Dgkq Cas9-CKO Strategy

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Project Overview

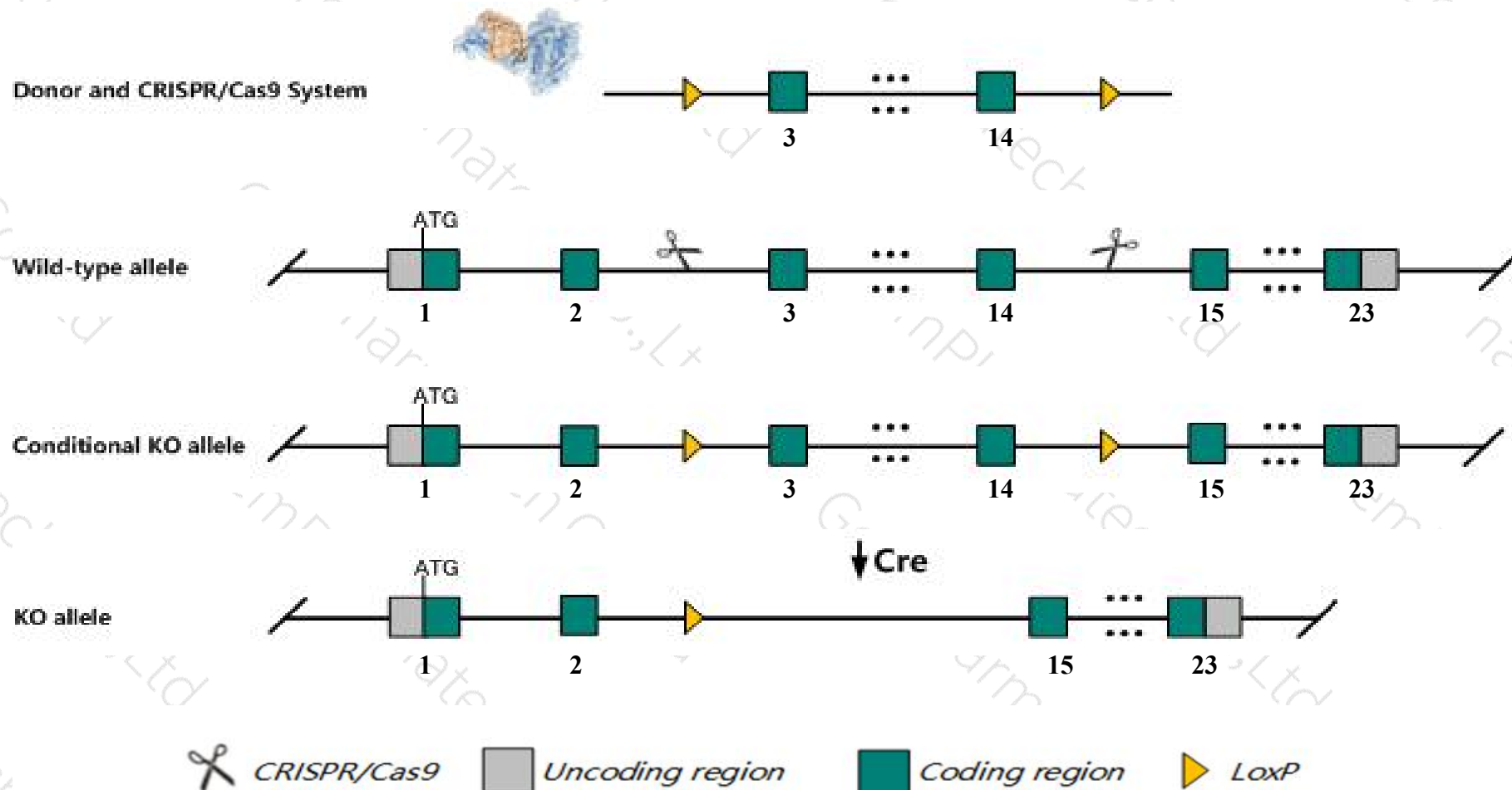|	
Project Name	*Dgkq*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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

Technical routes

➤ The *Dgkq* gene has 11 transcripts. According to the structure of *Dgkq* gene, exon3-exon14 of *Dgkq-201* (ENSMUST00000053913.12) transcript is recommended as the knockout region.The region contains 1261bp coding sequence. Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Dgkq* 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 *Dgkq* gene is located on the Chr5. 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）

Dgkq diacylglycerol kinase, theta [Mus musculus (house mouse)]

Gene ID: 110524, updated on 19-Mar-2019

Summary

|	
Official Symbol	Dgkq provided by MGI
Official Full Name	diacylglycerol kinase, theta provided by MGI
Primary source	MGI:MGI:102918
See related	Ensembl:ENSMUSG00000004815
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	110kDa, DAGK, DAGK7, Dagk4, Dgkd
Expression	Ubiquitous expression in small intestine adult (RPKM 17.4), duodenum adult (RPKM 15.1) and 28 other tissuesSee 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
Dgkq-201	ENSMUST00000053913.12	4938	934aa	Protein coding	CCDS19515	Q6P5E8	TSL:1 GENCODE basic APPRIS P1
Dgkq-203	ENSMUST00000132179.7	5345	257aa	Nonsense mediated decay	-	D6RI30	TSL:5
Dgkq-204	ENSMUST00000132708.7	5073	169aa	Nonsense mediated decay	-	D6RFT1	TSL:5
Dgkq-209	ENSMUST00000153238.7	4801	257aa	Nonsense mediated decay	-	D6RI30	TSL:5
Dgkq-207	ENSMUST00000144624.7	5213	No protein	Retained intron	-	-	TSL:1
Dgkq-210	ENSMUST00000153365.7	4529	No protein	Retained intron	-	-	TSL:2
Dgkq-202	ENSMUST00000123669.7	3599	No protein	Retained intron	-	-	TSL:5
Dgkq-208	ENSMUST00000145917.1	2321	No protein	Retained intron	-	-	TSL:1
Dgkq-206	ENSMUST00000139598.1	796	No protein	Retained intron	-	-	TSL:2
Dgkq-211	ENSMUST00000156964.7	749	No protein	Retained intron	-	-	TSL:3
Dgkq-205	ENSMUST00000139169.1	584	No protein	Retained intron	-	-	TSL:3

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

< Dgkq-201
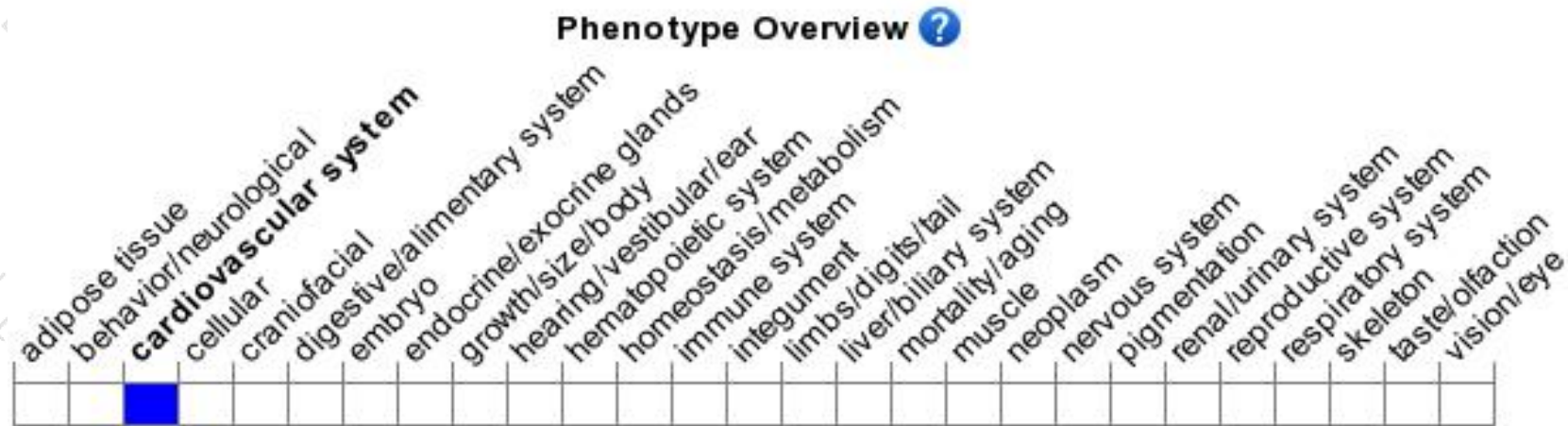protein coding

◄ Reverse strand

14.12 kb
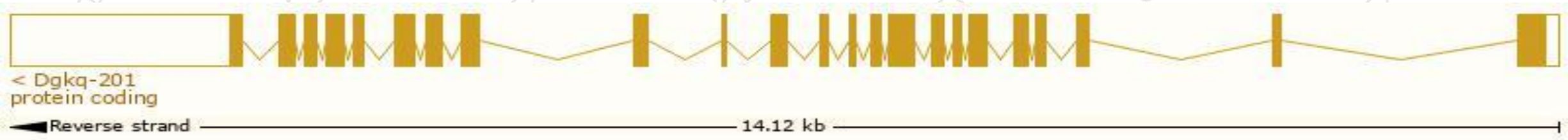
Genomic location distribution
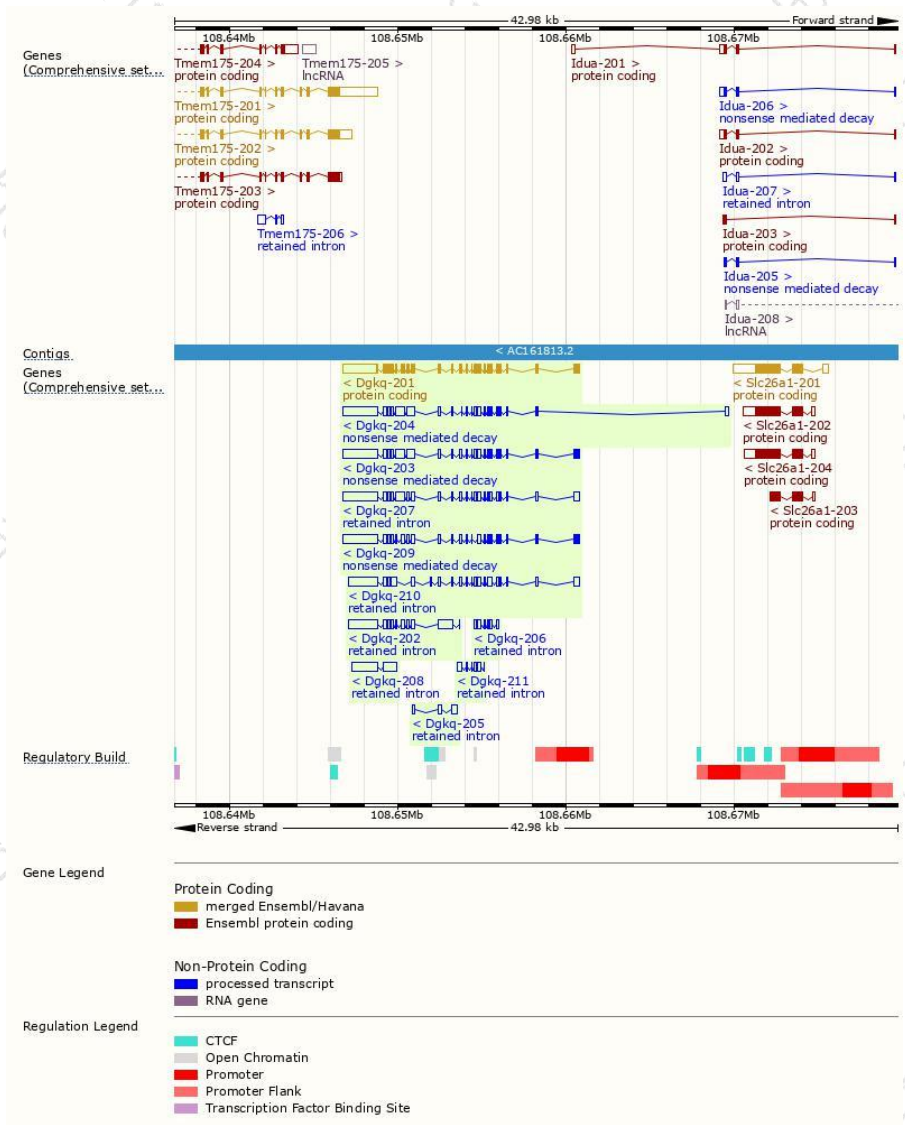
Protein domain
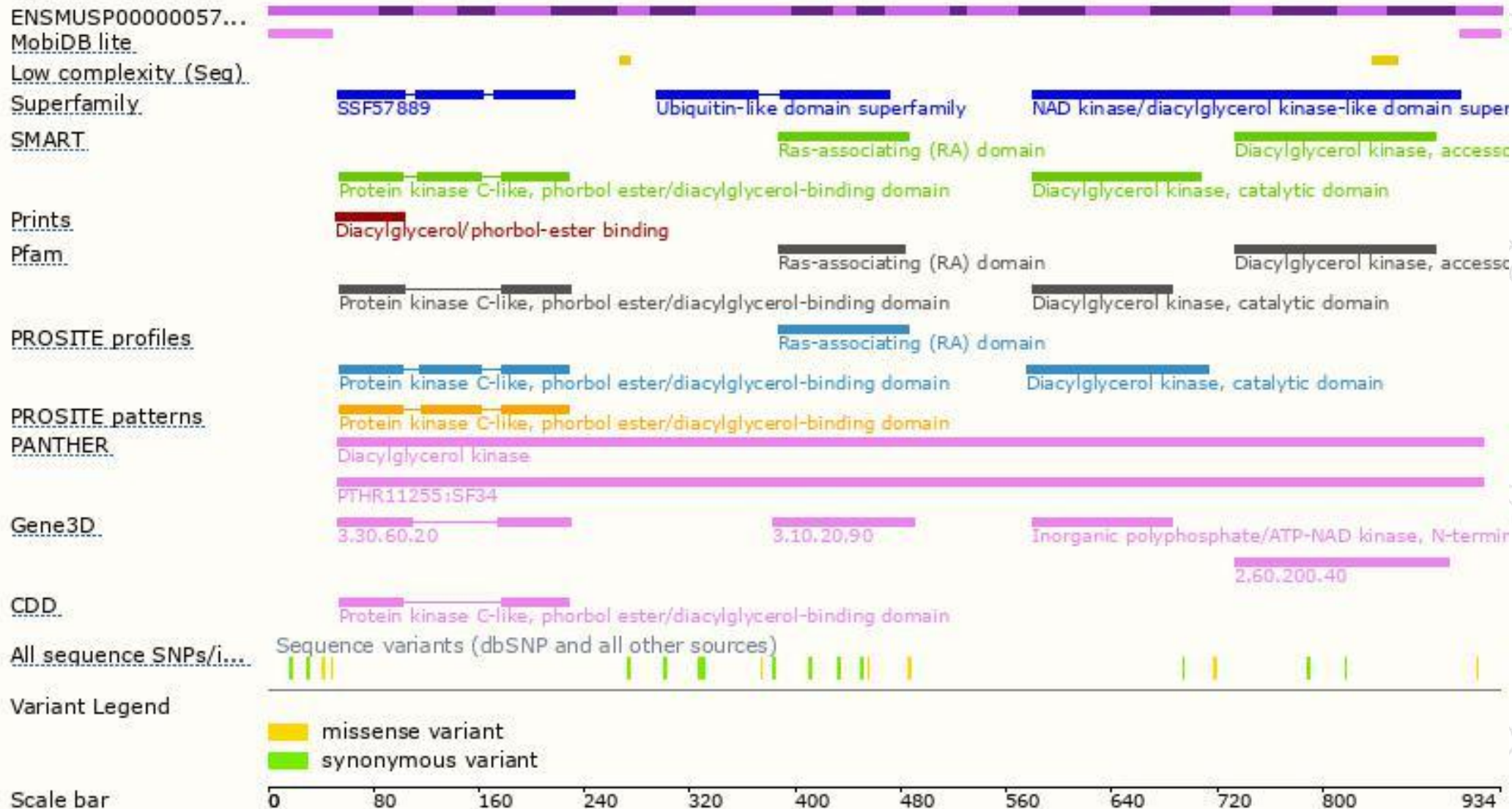
Mouse phenotype description(MGI)

Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).

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