

Dcaf6 Cas9-CKO Strategy

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Project Overview

Project Name

Dcaf6

Project type

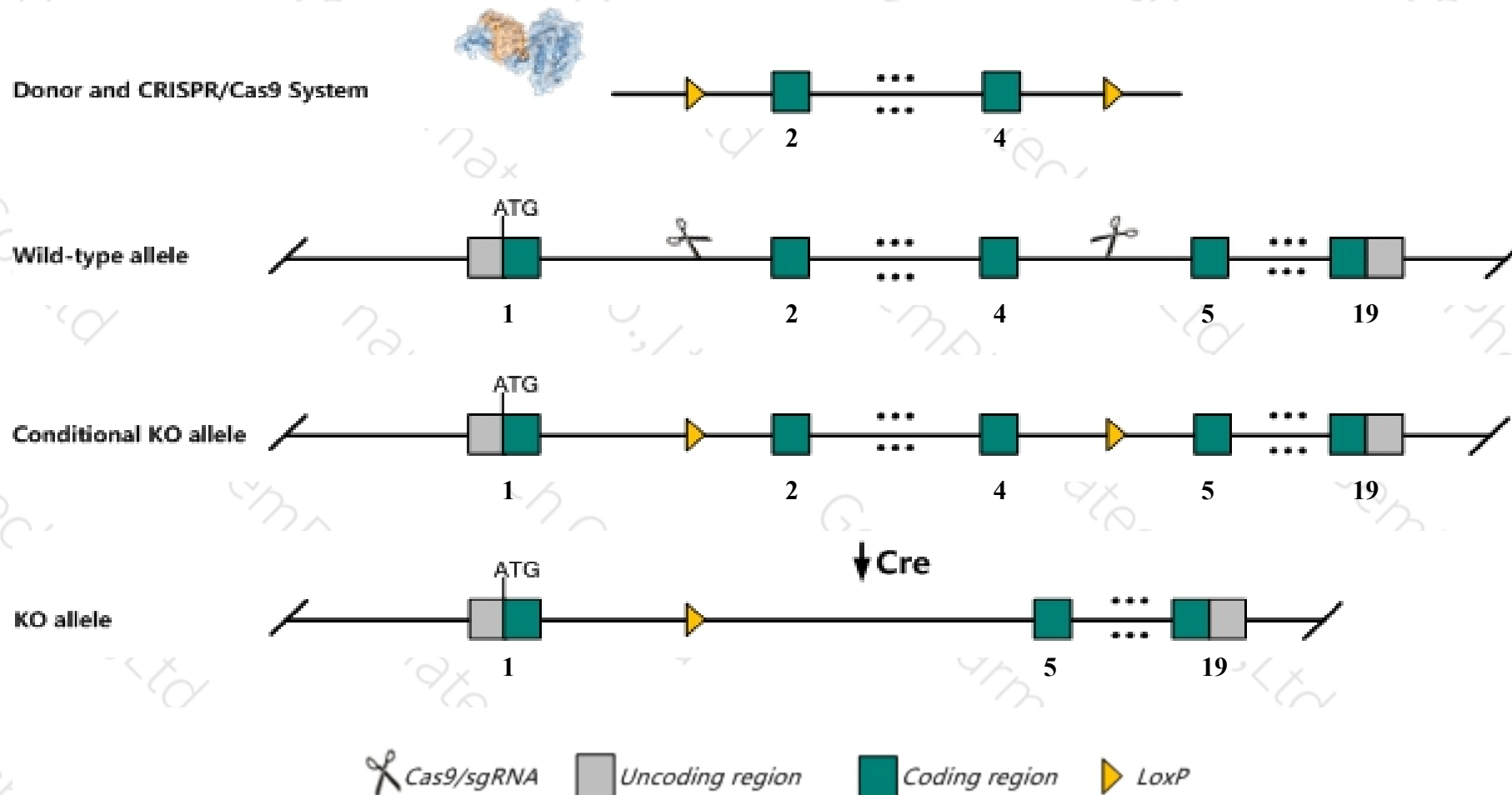
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dcaf6* gene. The schematic diagram is as follows:



- The *Dcaf6* gene has 5 transcripts. According to the structure of *Dcaf6* gene, exon2-exon4 of *Dcaf6*-201(ENSMUST00000027856.12) transcript is recommended as the knockout region. The region contains 341bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dcaf6* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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 impaired contractility and delayed regeneration with impaired skeletal muscle differentiation and myotube formation.
- Transcript 203,204 CDS 5' and 3' incomplete the influences is unknown.
- The *Dcaf6* gene is located on the Chr1. 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)

Dcaf6 DDB1 and CUL4 associated factor 6 [Mus musculus (house mouse)]

Gene ID: 74106, updated on 13-Mar-2020

Summary



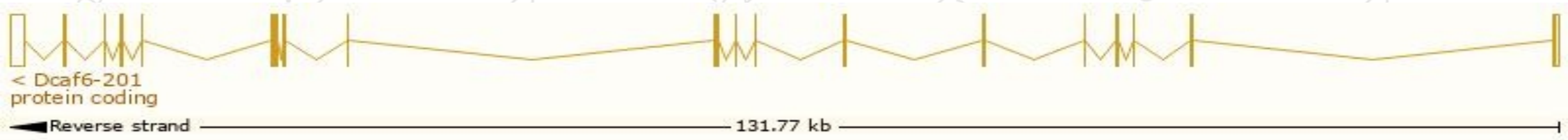
Official Symbol	Dcaf6 provided by MGI
Official Full Name	DDB1 and CUL4 associated factor 6 provided by MGI
Primary source	MGI:MGI:1921356
See related	Ensembl:ENSMUSG00000026571
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1200006M05Rik, Iqwd1, PC326
Expression	Ubiquitous expression in testis adult (RPKM 41.3), cortex adult (RPKM 13.4) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

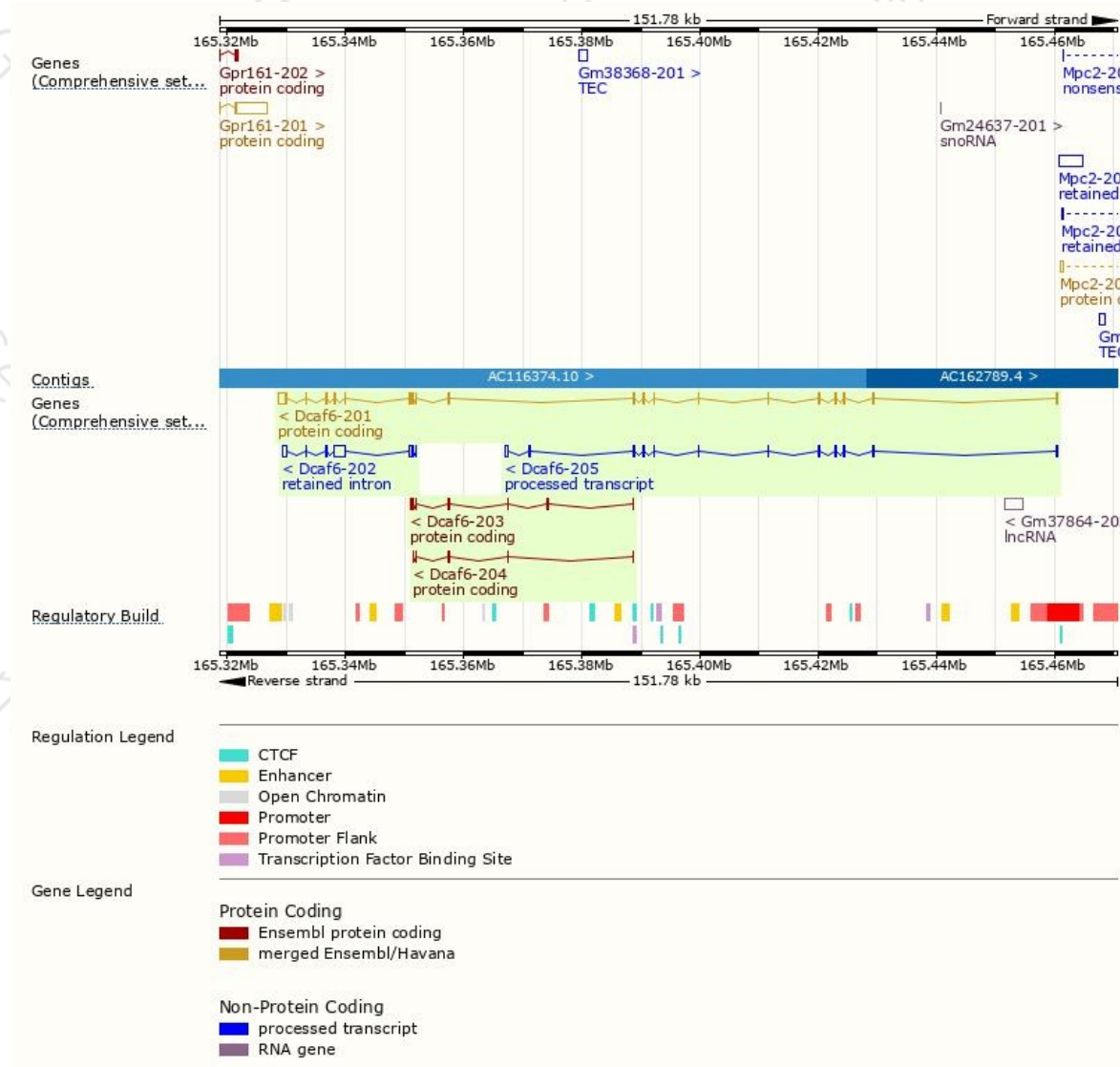
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dcaf6-201	ENSMUST00000027856.12	4110	876aa	Protein coding	CCDS48424	Q9DC22	TSL:1 GENCODE basic APPRIS P1
Dcaf6-203	ENSMUST00000194869.5	849	283aa	Protein coding	-	A0A0A6YW54	CDS 5' and 3' incomplete TSL:3
Dcaf6-204	ENSMUST00000195220.1	451	151aa	Protein coding	-	A0A0A6YVW2	CDS 5' and 3' incomplete TSL:3
Dcaf6-205	ENSMUST00000195686.1	2213	No protein	Processed transcript	-	-	TSL:5
Dcaf6-202	ENSMUST00000193353.1	3034	No protein	Retained intron	-	-	TSL:2

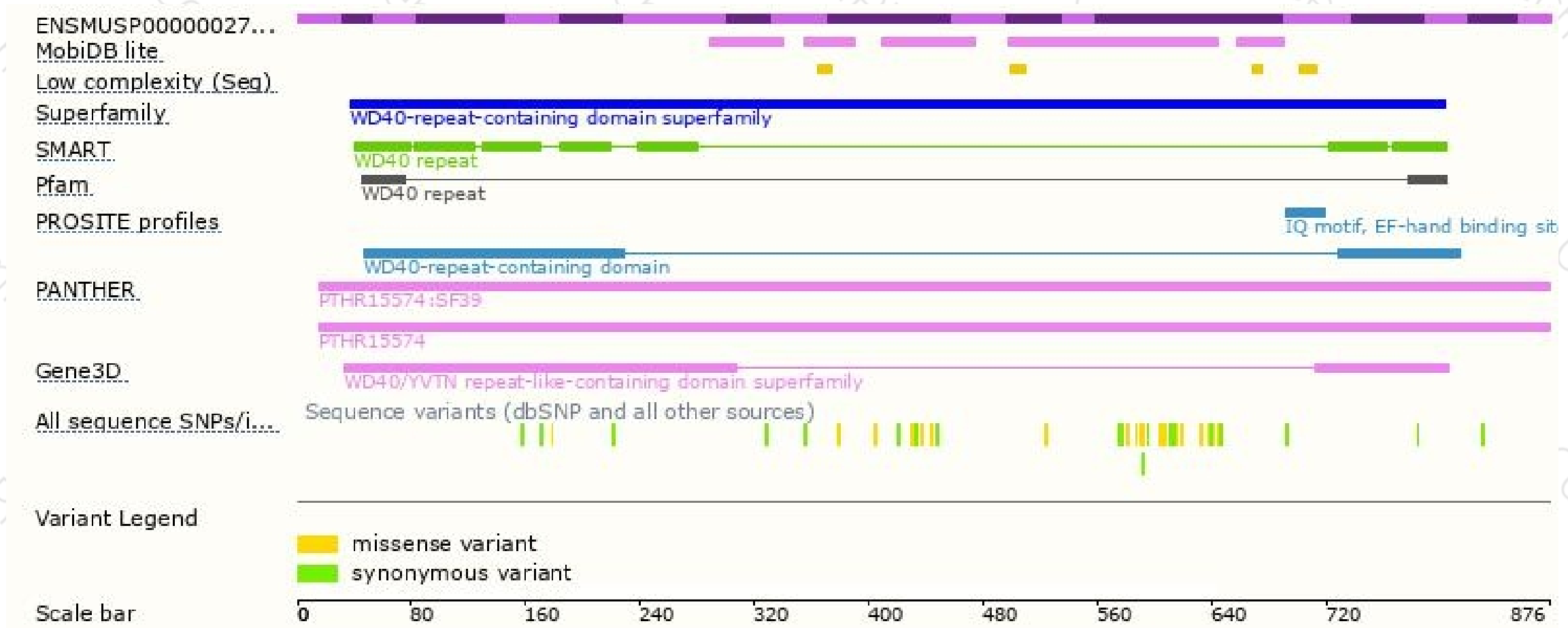
The strategy is based on the design of *Dcaf6-201* transcript,the transcription is shown below:



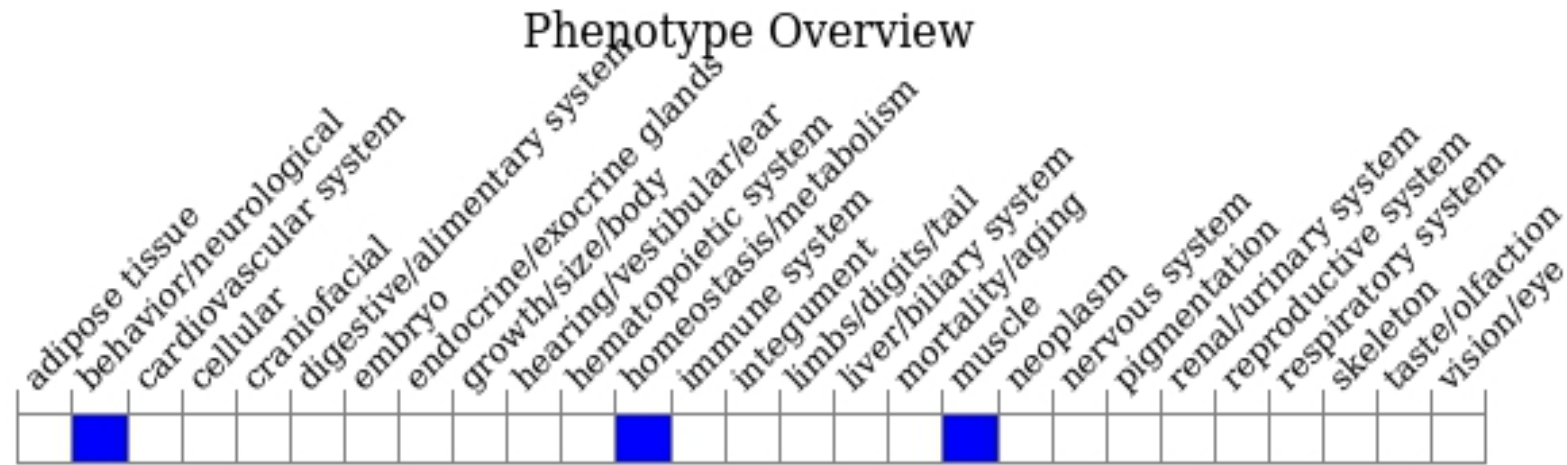
Genomic location distribution



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 impaired contractility and delayed regeneration with impaired skeletal muscle differentiation and myotube formation.

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

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