

# *Dclk3* Cas9-KO Strategy

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**Reviewer: Longyun Hu**

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# Project Overview

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**Project Name**

*Dclk3*

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**Project type**

**Cas9-KO**

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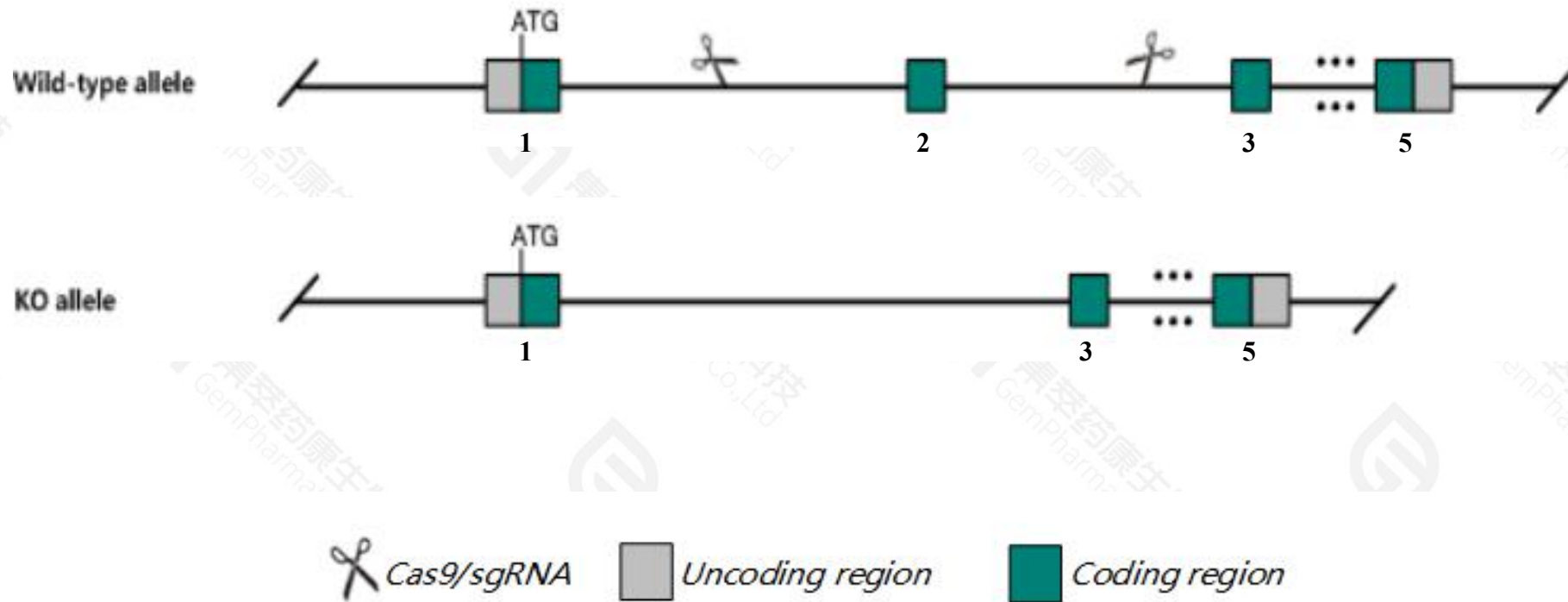
**Strain background**

**C57BL/6JGpt**

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# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dclk3* gene. The schematic diagram is as follows:



- The *Dclk3* gene has 1 transcript. According to the structure of *Dclk3* gene, exon2 of *Dclk3-201*(ENSMUST00000111879.5) transcript is recommended as the knockout region. The region contains 1838bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dclk3* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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 *Dclk3* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

## Dclk3 doublecortin-like kinase 3 [Mus musculus (house mouse)]

Gene ID: 245038, updated on 17-Nov-2020

### Summary



**Official Symbol** Dclk3 provided by [MGI](#)

**Official Full Name** doublecortin-like kinase 3 provided by [MGI](#)

**Primary source** [MGI:MGI:3039580](#)

**See related** [Ensembl:ENSMUSG00000032500](#)

**Gene type** protein coding

**RefSeq status** REVIEWED

**Organism** [Mus musculus](#)

**Lineage** Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

**Also known as** BC056929, C730036H08, Dcamk, Dcamkl3

**Summary** This gene encodes a member of the protein kinase superfamily and the doublecortin family. Differently from the other two closely related family members (DCLK1 and DCLK2), the protein encoded by this gene contains only one N-terminal doublecortin domain and is unable to bind microtubules and to regulate microtubule polymerization. The protein contains a C-terminal serine/threonine protein kinase domain, which shows substantial homology to Ca<sup>2+</sup>/calmoduline-dependent protein kinase, and a serine/proline-rich domain in between the doublecortin and the protein kinase domains, which mediates multiple protein-protein interactions. [provided by RefSeq, Sep 2010]

**Expression** Biased expression in kidney adult (RPKM 7.2), cortex adult (RPKM 6.3) and 13 other tissues [See more](#)

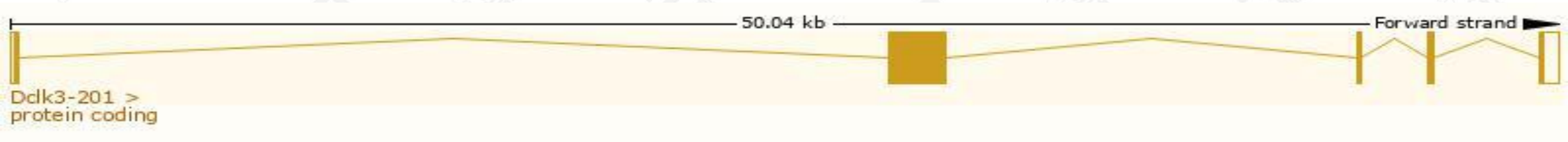
**Orthologs** [human](#) [all](#)

# Transcript information (Ensembl)

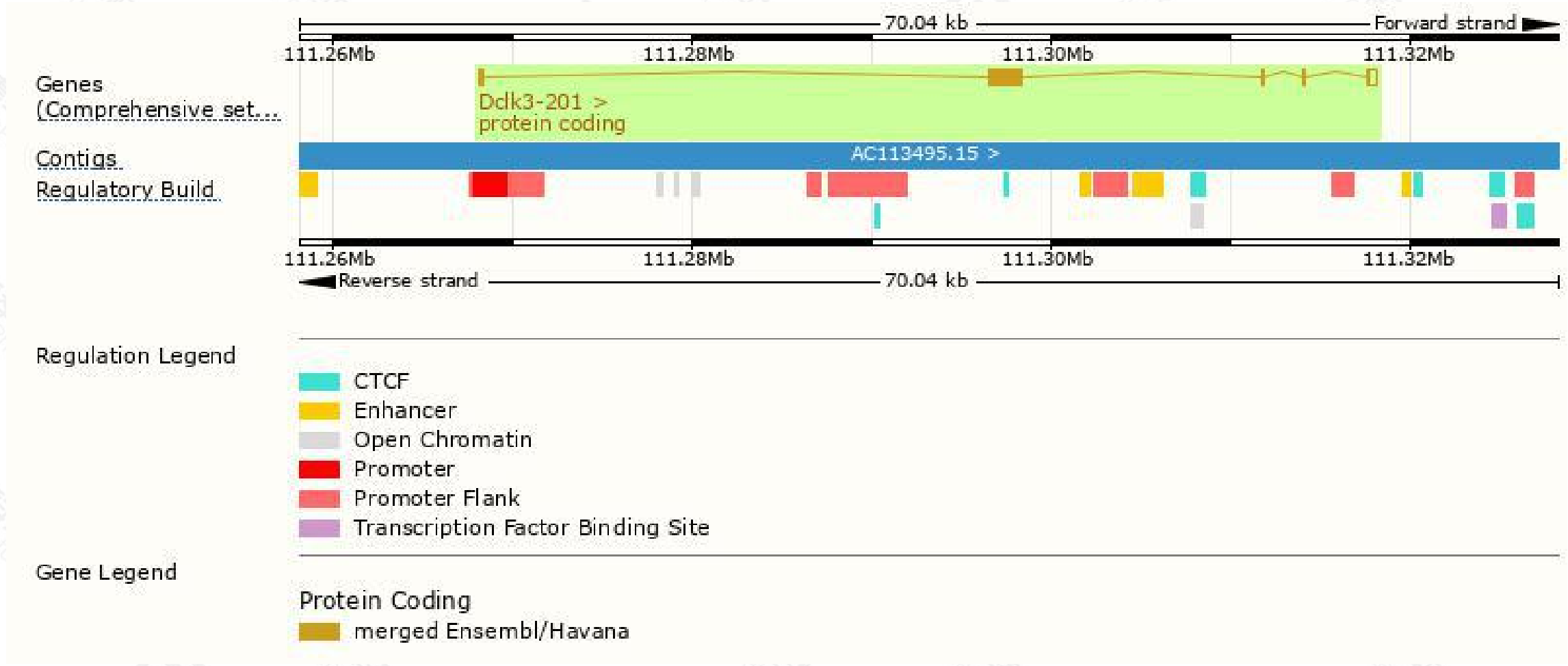
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dclk3-201	<a href="#">ENSMUST00000111879.5</a>	3005	<a href="#">790aa</a>	Protein coding	<a href="#">CCDS23585</a>		TSL:1 , GENCODE basic , APPRIS P1 ,

The strategy is based on the design of *Dclk3-201* transcript, the transcription is shown below:

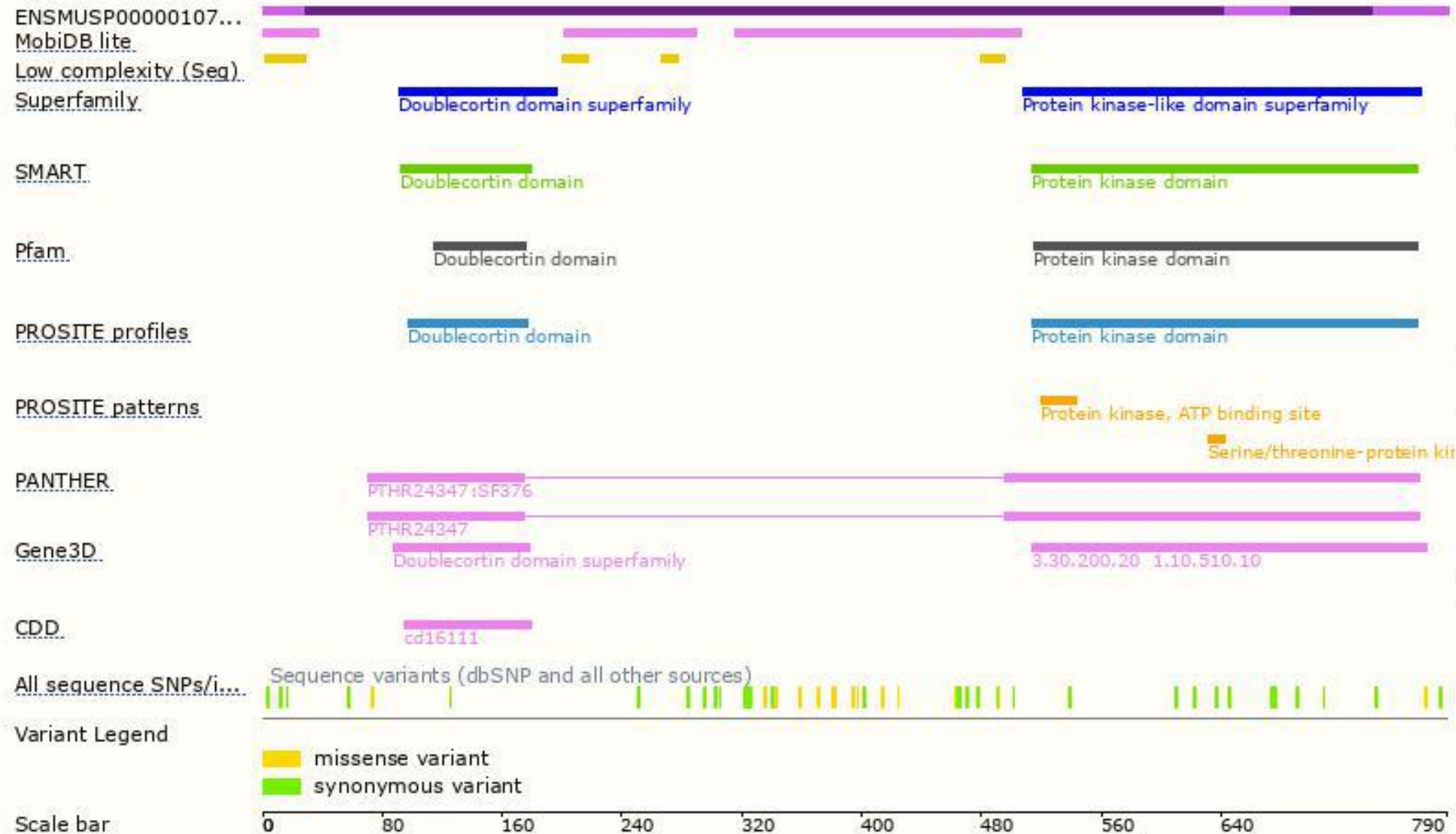


# Genomic location distribution





# Protein domain



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

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