

Dagla Cas9-CKO Strategy

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Project Overview

Project Name

Dagla

Project type

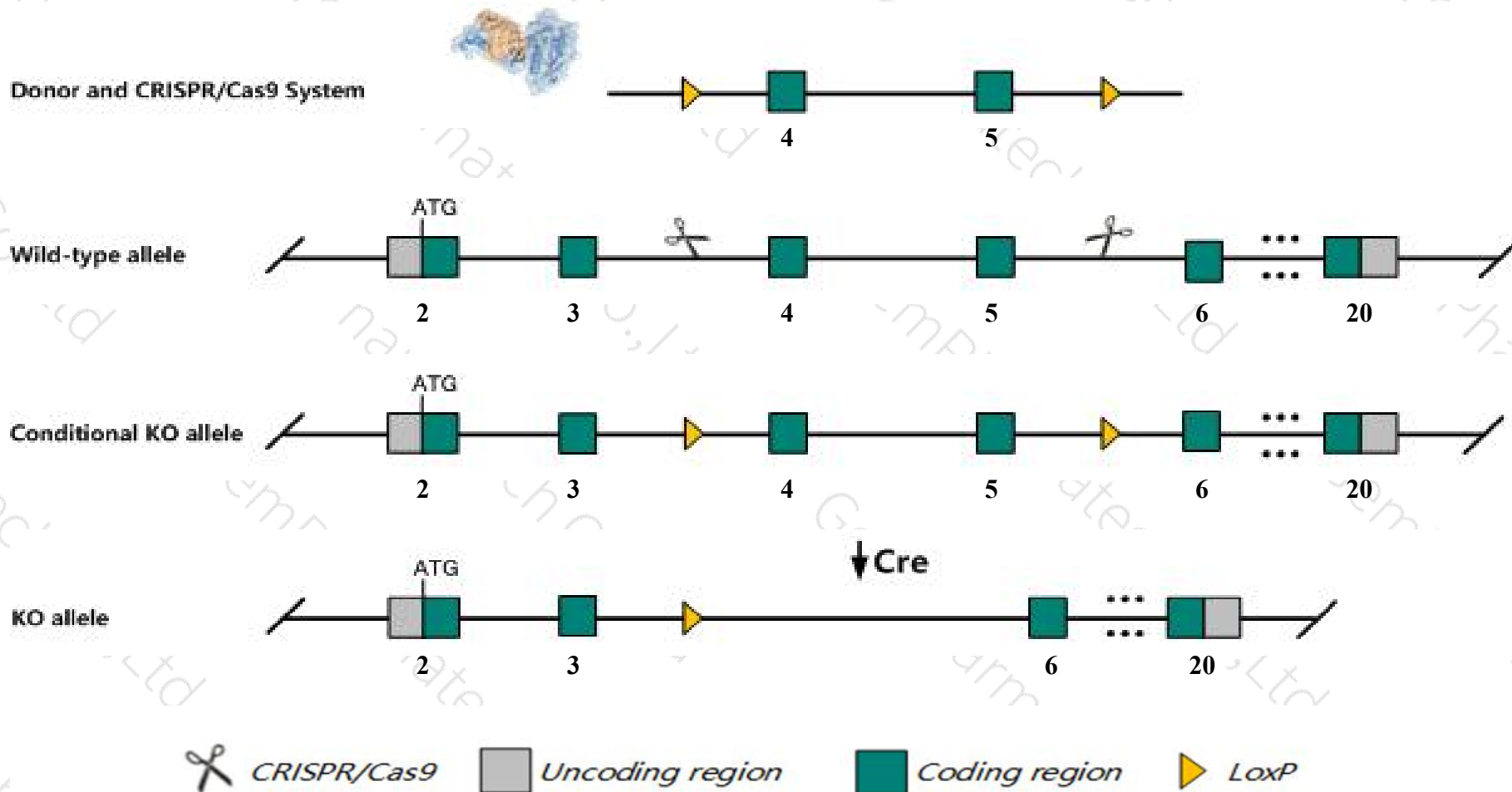
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Dagla* gene has 3 transcripts. According to the structure of *Dagla* gene, exon4-exon5 of *Dagla*-201 (ENSMUST00000039327.10) transcript is recommended as the knockout region. The region contains 241bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dagla* 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 null mutations have decreased body weight, adult neuronal proliferation, and nervous system endocannabinoid levels and abnormal inhibitory postsynaptic currents.
- The *Dagla* gene is located on the Chr19. 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)

Dagla diacylglycerol lipase, alpha [Mus musculus (house mouse)]

Gene ID: 269060, updated on 13-Mar-2020

Summary



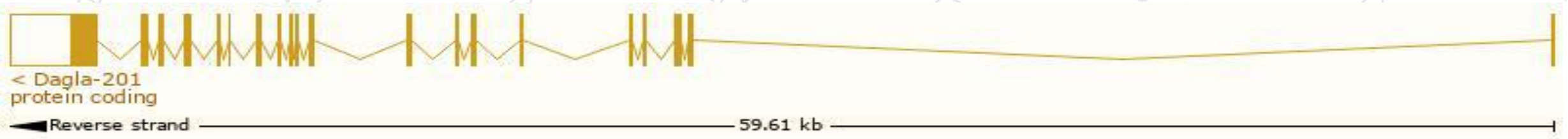
Official Symbol	Dagla provided by MGI
Official Full Name	diacylglycerol lipase, alpha provided by MGI
Primary source	MGI:MGI:2677061
See related	Ensembl:ENSMUSG000000035735
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Nsddr
Expression	Broad expression in cortex adult (RPKM 16.8), cerebellum adult (RPKM 13.6) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

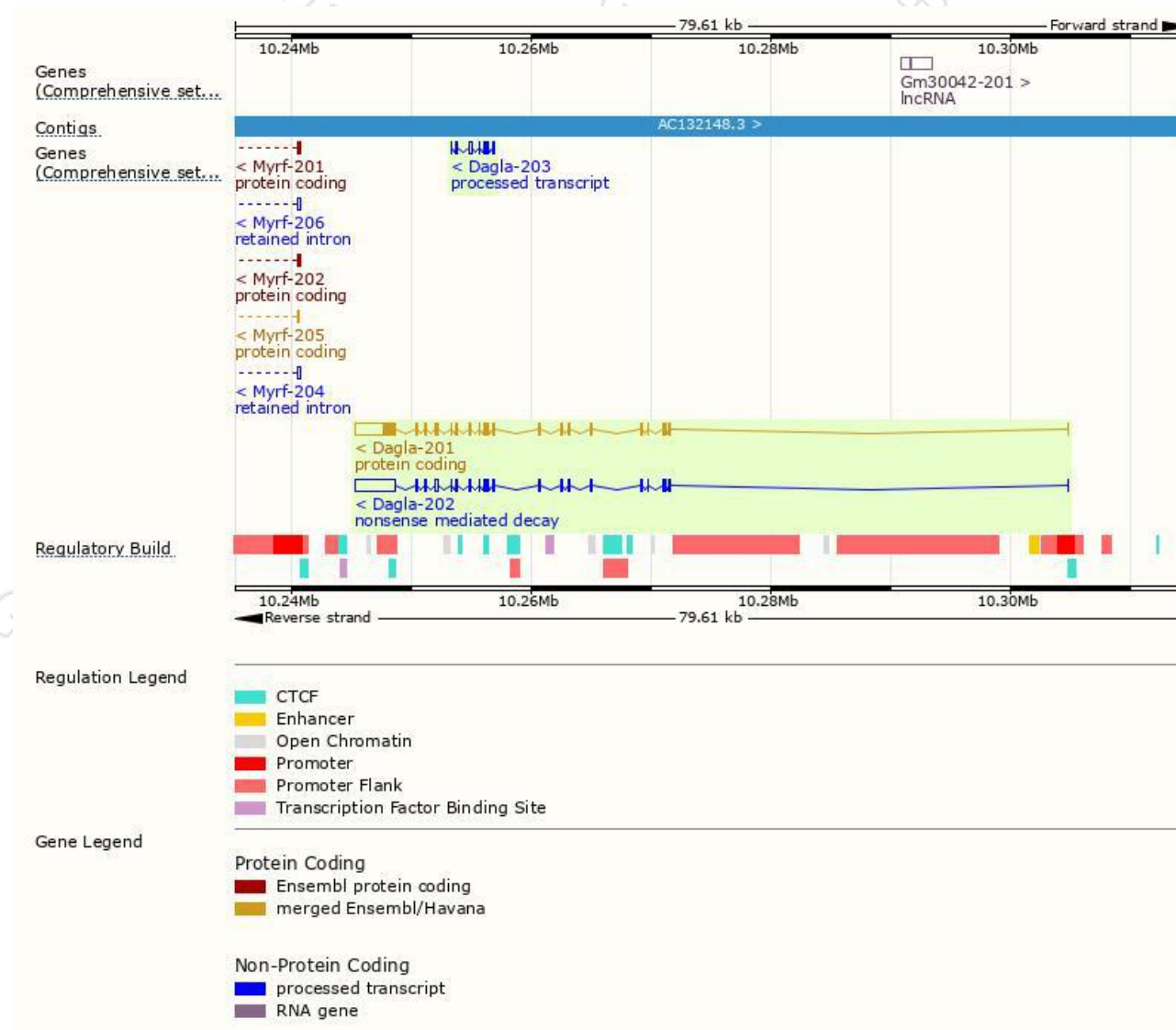
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dagla-201	ENSMUST00000039327.10	5634	1044aa	Protein coding	CCDS29574	Q6WQJ1	TSL:5 GENCODE basic APPRIS P1
Dagla-202	ENSMUST00000125567.7	5588	99aa	Nonsense mediated decay	-	S4R2M3	TSL:1
Dagla-203	ENSMUST00000156361.1	695	No protein	Processed transcript	-	-	TSL:5

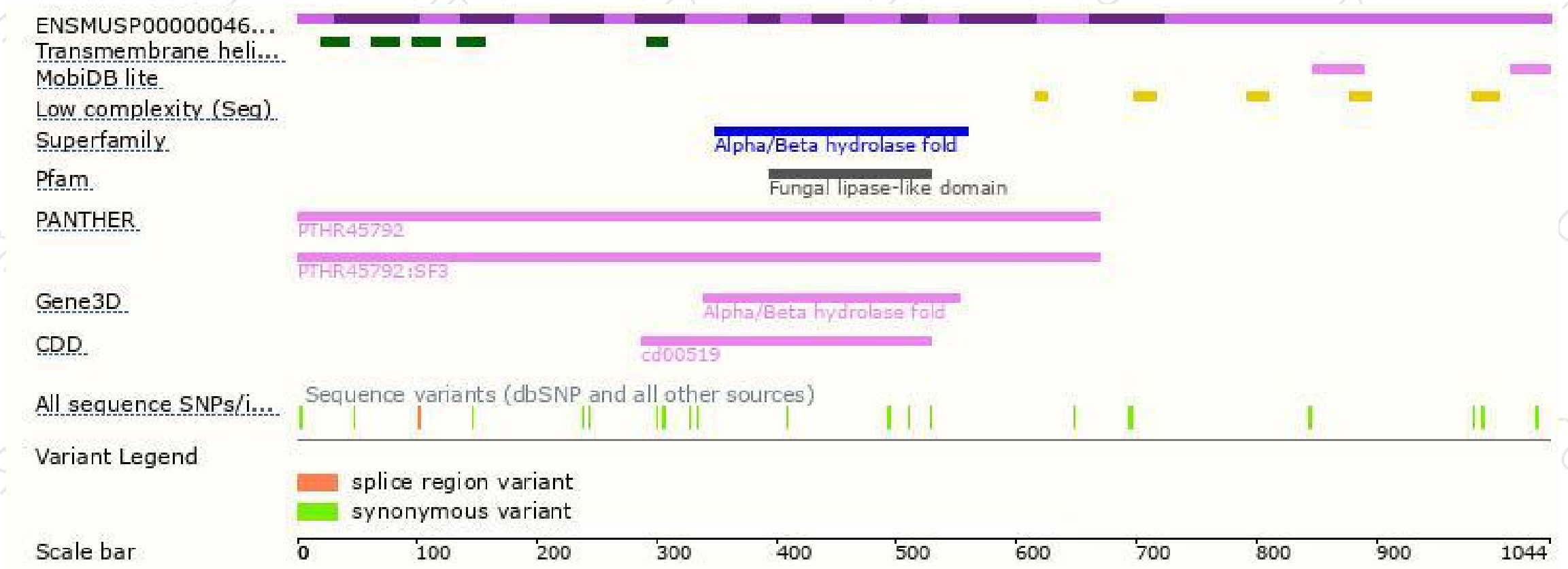
The strategy is based on the design of *Dagla-201* transcript,the transcription is shown below



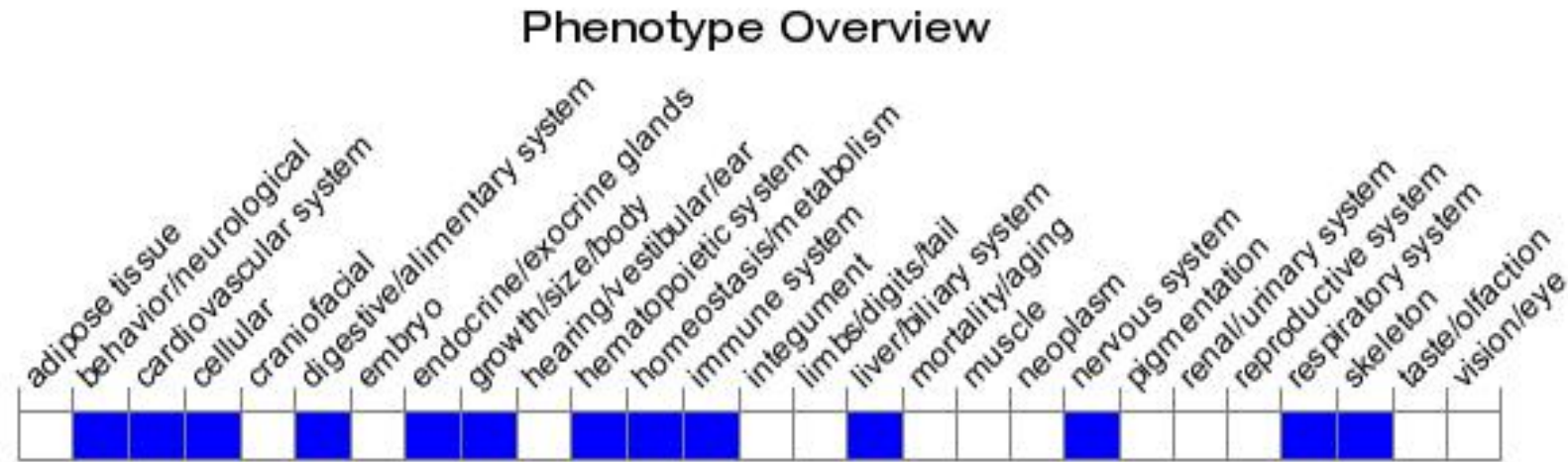
Genomic location distribution



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 null mutations have decreased body weight, adult neuronal proliferation, and nervous system endocannabinoid levels and abnormal inhibitory postsynaptic currents.

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

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