

Myh6 Cas9-KO Strategy

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Project Overview

Project Name

Myh6

Project type

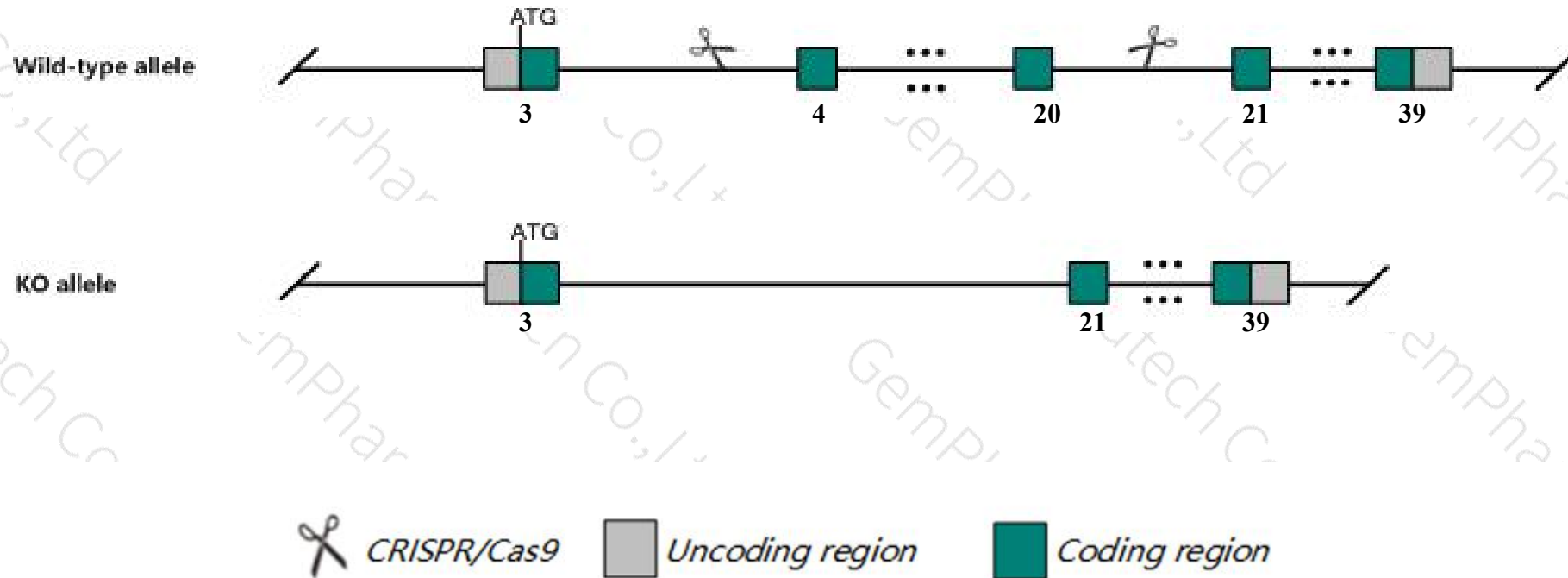
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Myh6* gene. The schematic diagram is as follows:



- The *Myh6* gene has 7 transcripts. According to the structure of *Myh6* gene, exon4-exon20 of *Myh6-201* (ENSMUST00000081857.13) transcript is recommended as the knockout region. The region contains 2228bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Myh6* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit embryonic lethality associated with heart defects while heterozygotes show cardiac myofibrillar disarray, cardiac dysfunction and fibrosis. Mice heterozygous for different knock-in alleles may develop hypertrophic or dilated forms of cardiomyopathy.
- Transcript *Myh6*-202,206,207 may not be affected.
- The *Myh6* gene is located on the Chr14. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Myh6 myosin, heavy polypeptide 6, cardiac muscle, alpha [Mus musculus (house mouse)]

Gene ID: 17888, updated on 31-Jan-2019

Summary



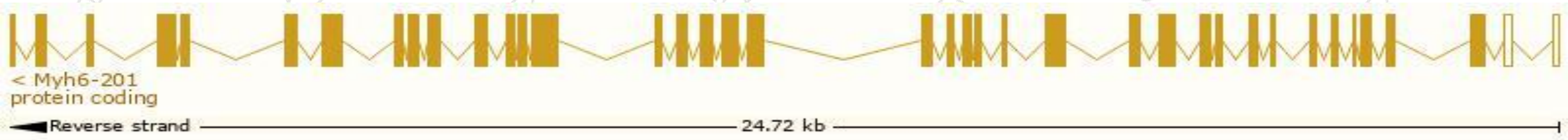
Official Symbol	Myh6 provided by MGI
Official Full Name	myosin, heavy polypeptide 6, cardiac muscle, alpha provided by MGI
Primary source	MGI:MGI:97255
See related	Ensembl:ENSMUSG00000040752
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A830009F23Rik, AA517445, Myhc-a, Myhca, alpha-MHC, alphaMHC
Expression	Restricted expression toward heart adult (RPKM 1317.1) See more
Orthologs	human all

Transcript information (Ensembl)

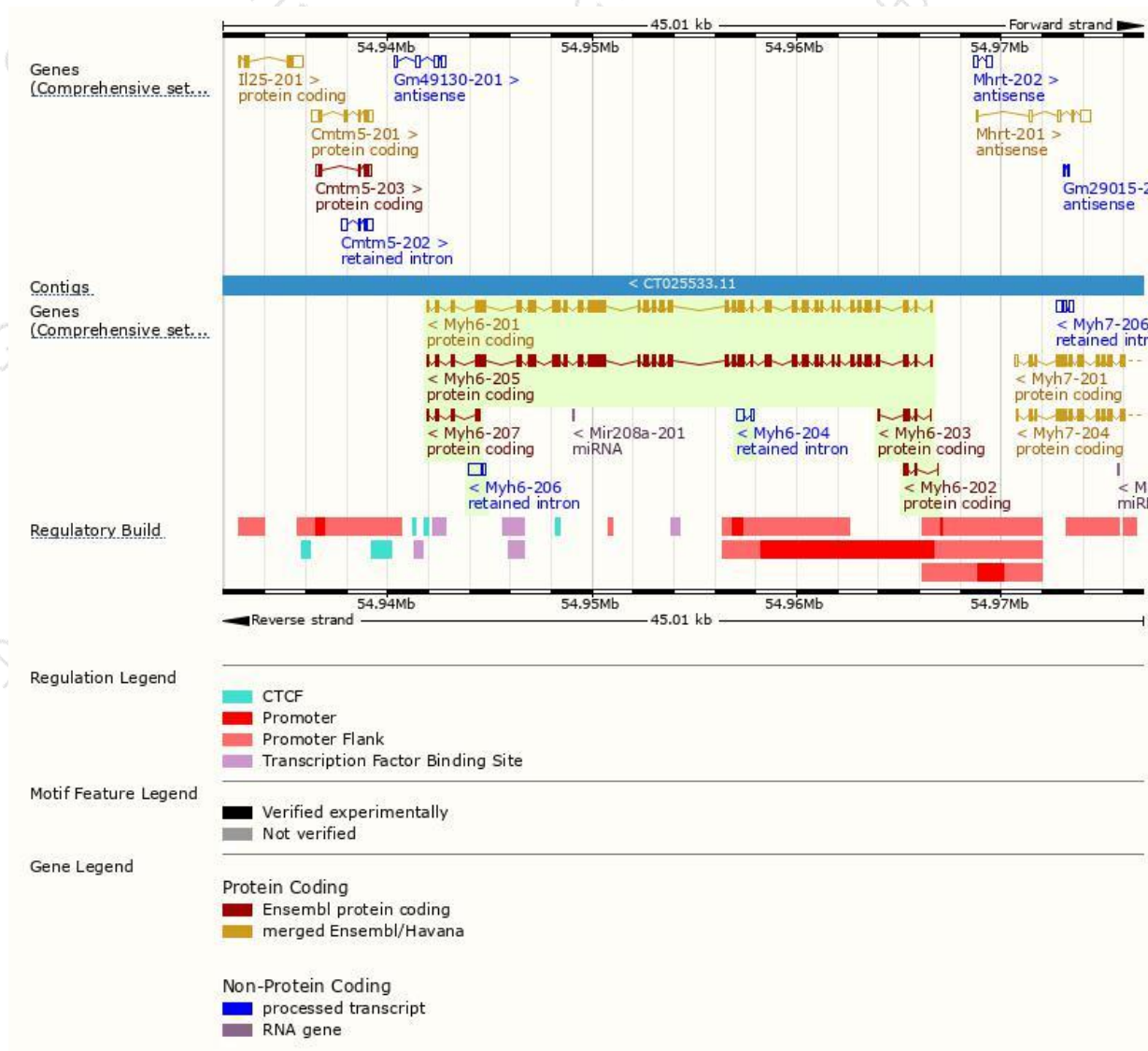
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Myh6-201	ENSMUST00000081857.13	6113	1938aa	Protein coding	CCDS36927	B2RQQ1 Q02566	TSL:1 GENCODE basic APPRIS P1
Myh6-205	ENSMUST00000226297.1	6008	1938aa	Protein coding	CCDS36927	B2RQQ1 Q02566	GENCODE basic APPRIS P1
Myh6-207	ENSMUST00000228731.1	542	162aa	Protein coding	-	A0A2I3BPY4	CDS 5' incomplete
Myh6-203	ENSMUST00000124930.7	411	94aa	Protein coding	-	Q1WNP4	CDS 3' incomplete TSL:1
Myh6-202	ENSMUST00000111456.1	376	63aa	Protein coding	-	B8JJH3	CDS 3' incomplete TSL:3
Myh6-206	ENSMUST00000227905.1	718	No protein	Retained intron	-	-	
Myh6-204	ENSMUST00000131892.1	511	No protein	Retained intron	-	-	TSL:3

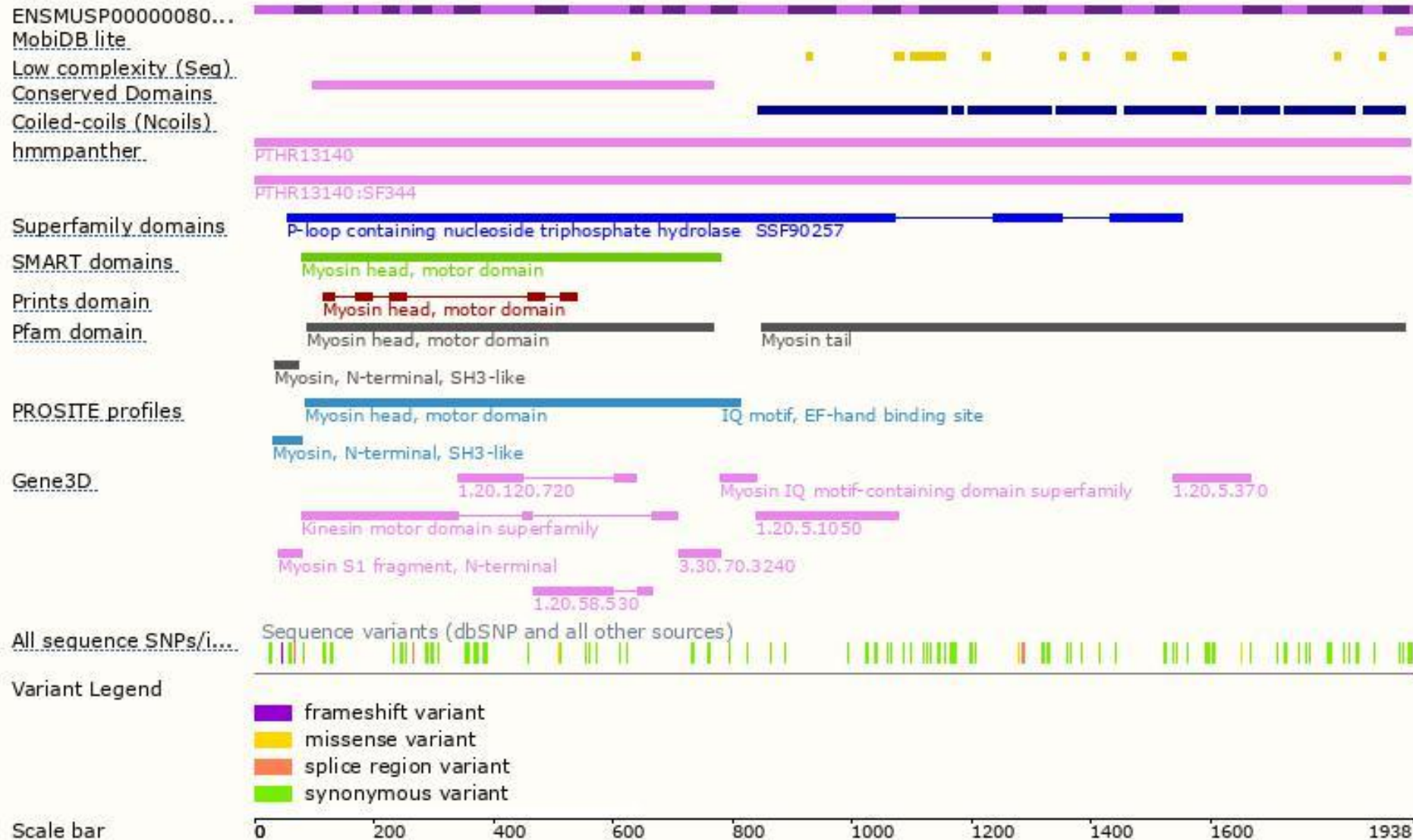
The strategy is based on the design of *Myh6-201* transcript,The transcription is shown below



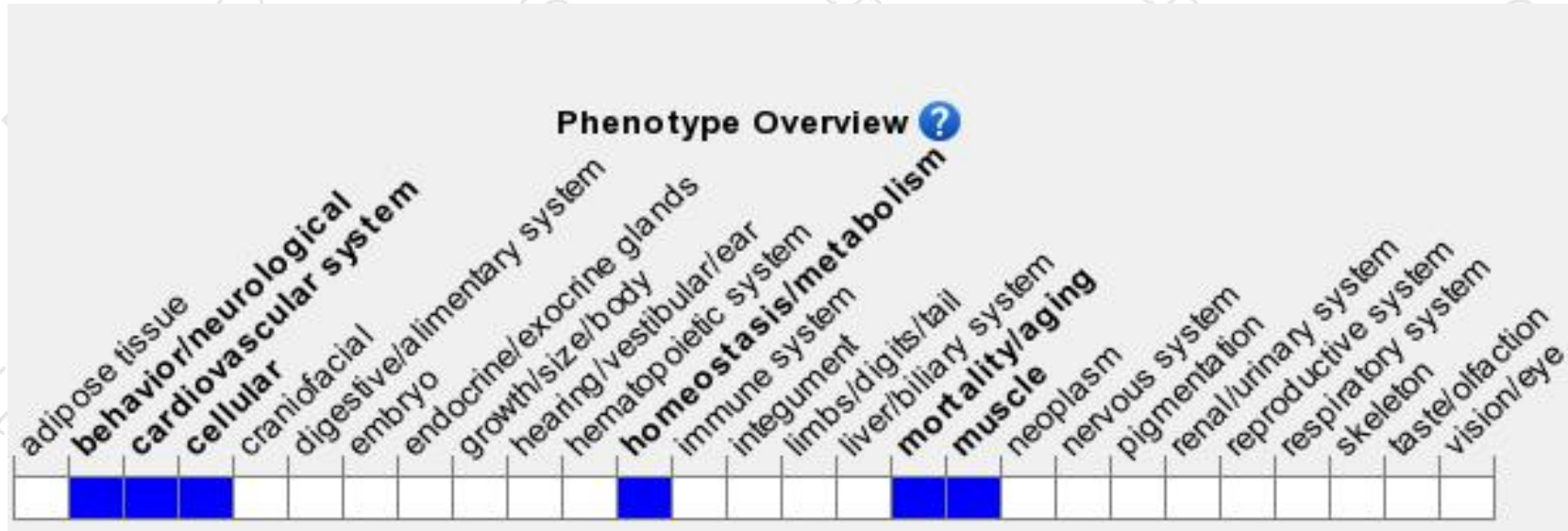
Genomic location distribution



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 a knock-out allele exhibit embryonic lethality associated with heart defects while heterozygotes show cardiac myofibrillar disarray, cardiac dysfunction and fibrosis. Mice heterozygous for different knock-in alleles may develop hypertrophic or dilated forms of cardiomyopathy.

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

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