

Dock3 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Dock3

Project type

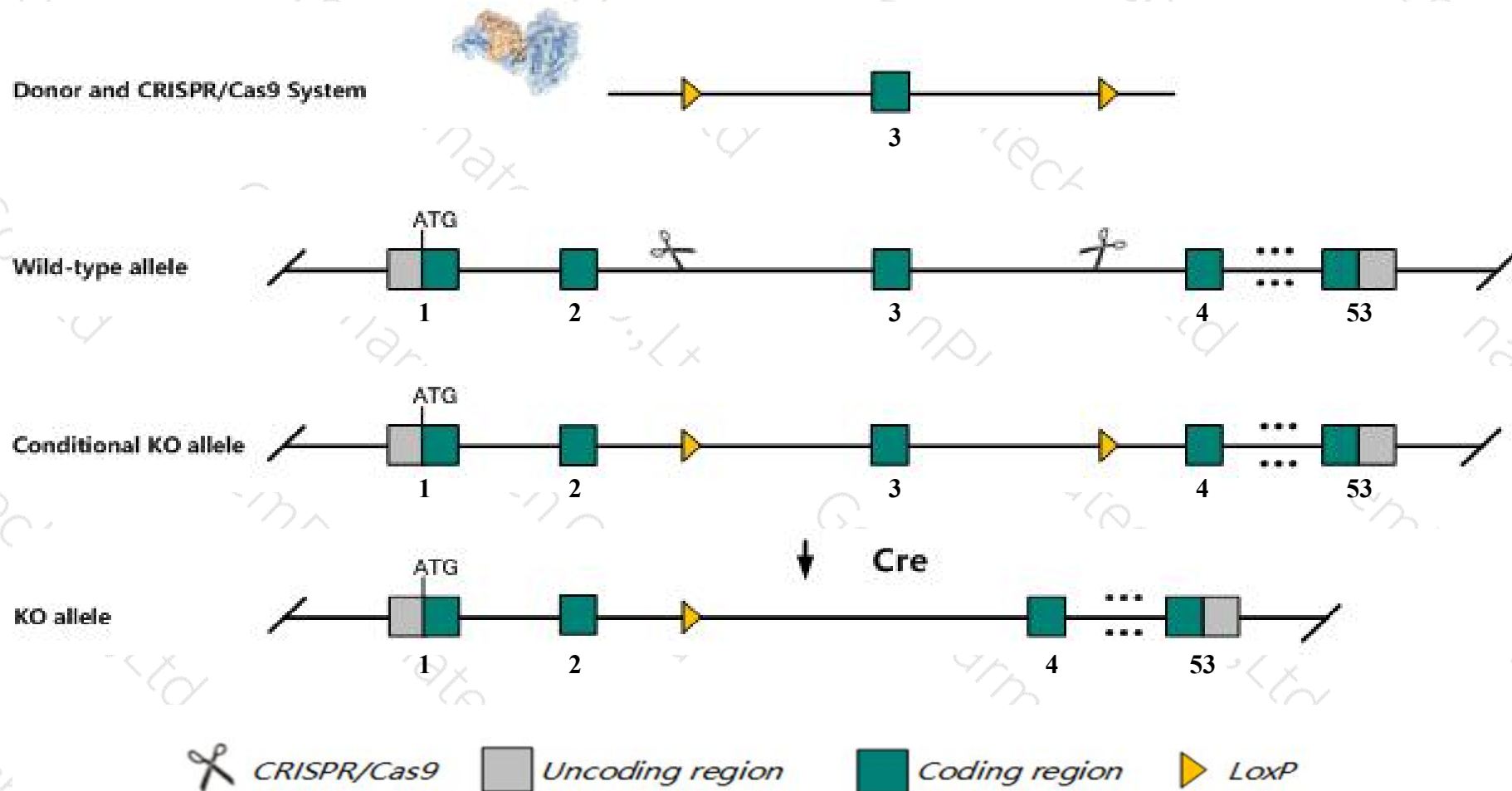
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dock3* gene. The schematic diagram is as follows:



- The *Dock3* gene has 11 transcripts. According to the structure of *Dock3* gene, exon3 of *Dock3-201* (ENSMUST00000044532.10) transcript is recommended as the knockout region. The region contains 41bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dock3* 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.

- According to the existing MGI data, Mice homozygous for a null allele exhibit abnormal behaviors and muscular weakness associated with axonal dystrophy.
- Transcript 202,205,208,211 CDS 5' and 3' incomplete the influences is unknown.
- The *Dock3* 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)

Dock3 dedicator of cyto-kinesis 3 [Mus musculus (house mouse)]

Gene ID: 208869, updated on 31-Jan-2019

Summary



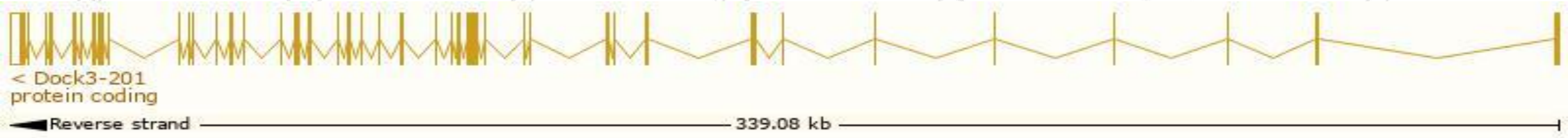
Official Symbol	Dock3 provided by MGI
Official Full Name	dedicator of cyto-kinesis 3 provided by MGI
Primary source	MGI:MGI:2429763
See related	Ensembl:ENSMUSG00000039716
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	MOCA, PBP, mKIAA0299
Expression	Biased expression in frontal lobe adult (RPKM 24.4), cortex adult (RPKM 21.6) and 7 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

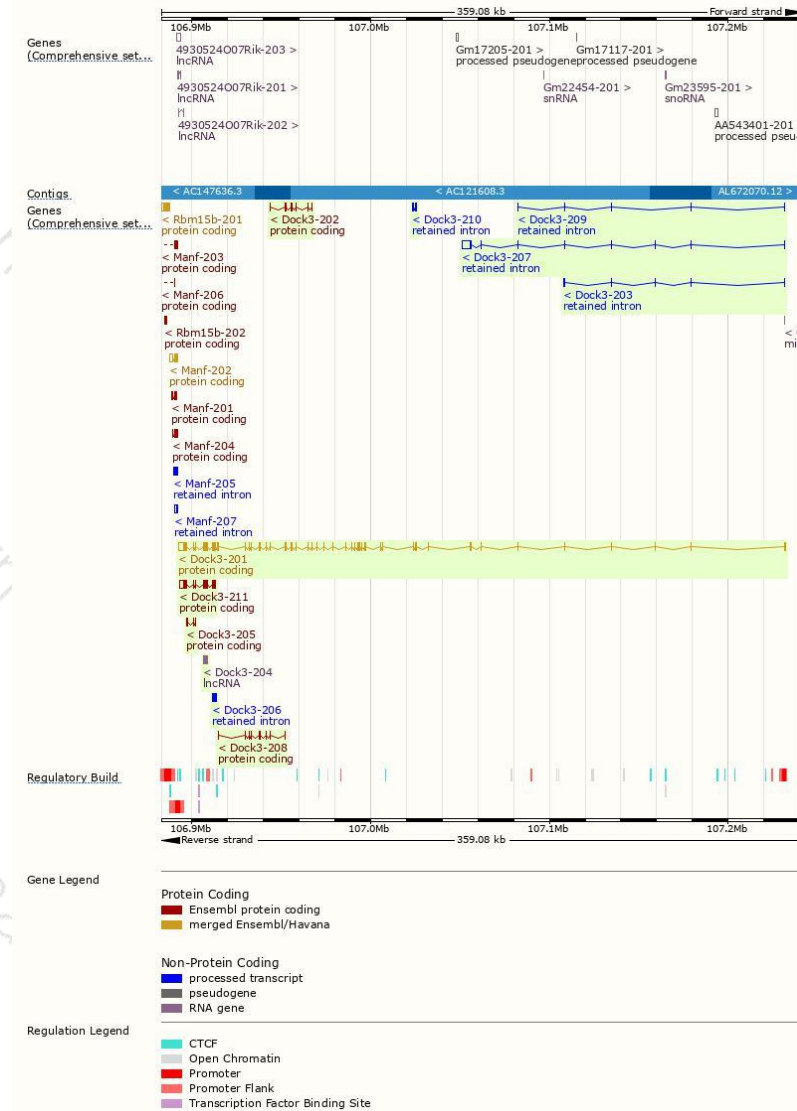
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dock3-201	ENSMUST00000044532.10	9063	2030aa	Protein coding	CCDS40760	F8VPQ1	TSL:2 GENCODE basic APPRIS P1
Dock3-211	ENSMUST00000171095.7	3947	552aa	Protein coding	-	F6VMI1	CDS 5' incomplete TSL:1
Dock3-202	ENSMUST00000165075.1	723	241aa	Protein coding	-	F7CVM6	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Dock3-208	ENSMUST00000168759.1	723	241aa	Protein coding	-	F6YXW9	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Dock3-205	ENSMUST00000166152.1	263	87aa	Protein coding	-	F7AGL4	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Dock3-207	ENSMUST00000167053.7	5440	No protein	Retained intron	-	-	TSL:2
Dock3-209	ENSMUST00000169164.7	920	No protein	Retained intron	-	-	TSL:3
Dock3-206	ENSMUST00000166759.1	679	No protein	Retained intron	-	-	TSL:3
Dock3-203	ENSMUST00000165182.1	529	No protein	Retained intron	-	-	TSL:3
Dock3-210	ENSMUST00000170193.1	529	No protein	Retained intron	-	-	TSL:5
Dock3-204	ENSMUST00000165562.1	453	No protein	lncRNA	-	-	TSL:3

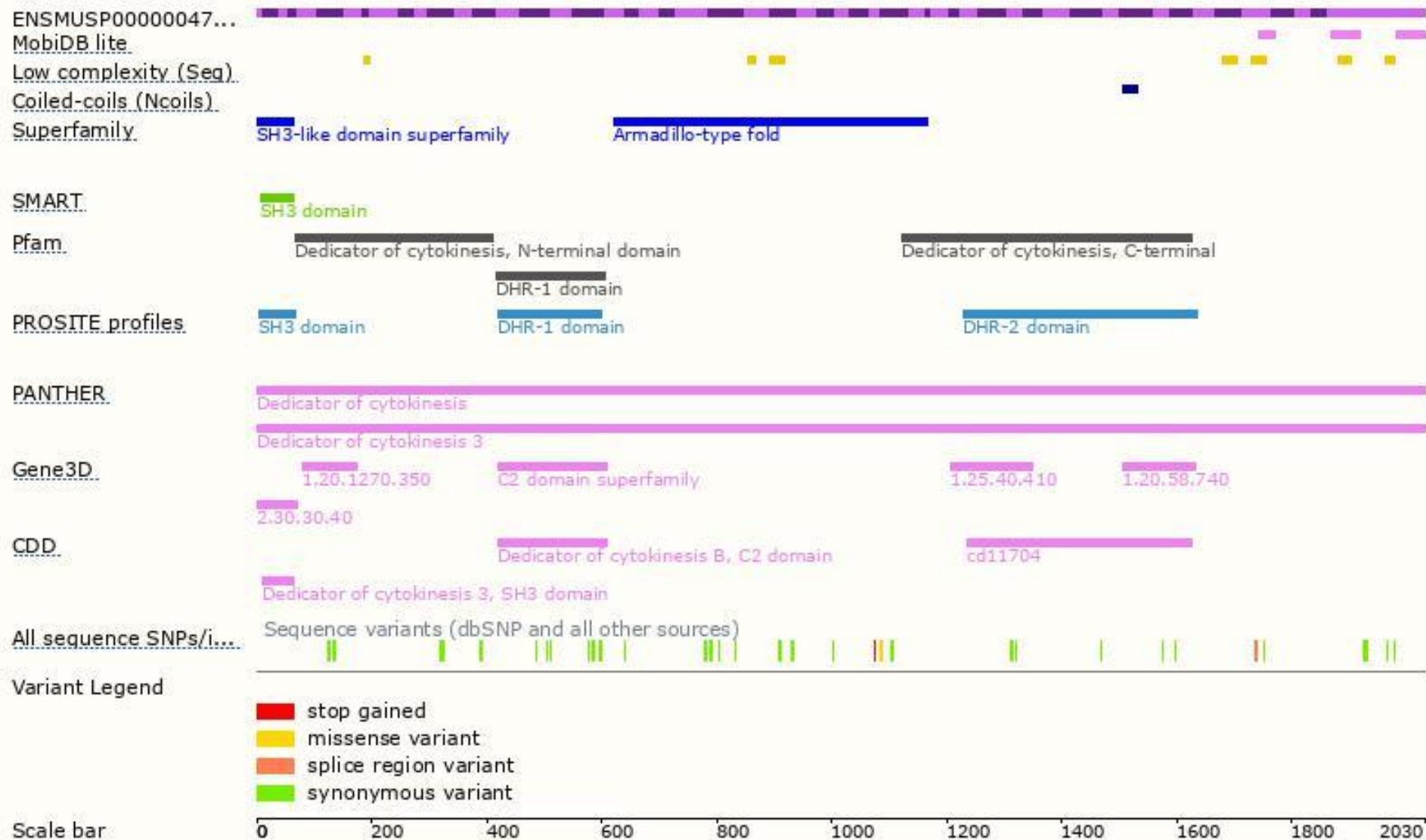
The strategy is based on the design of *Dock3-201* transcript,The transcription is shown below



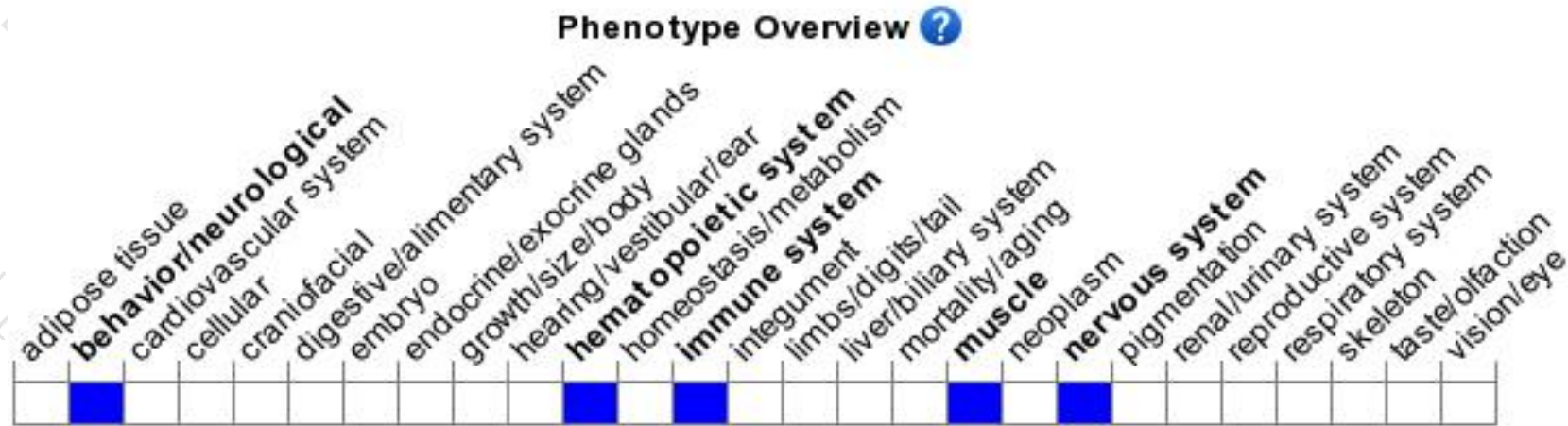
Genomic location distribution



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 a null allele exhibit abnormal behaviors and muscular weakness associated with axonal dystrophy.

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

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