

Mybpc3-KO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

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Project Overview



Project Name

Mybpc3

Project type

KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR 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 technology to modify *Mybpc3* gene. The brief process is as follows: sgRNA was transcribed in vitro. sgRNA was microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- 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



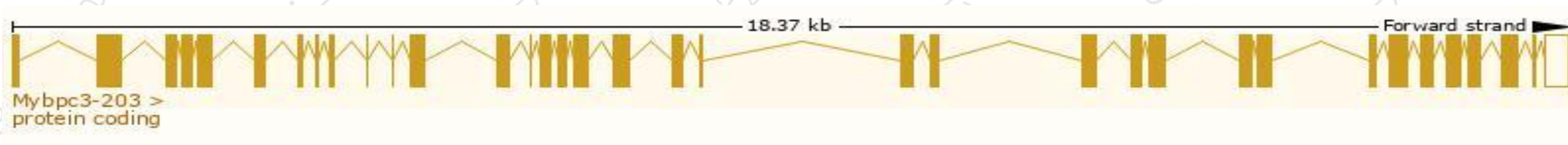
| | |
|---------------------------|---|
| Official Symbol | Mybpc3 provided by MGI |
| Official Full Name | myosin binding protein C, cardiac provided by MGI |
| Primary source | MGI:MGI:102844 |
| See related | Ensembl:ENSMUSG00000002100 |
| Gene type | protein coding |
| RefSeq status | VALIDATED |
| 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)

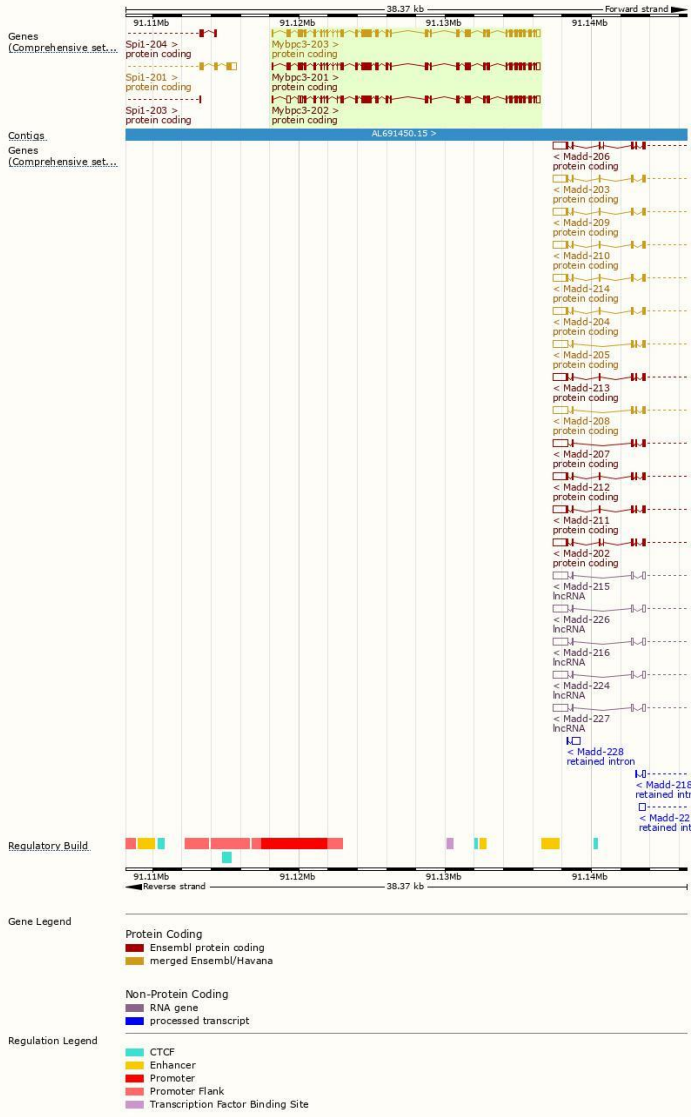
The gene has 3 transcripts, all transcripts are shown below:

| 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



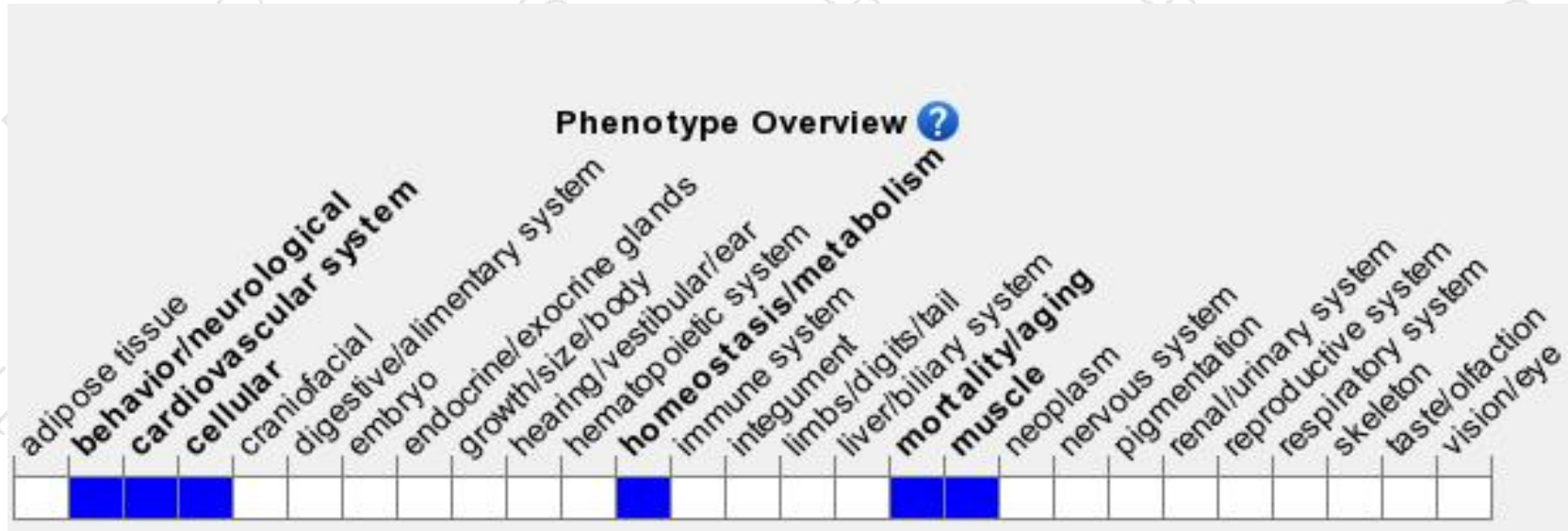
Genomic location distribution



Protein domain



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.

Tel: 025-5864 1534

