcript,The transcription is shown below



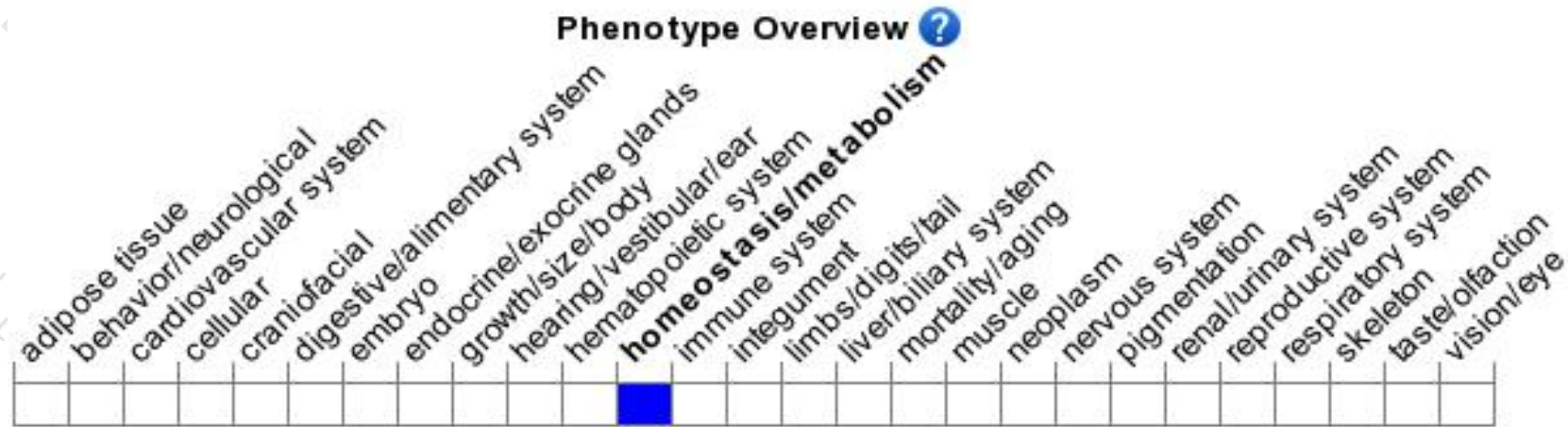
Genomic location distribution



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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