

# ***Dcaf17*** Cas9-CKO Strategy

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# Project Overview

**Project Name**

***Dcaf17***

**Project type**

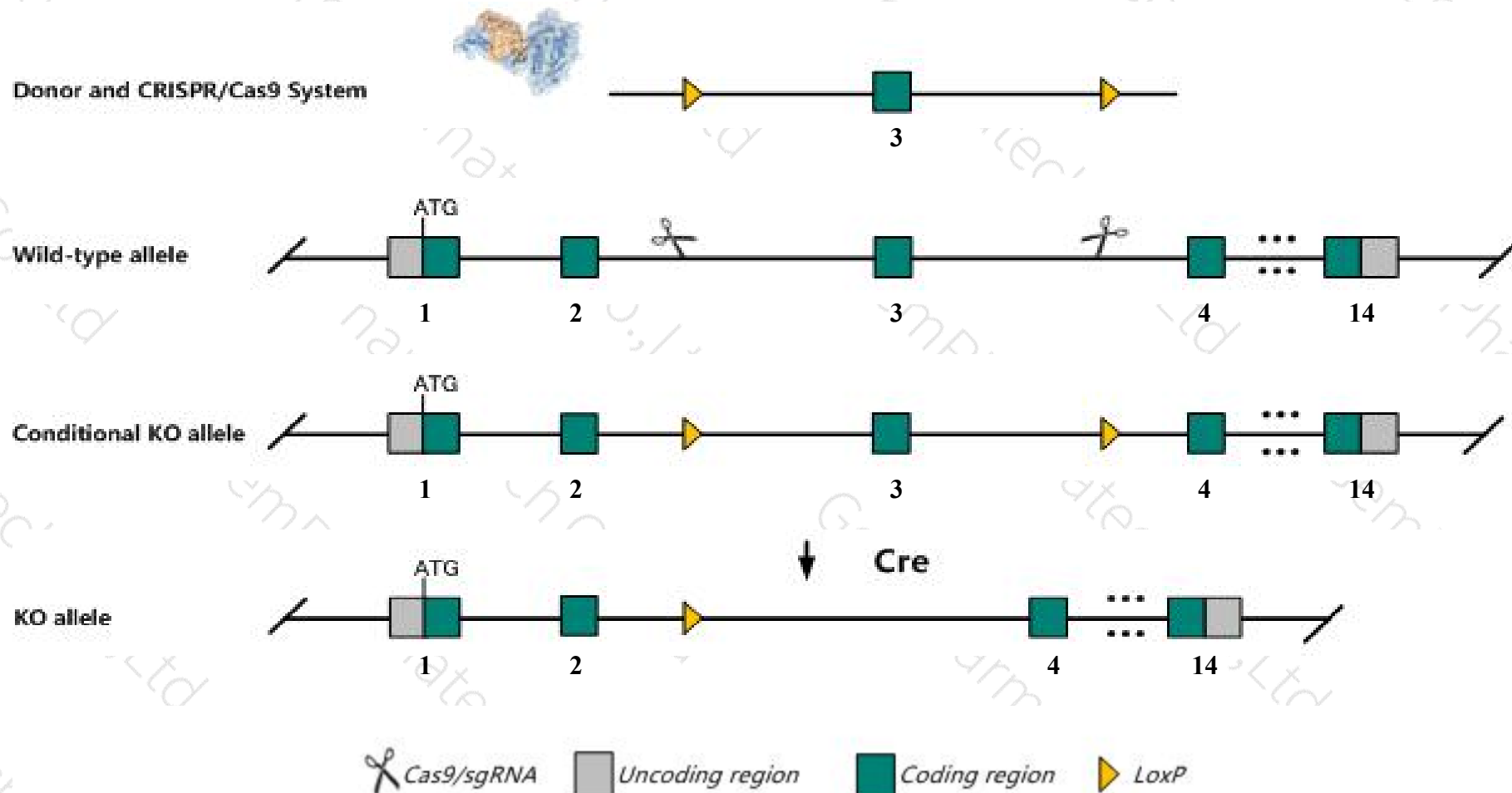
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dcaf17* gene. The schematic diagram is as follows:



- The *Dcaf17* gene has 9 transcripts. According to the structure of *Dcaf17* gene, exon3 of *Dcaf17*-209(ENSMUST00000154704.7) transcript is recommended as the knockout region. The region contains 91bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dcaf17* 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 knock-out allele exhibit male infertility associated with defects in spermatogenesis.
- The KO region is close to *Mettl8* gene. Knockout the region may affect the function of *Mettl8* gene.
- The *Dcaf17* gene is located on the Chr2. 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)

## Dcaf17 DDB1 and CUL4 associated factor 17 [ *Mus musculus* (house mouse) ]

Gene ID: 75763, updated on 25-Sep-2020

### Summary

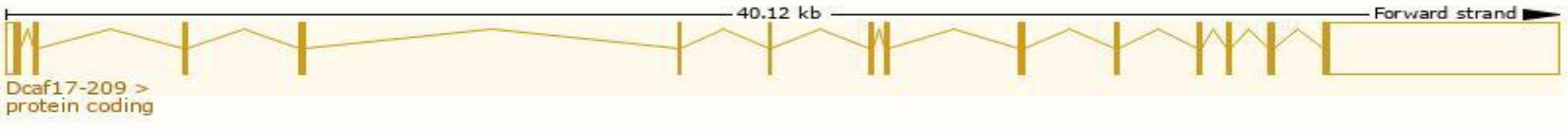
Official Symbol	Dcaf17 provided by <a href="#">MGI</a>
Official Full Name	DDB1 and CUL4 associated factor 17 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1923013</a>
See related	<a href="#">Ensembl:ENSMUSG000000041966</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI448937; 2810055O12Rik; 4833418A01Rik; A030004A10Rik; A930009G19Rik
Expression	Ubiquitous expression in CNS E18 (RPKM 1.5), CNS E14 (RPKM 1.4) and 28 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

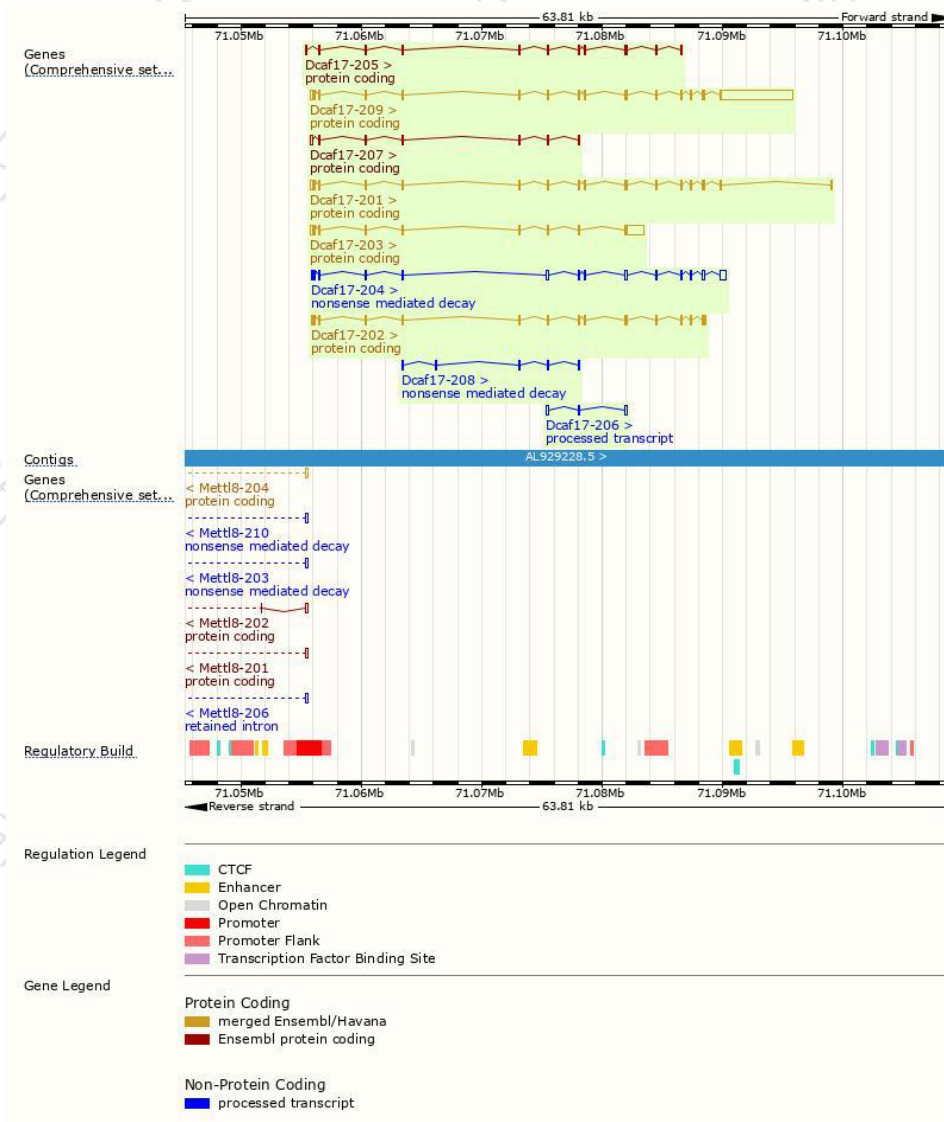
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dcaf17-209	<a href="#">ENSMUST00000154704.7</a>	7739	<a href="#">519aa</a>	Protein coding	<a href="#">CCDS50601</a>	<a href="#">Q3TUL7</a>	TSL:1 GENCODE basic APPRIS P1
Dcaf17-203	<a href="#">ENSMUST00000112159.8</a>	2490	<a href="#">286aa</a>	Protein coding	<a href="#">CCDS50602</a>	<a href="#">Q3TUL7</a>	TSL:1 GENCODE basic
Dcaf17-201	<a href="#">ENSMUST00000064141.11</a>	1905	<a href="#">519aa</a>	Protein coding	<a href="#">CCDS50601</a>	<a href="#">Q3TUL7</a>	TSL:1 GENCODE basic APPRIS P1
Dcaf17-202	<a href="#">ENSMUST00000102701.4</a>	1703	<a href="#">505aa</a>	Protein coding	<a href="#">CCDS16111</a>	<a href="#">Z4YK64</a>	TSL:1 GENCODE basic
Dcaf17-205	<a href="#">ENSMUST00000130292.7</a>	1214	<a href="#">405aa</a>	Protein coding	-	<a href="#">F6YAD1</a>	CDS 5' and 3' incomplete TSL:1
Dcaf17-207	<a href="#">ENSMUST00000135357.7</a>	765	<a href="#">157aa</a>	Protein coding	-	<a href="#">B0R0U2</a>	CDS 3' incomplete TSL:3
Dcaf17-204	<a href="#">ENSMUST00000112167.8</a>	2061	<a href="#">156aa</a>	Nonsense mediated decay	-	<a href="#">F8WIJ2</a>	TSL:5
Dcaf17-208	<a href="#">ENSMUST00000136299.1</a>	441	<a href="#">58aa</a>	Nonsense mediated decay	-	<a href="#">F6XZ79</a>	CDS 5' incomplete TSL:3
Dcaf17-206	<a href="#">ENSMUST00000132619.1</a>	443	No protein	Processed transcript	-	-	TSL:2

The strategy is based on the design of *Dcaf17-209* transcript,the transcription is shown below:

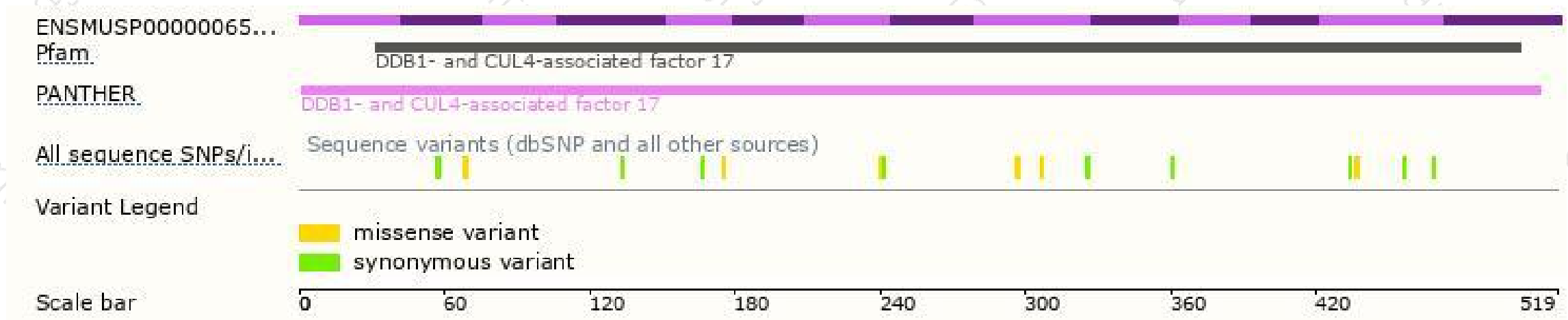


# Genomic location distribution

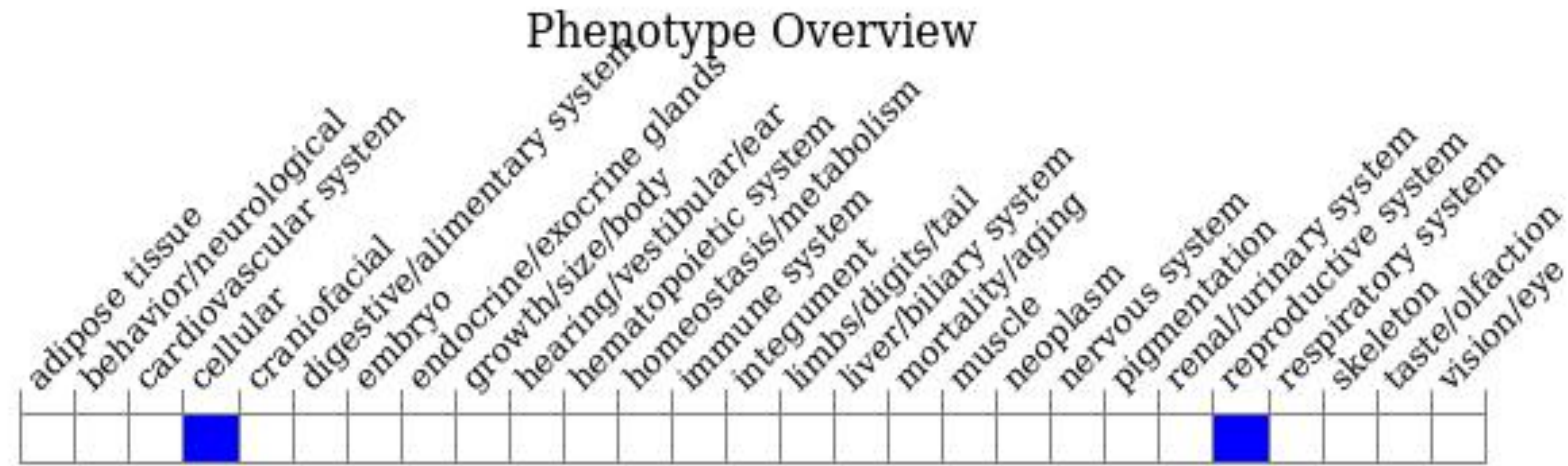




# Protein domain



# 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 knock-out allele exhibit male infertility associated with defects in spermatogenesis.

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

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