

Pdpk1 Cas9-KO Strategy

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Project Overview

Project Name

Pdpk1

Project type

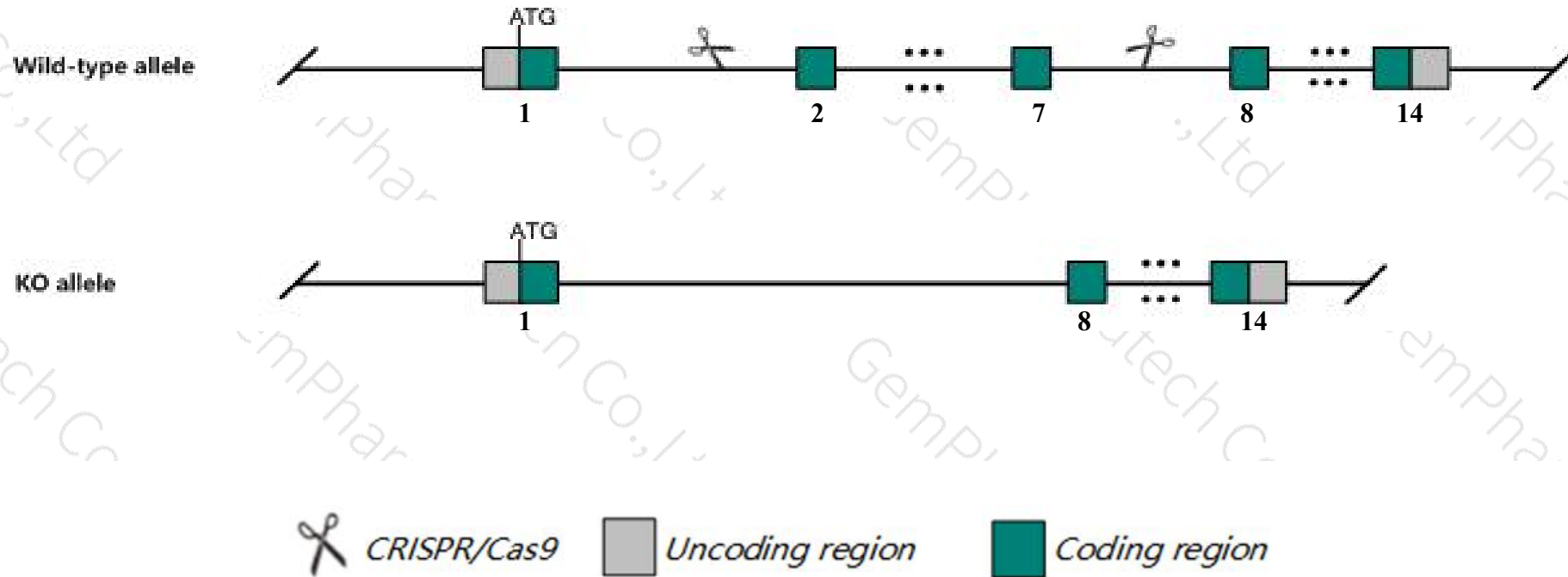
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pdpk1* gene. The schematic diagram is as follows:



- The *Pdpr1* gene has 11 transcripts. According to the structure of *Pdpr1* gene, exon2-exon7 of *Pdpr1-202* (ENSMUST00000102927.9) transcript is recommended as the knockout region. The region contains 770bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pdpr1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutant mice exhibit embryogenesis defects, impaired forebrain development, and die by mid gestation. Cardiac muscle-specific conditional mutants exhibit thin ventricular walls and die of heart failure.
- The *Pdpk1* gene is located on the Chr17. 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)

Pdpk1 3-phosphoinositide dependent protein kinase 1 [Mus musculus (house mouse)]

Gene ID: 18607, updated on 4-Apr-2019

Summary



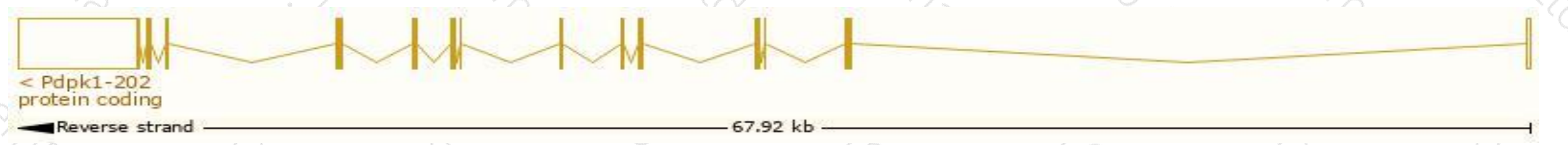
Official Symbol	Pdpk1 provided by MGI
Official Full Name	3-phosphoinositide dependent protein kinase 1 provided by MGI
Primary source	MGI:MGI:1338068
See related	Ensembl:ENSMUSG000000024122
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Pdk1
Expression	Ubiquitous expression in testis adult (RPKM 17.0), thymus adult (RPKM 9.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

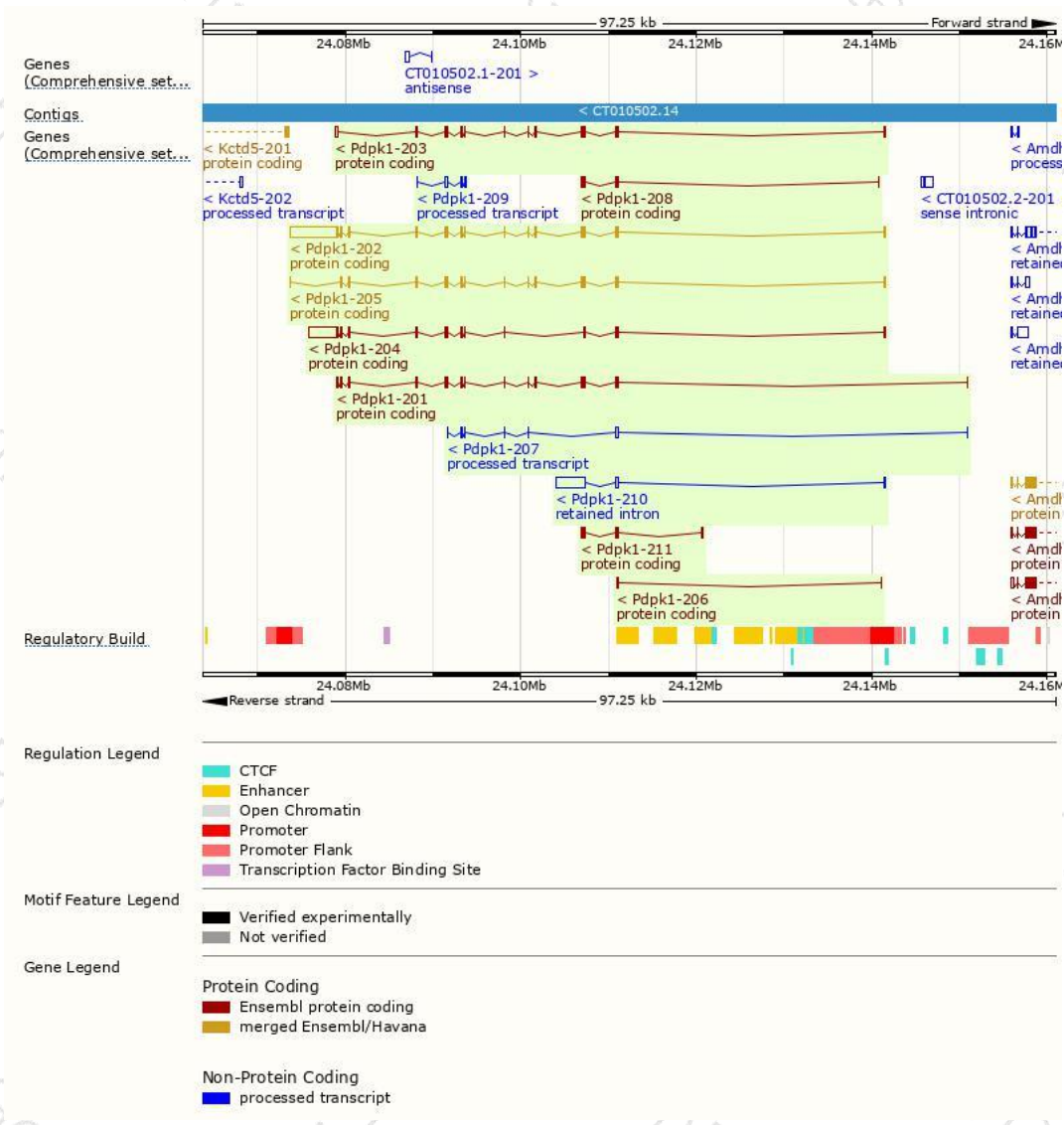
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pdpk1-202	ENSMUST00000102927.9	7161	559aa	Protein coding	CCDS28474	Q9Z2A0	TSL:1 GENCODE basic APPRIS P3
Pdpk1-201	ENSMUST00000052462.12	1832	532aa	Protein coding	CCDS70767	F2Z3X6	TSL:1 GENCODE basic APPRIS ALT2
Pdpk1-205	ENSMUST00000115411.7	1724	522aa	Protein coding	CCDS37483	Q3TRL2	TSL:1 GENCODE basic
Pdpk1-204	ENSMUST00000115409.8	4623	432aa	Protein coding	-	F2Z3Z9	TSL:5 GENCODE basic
Pdpk1-203	ENSMUST00000115407.8	1730	457aa	Protein coding	-	F2Z400	TSL:5 GENCODE basic
Pdpk1-211	ENSMUST00000154982.1	652	111aa	Protein coding	-	F2Z3V6	CDS 3' incomplete TSL:2
Pdpk1-208	ENSMUST00000144533.7	505	128aa	Protein coding	-	F2Z4A5	CDS 3' incomplete TSL:2
Pdpk1-206	ENSMUST00000128997.1	328	56aa	Protein coding	-	F2Z3X9	CDS 3' incomplete TSL:2
Pdpk1-210	ENSMUST00000150578.1	3652	No protein	Retained intron	-	-	TSL:2
Pdpk1-207	ENSMUST00000140906.7	691	No protein	lncRNA	-	-	TSL:5
Pdpk1-209	ENSMUST00000147199.7	571	No protein	lncRNA	-	-	TSL:3

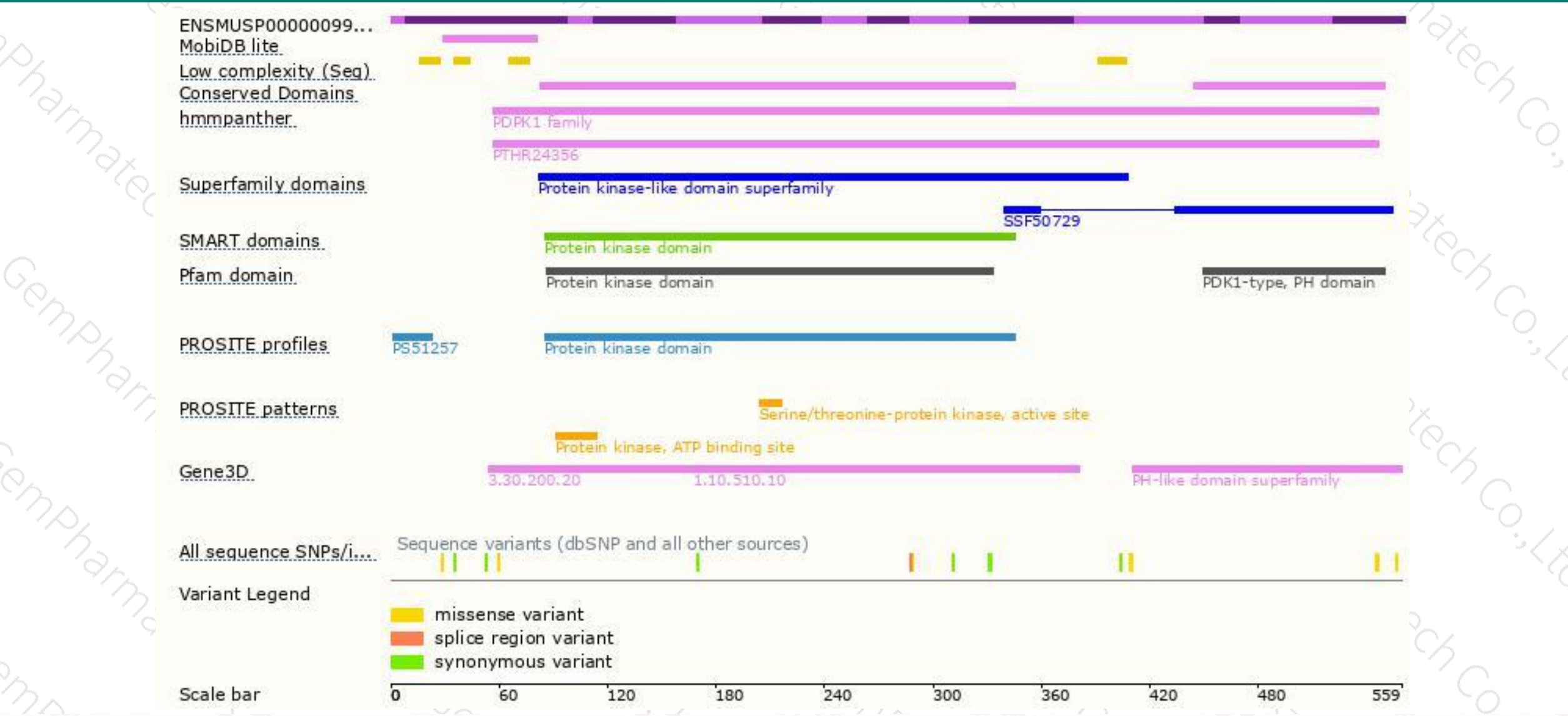
The strategy is based on the design of *Pdpk1-202* transcript,The transcription is shown below



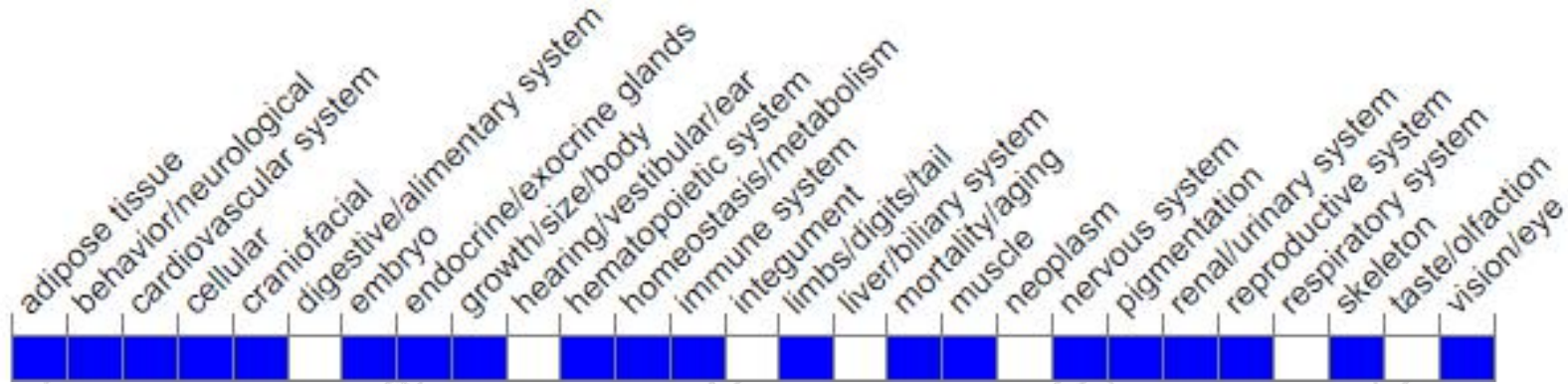
Genomic location distribution



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, Homozygous mutant mice exhibit embryogenesis defects, impaired forebrain development, and die by mid gestation. Cardiac muscle-specific conditional mutants exhibit thin ventricular walls and die of heart failure.

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

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