

Mylk2 Cas9-CKO Strategy

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Design Date: 2021-4-26

Project Overview

Project Name

Mylk2

Project type

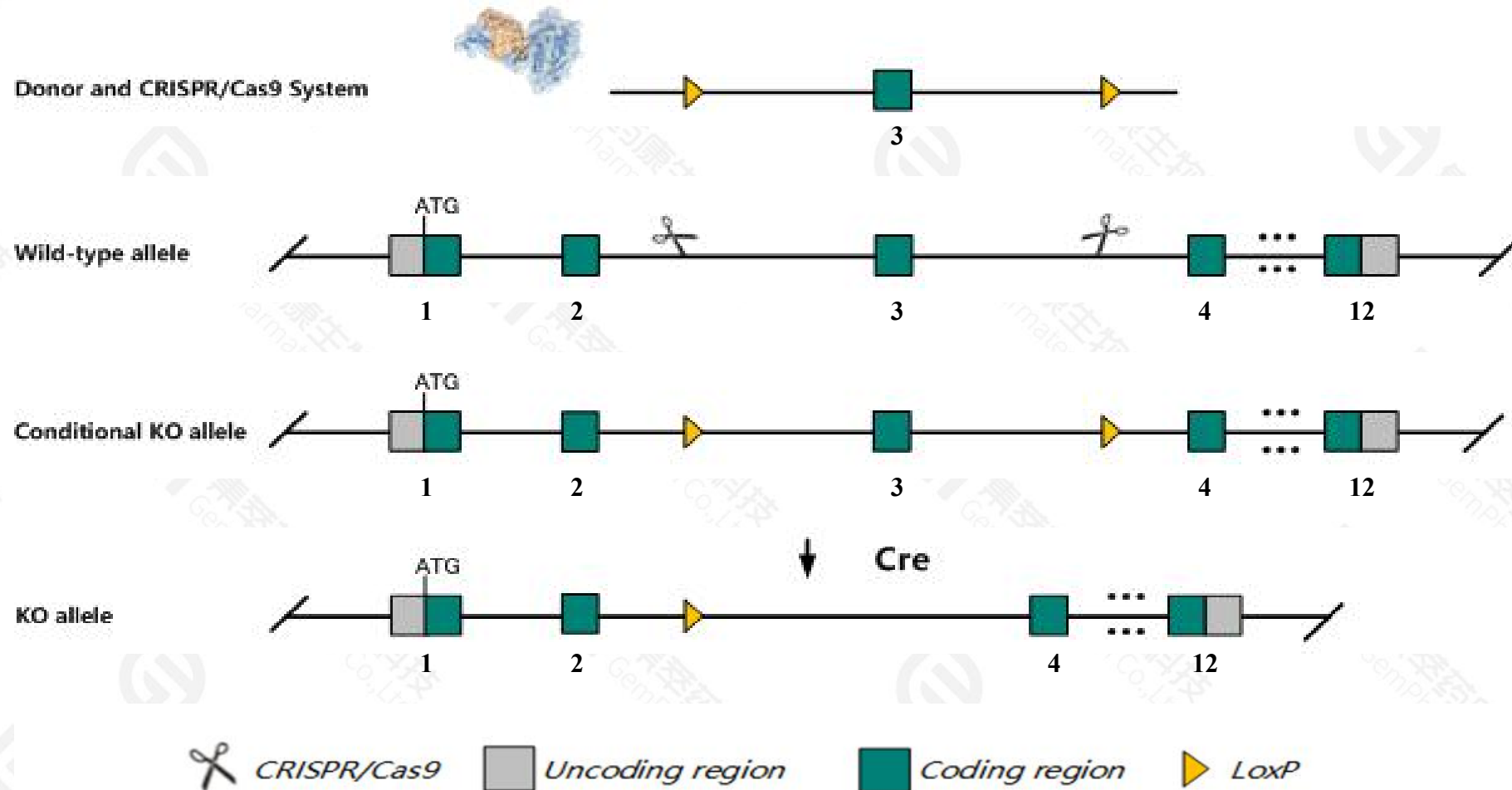
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mylk2* gene. The schematic diagram is as follows:



- The *Mylk2* gene has 1 transcript. According to the structure of *Mylk2* gene, exon3 of *Mylk2-201*(ENSMUST00000028970.8) transcript is recommended as the knockout region. The region contains 296bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mylk2* 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, homozygous knockout mice display impaired skeletal muscle twitch tension response to tetanic stimulation.
- The *Mylk2* 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)

Mylk2 myosin, light polypeptide kinase 2, skeletal muscle [Mus musculus (house mouse)]

Gene ID: 228785, updated on 25-Sep-2020

Summary



Official Symbol Mylk2 provided by [MGI](#)

Official Full Name myosin, light polypeptide kinase 2, skeletal muscle provided by [MGI](#)

Primary source [MGI:MGI:2139434](#)

See related [Ensembl:ENSMUSG00000027470](#)

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 9830004H17Rik, BB138278

Expression Biased expression in mammary gland adult (RPKM 11.2), lung adult (RPKM 0.7) and 1 other tissue [See more](#)

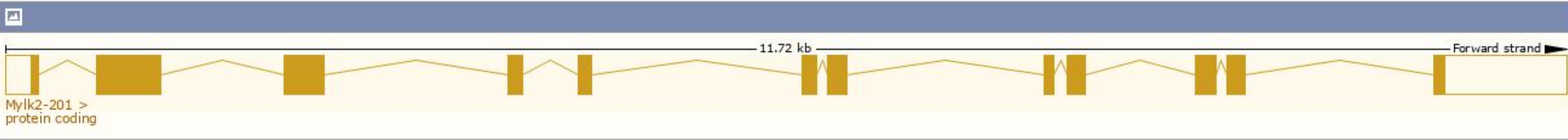
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mylk2-201	ENSMUST00000028970.8	2951	613aa	Protein coding	CCDS38282		TSL:1 , GENCODE basic , APPRIS P1 ,

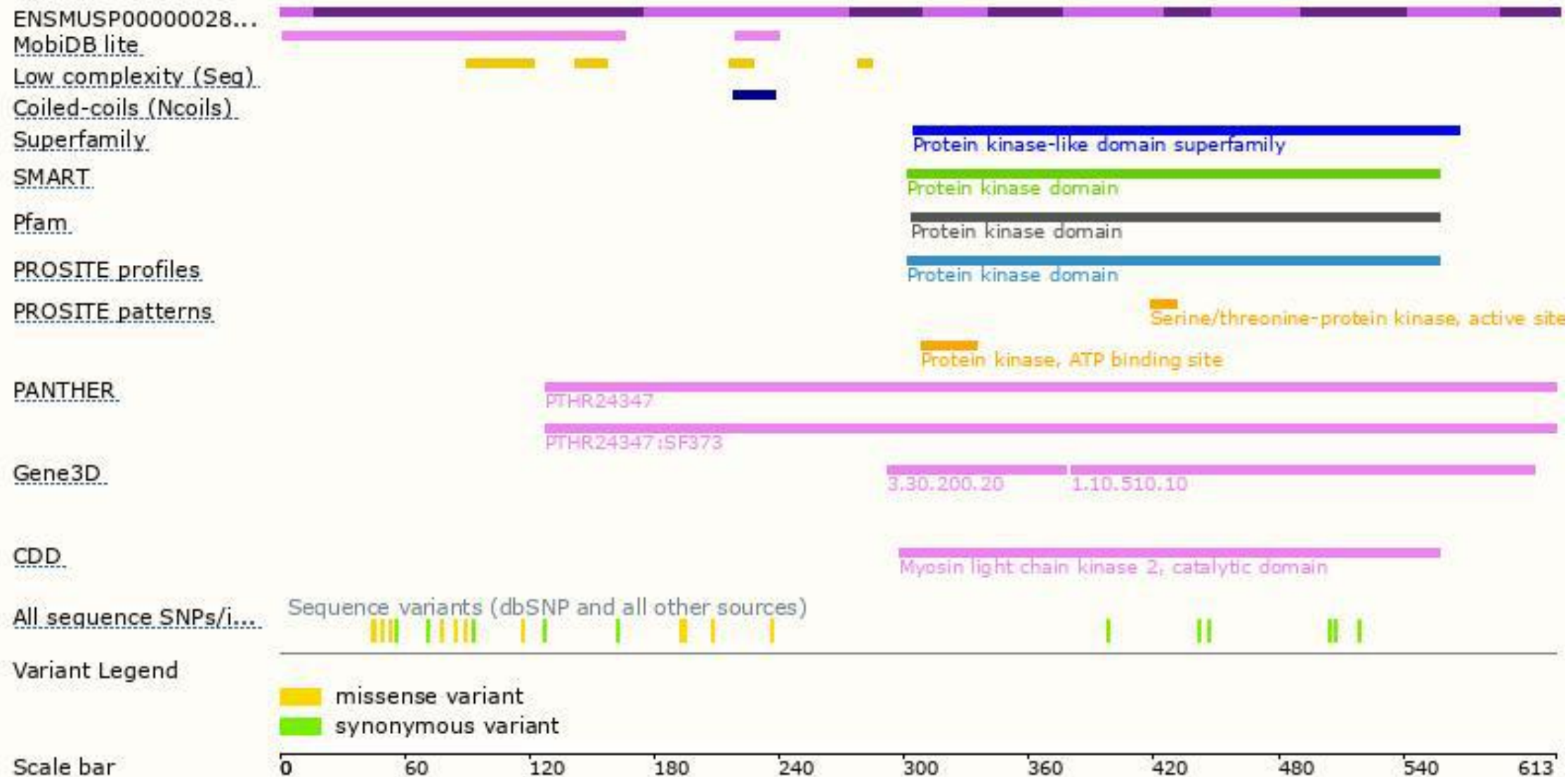
The strategy is based on the design of *Mylk2-201* transcript, the transcription is shown below:



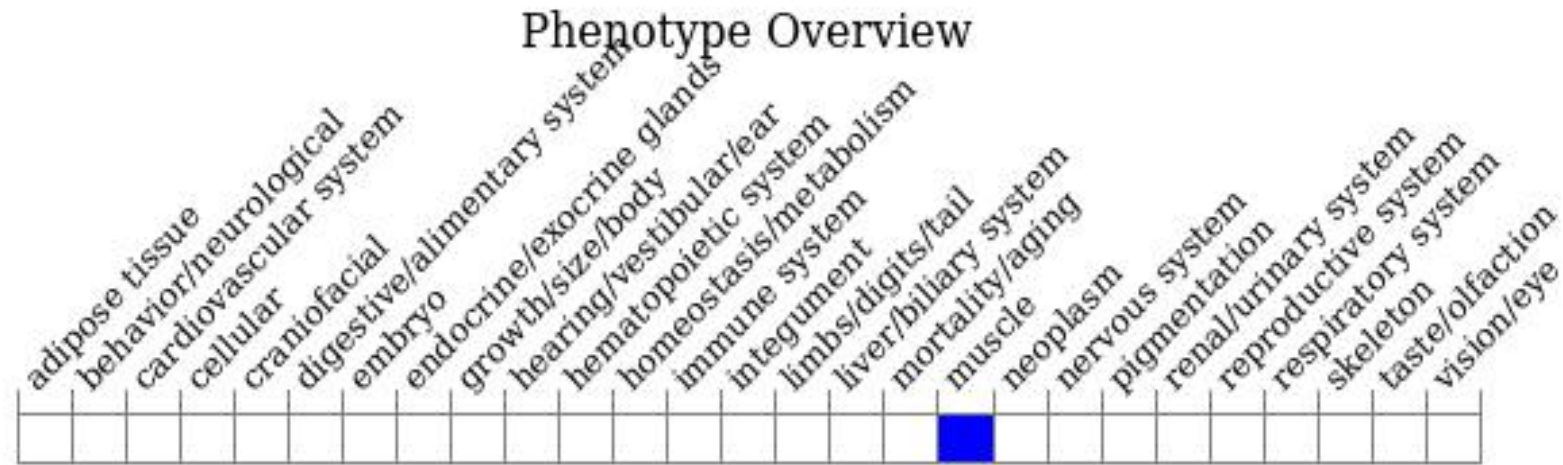
Genomic location distribution



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, homozygous knockout mice display impaired skeletal muscle twitch tension response to tetanic stimulation.

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