Myh3 Cas9-CKO Strategy

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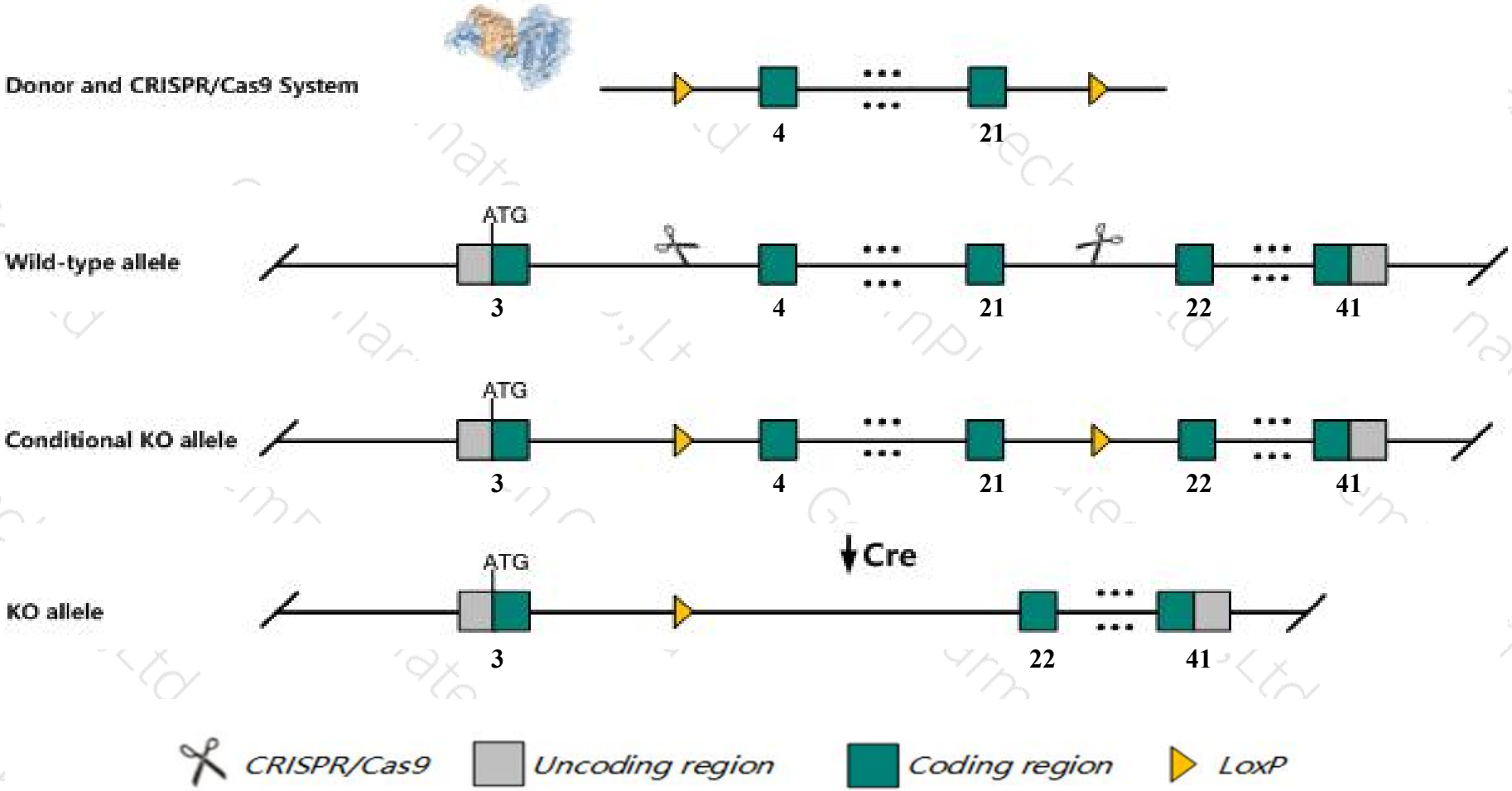
Project Overview

Project Name	***Myh3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Myh3* gene. The schematic diagram is as follows:



Technical routes

- The *Myh3* gene has 3 transcripts. According to the structure of *Myh3* gene, exon4-exon21 of *Myh3-202* (ENSMUST00000108689.7) transcript is recommended as the knockout region.The region contains 2222bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Myh3* 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 floxed region is near to the N-terminal of *Mir6923* gene,this strategy may influence the regulatory function of the N-terminal of *Mir6923* gene.

➢ The *Myh3* gene is located on the Chr11. 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）

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Myh3 myosin, heavy polypeptide 3, skeletal muscle, embryonic [*Mus musculus* (house mouse)]

Gene ID: 17883, updated on 21-Aug-2019

Summary

Official Symbol	Myh3 provided by MGI
Official Full Name	myosin, heavy polypeptide 3, skeletal muscle, embryonic provided by MGI
Primary source	MGI:MGI:1339709
See related	Ensembl:ENSMUSG00000020908
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Myhse; Myhs-e; MyHC-emb
Summary	Myosin is a major contractile protein which converts chemical energy into mechanical energy through the hydrolysis of ATP. Myosin is a hexameric protein composed of a pair of myosin heavy chains (MYH) and two pairs of nonidentical light chains. This gene is a member of the MYH family and encodes a protein with an IQ domain and a myosin head-like domain. [provided by RefSeq, Sep 2015]
Expression	Biased expression in limb E14.5 (RPKM 52.1), CNS E14 (RPKM 5.2) and 1 other tissue See more
Orthologs	human all

Genomic context

Location: 11 B3; 11 40.59 cM

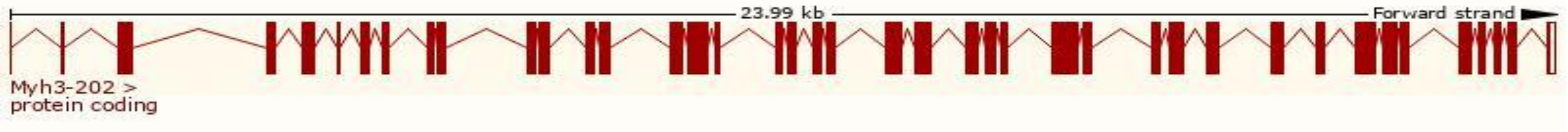
See Myh3 in Genome Data Viewer

Transcript information（Ensembl）

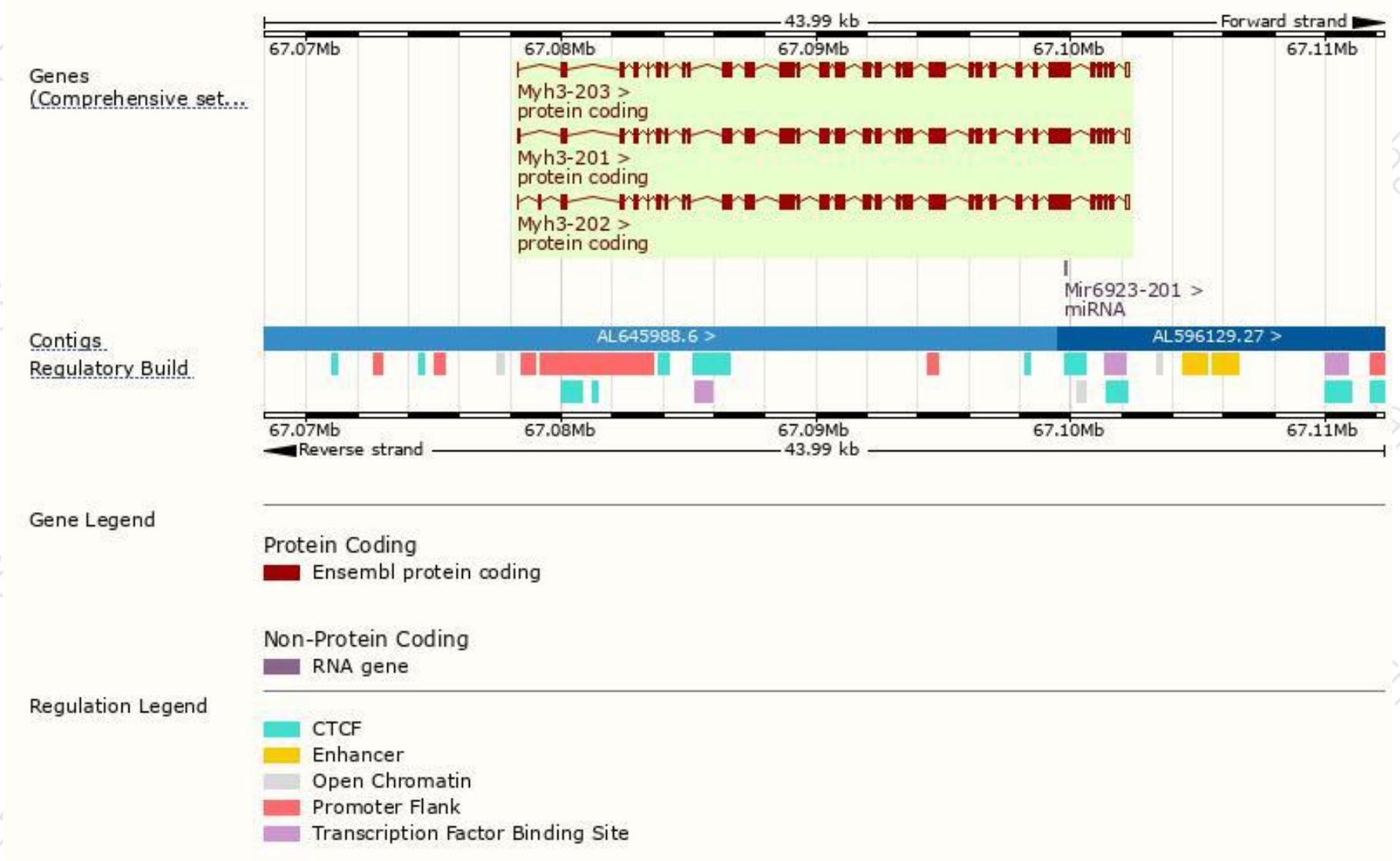
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Myh3-202	ENSMUST00000108689.7	6031	1940aa	Protein coding	CCDS36184	P13541	TSL:5 GENCODE basic APPRIS P1
Myh3-203	ENSMUST00000165221.1	5994	1940aa	Protein coding	CCDS36184	P13541	TSL:5 GENCODE basic APPRIS P1
Myh3-201	ENSMUST00000007301.13	5992	1940aa	Protein coding	CCDS36184	P13541	TSL:5 GENCODE basic APPRIS P1

The strategy is based on the design of *Myh3-202* transcript,The transcription is shown below



Genomic location distribution



Protein domain

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

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