

Mybpc3 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Mybpc3

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mybpc3* gene. The schematic diagram is as follows:



- The *Mybpc3* gene has 3 transcripts. According to the structure of *Mybpc3* gene, exon2-exon22 of *Mybpc3-203* (ENSMUST00000169776.1) transcript is recommended as the knockout region. The region contains 2111bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mybpc3* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygotes for null or truncated mutations exhibit cardiac abnormalities such as cardiac hypertrophy, dilated cardiomyopathy, abnormal cardiac muscle contractility and relaxation, disorganized myocardium, and cardiac fibrosis.
- The *Mybpc3* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Mybpc3 myosin binding protein C, cardiac [Mus musculus (house mouse)]

Gene ID: 17868, updated on 2-Apr-2019

Summary



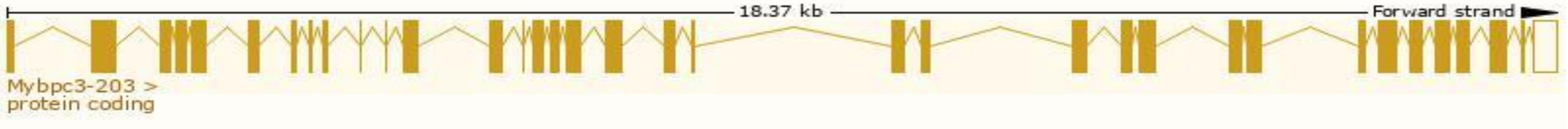
Official Symbol	Mybpc3 provided by MGI
Official Full Name	myosin binding protein C, cardiac provided by MGI
Primary source	MGI:MGI:102844
See related	Ensembl:ENSMUSG000000002100
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Restricted expression toward heart adult (RPKM 559.6) See more
Orthologs	human all

Transcript information (Ensembl)

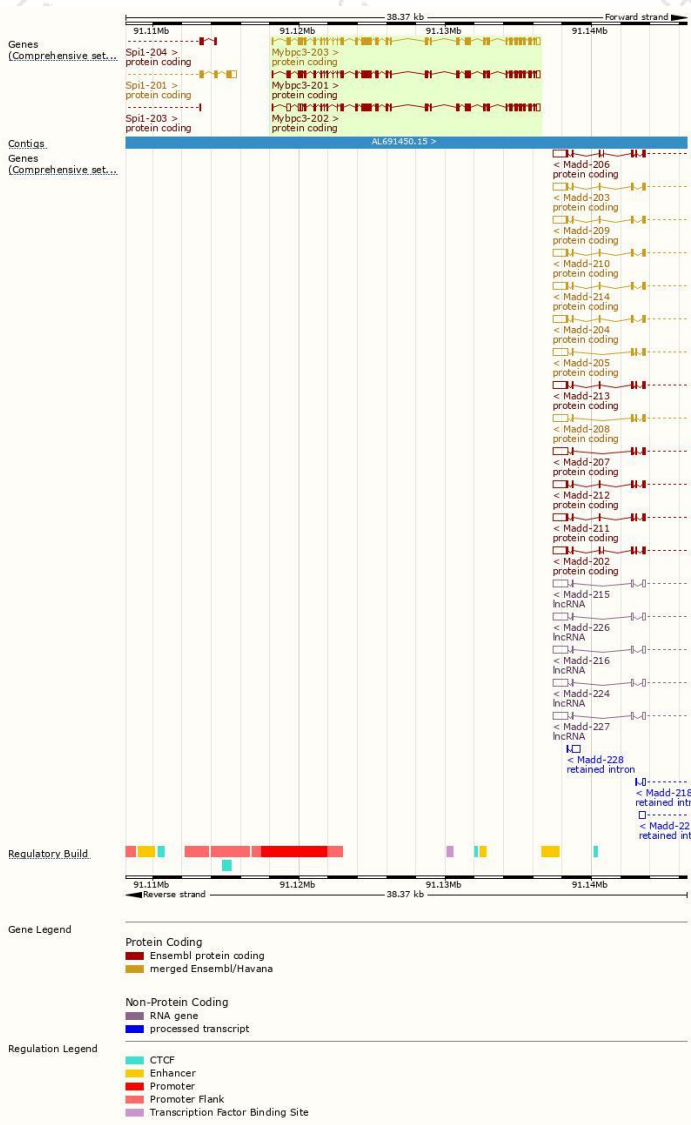
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mybpc3-203	ENSMUST00000169776.1	4163	1278aa	Protein coding	CCDS50631	Q3UIK0	TSL:5 GENCODE basic APPRIS P2
Mybpc3-201	ENSMUST00000111430.9	4154	1277aa	Protein coding	-	E9Q9T8	TSL:5 GENCODE basic APPRIS ALT2
Mybpc3-202	ENSMUST00000137942.7	4134	1113aa	Protein coding	-	Q3TF37	TSL:5 GENCODE basic APPRIS ALT2

The strategy is based on the design of *Mybpc3-203* transcript,The transcription is shown below



Genomic location distribution



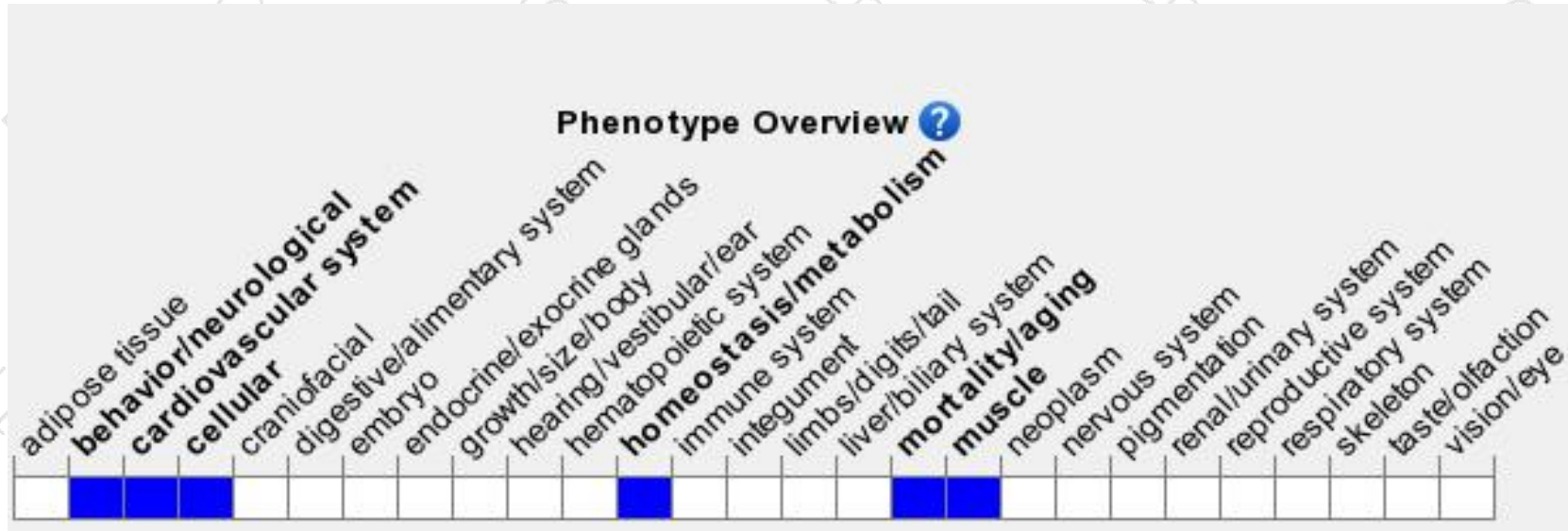
Protein domain



集萃药康
GemPharmatech



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, Homozygotes for null or truncated mutations exhibit cardiac abnormalities such as cardiac hypertrophy, dilated cardiomyopathy, abnormal cardiac muscle contractility and relaxation, disorganized myocardium, and cardiac fibrosis.

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

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