

# Myh6 Cas9-CKO Strategy

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# Overview

## Target Gene Name

- Myh6

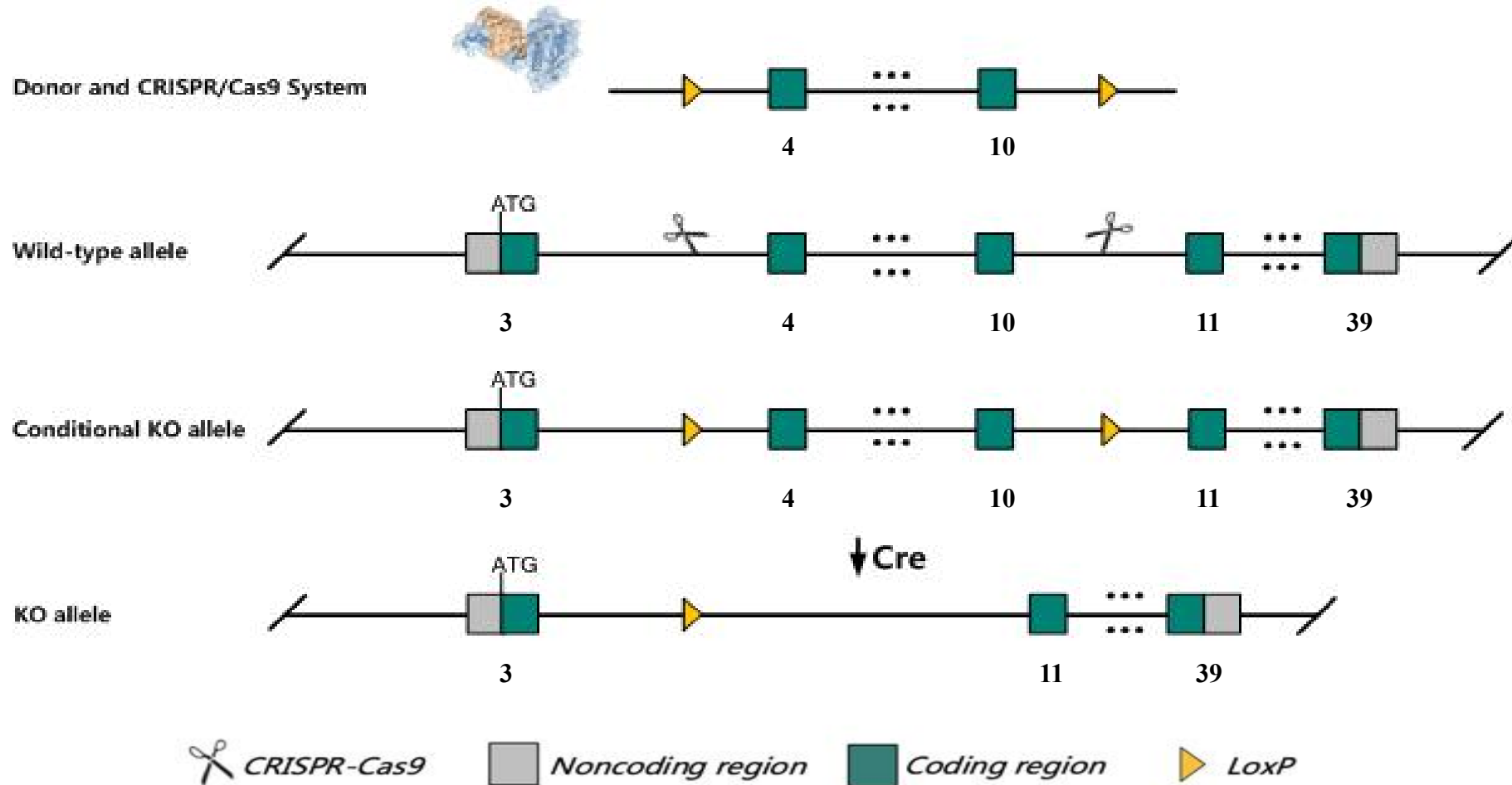
## Project Type

- Cas9-CKO

## Genetic Background

- C57BL/6JGpt

# Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Myh6* gene.

# Technical Information

- The *Myh6* gene has 7 transcripts. According to the structure of *Myh6* gene, exon4-exon10 of *Myh6*-201 (ENSMUST00000081857.14) transcript is recommended as the knockout region. The region contains 697bp coding sequence. Knocking 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 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- 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.

# Gene Information

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

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Gene ID: 17888, updated on 27-Aug-2025

### Summary

<b>Official Symbol</b>	Myh6 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	myosin, heavy polypeptide 6, cardiac muscle, alpha provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:97255</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000040752</a> <a href="#">AllianceGenome:MGI:97255</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	Myhca; Myhc-a; alphaMHC; alpha-MHC; A830009F23Rik
<b>Summary</b>	Enables microfilament motor activity. Involved in cardiac muscle contraction. Acts upstream of or within several processes, including adult heart development; regulation of heart contraction; and striated muscle cell development. Located in Z disc and stress fiber. Part of myosin complex. Is expressed in several structures, including brown fat; embryo mesenchyme; great vessel of heart; heart; and skeletal musculature. Used to study dilated cardiomyopathy; dilated cardiomyopathy 1EE; and hypertrophic cardiomyopathy 14. Human ortholog(s) of this gene implicated in atrial heart septal defect (multiple); heart conduction disease (multiple); and intrinsic cardiomyopathy (multiple). Orthologous to human MYH6 (myosin heavy chain 6). [provided by Alliance of Genome Resources, Jul 2025]
<b>Expression</b>	Restricted expression toward heart adult (RPKM 1317.1) <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

**NEW** Try the new [Gene table](#)  
Try the new [Transcript table](#)

Source: <https://www.ncbi.nlm.nih.gov/>

# Transcript Information

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

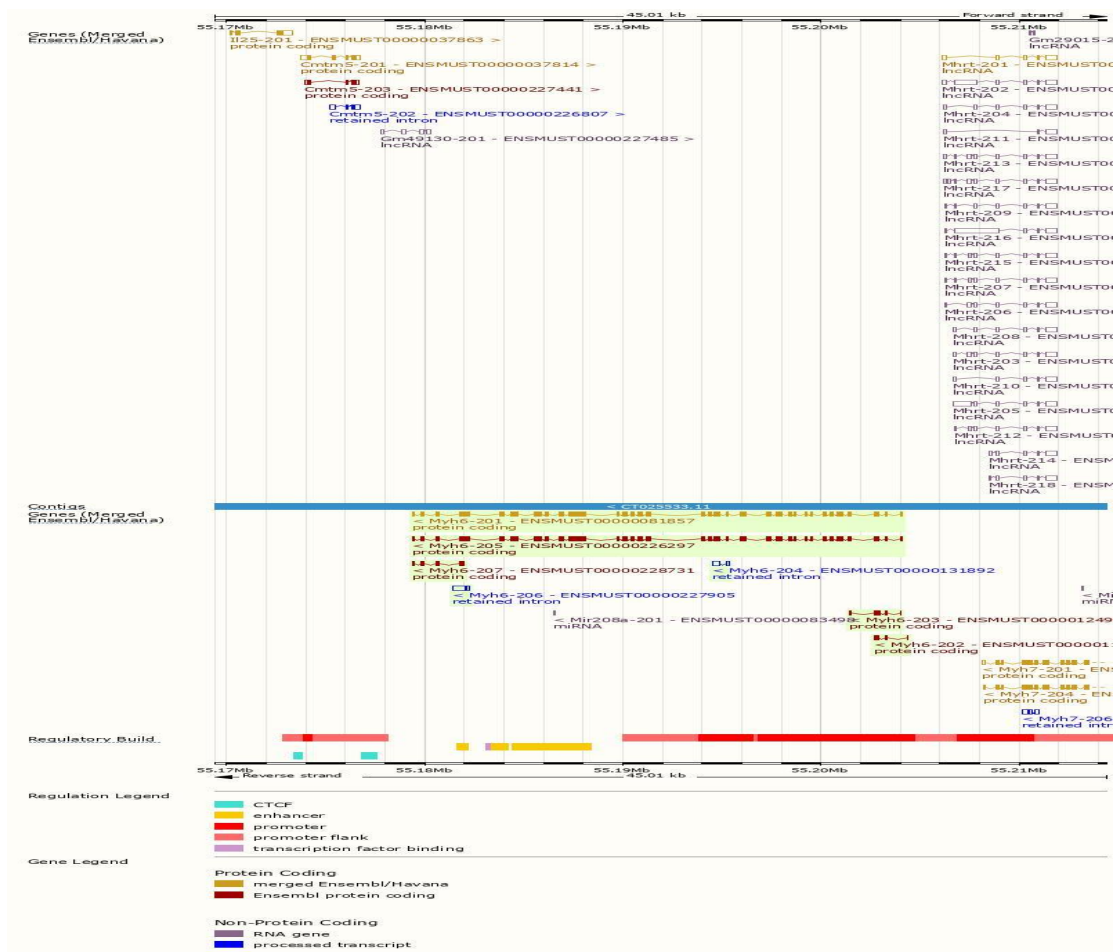
Show/hide columns (1 hidden)							Filter				
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags				
<a href="#">ENSMUST00000081857.14</a>	Myh6-201	6113	<a href="#">1938aa</a>	Protein coding	<a href="#">CCDS36927</a>	<a href="#">B2RQQ1</a> <a href="#">Q02566</a>	Ensembl Canonical	GENCODE Primary	GENCODE Basic	APPRIS P1	TSL:1
<a href="#">ENSMUST00000226297.2</a>	Myh6-205	6008	<a href="#">1938aa</a>	Protein coding	<a href="#">CCDS36927</a>	<a href="#">B2RQQ1</a> <a href="#">Q02566</a>		GENCODE Basic	APPRIS P1		
<a href="#">ENSMUST00000228731.2</a>	Myh6-207	542	<a href="#">162aa</a>	Protein coding		<a href="#">A0A2I3BPY4</a>		CDS 5' incomplete			
<a href="#">ENSMUST00000124930.8</a>	Myh6-203	411	<a href="#">94aa</a>	Protein coding		<a href="#">Q1WNP4</a>		TSL:1	CDS 3' incomplete		
<a href="#">ENSMUST00000111456.2</a>	Myh6-202	376	<a href="#">63aa</a>	Protein coding		<a href="#">B8JJH3</a>		TSL:3	CDS 3' incomplete		
<a href="#">ENSMUST00000227905.2</a>	Myh6-206	718	No protein	Retained intron		-		-			
<a href="#">ENSMUST00000131892.2</a>	Myh6-204	511	No protein	Retained intron		-		TSL:3			

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



Source: <https://www.ensembl.org>

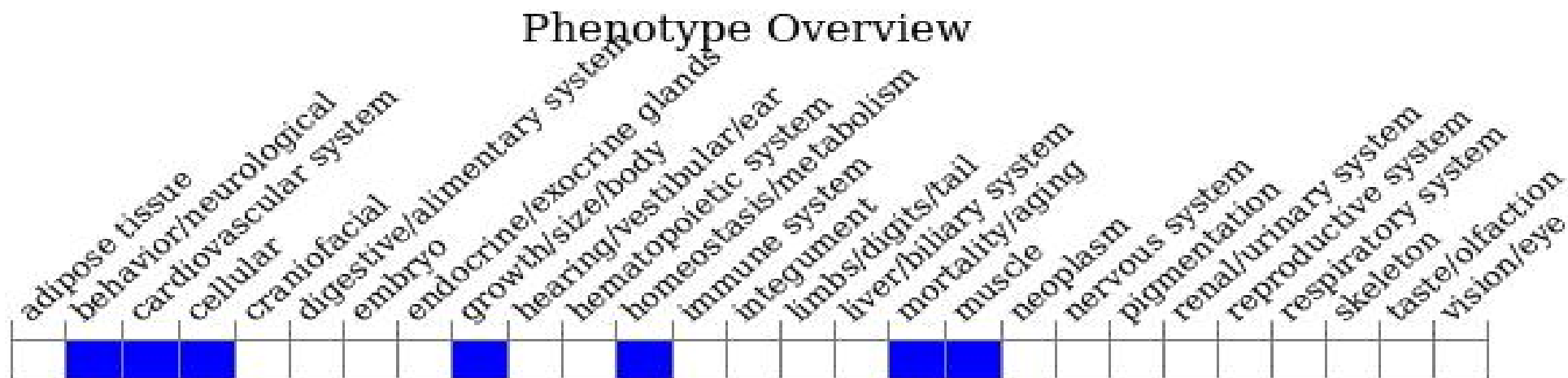
# Genomic Information



# Protein Information



# Mouse Phenotype Information (MGI)



- 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.

# Important Information

- 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.
- *Myh6* is located on Chr14. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 the existing technology level.
- One loxp will be located intron 10-11 of *Myh6-201*, and the effect is unknown.
- The 3' of the *Myh6-203* is incomplete, and its effect is unknown.
- The 3' of the *Myh6-202* is incomplete, and its effect is unknown.
- The 5' of the *Myh6-207* is incomplete, and its effect is unknown.