

***Lats2* Cas9-CKO Strategy**

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Project Overview

Project Name

Lats2

Project type

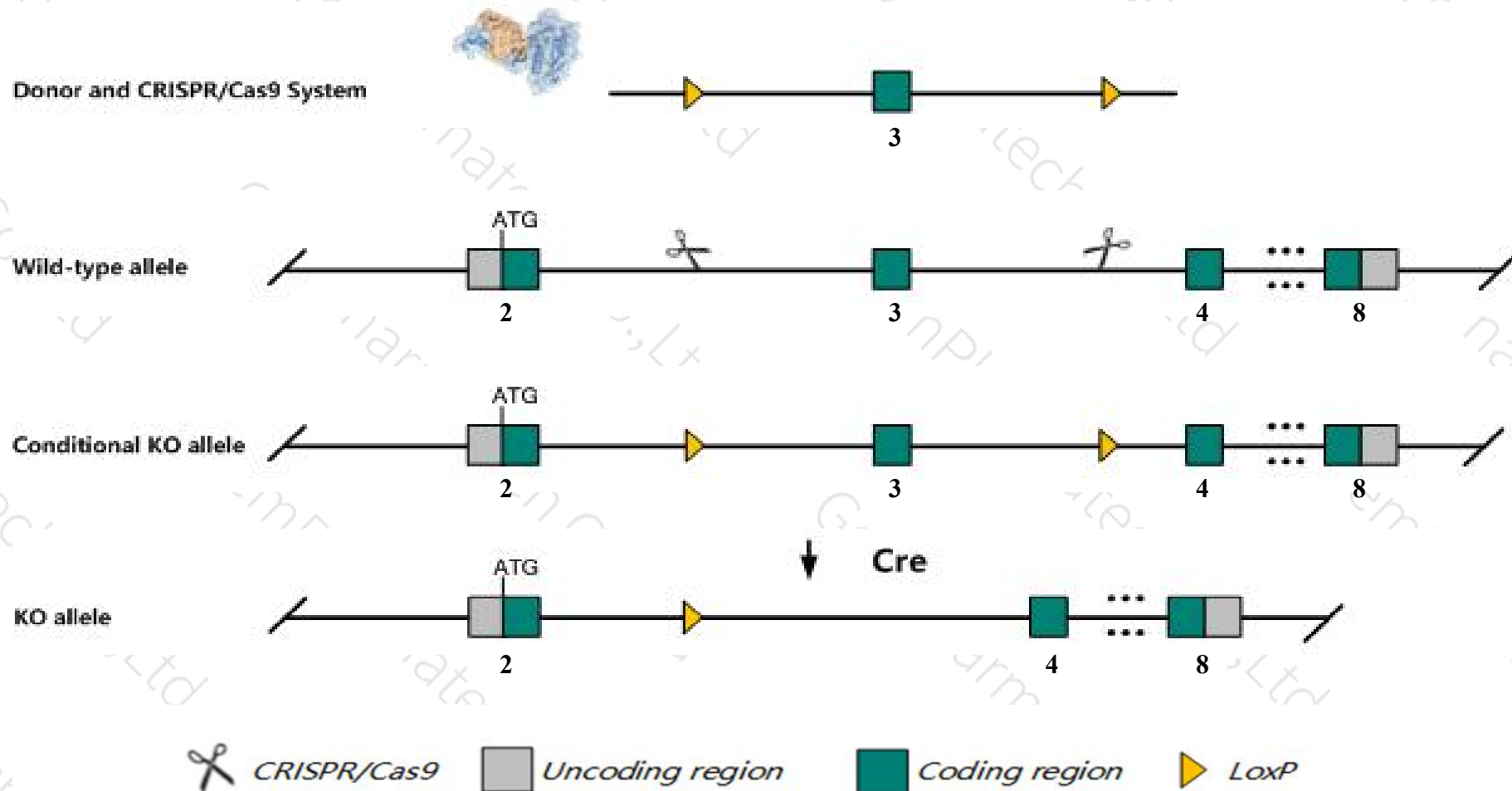
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lats2* gene. The schematic diagram is as follows:



Technical routes

- The *Lats2* gene has 9 transcripts. According to the structure of *Lats2* gene, exon3 of *Lats2-201* (ENSMUST00000022531.13) transcript is recommended as the knockout region. The region contains 133bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Lats2* 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 sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- 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.

- According to the existing MGI data, Homozygous null mice display embryonic lethality with decreased cell proliferation, chromosomal instability, atrial hyperplasia, ventricular hypoplasia, delayed embryonic development, an irregular kinked neural tube, and hemorrhages.
- The *Lats2* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Lats2 large tumor suppressor 2 [Mus musculus (house mouse)]

Gene ID: 50523, updated on 9-Apr-2019

Summary



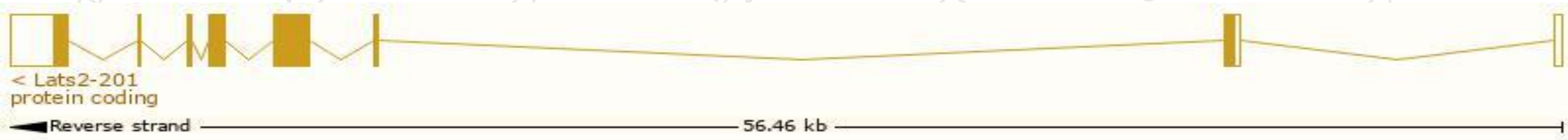
Official Symbol	Lats2 provided by MGI
Official Full Name	large tumor suppressor 2 provided by MGI
Primary source	MGI:MGI:1354386
See related	Ensembl:ENSMUSG000000021959
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4932411G09Rik, AV277261, AW228608
Expression	Ubiquitous expression in testis adult (RPKM 26.6), lung adult (RPKM 25.8) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

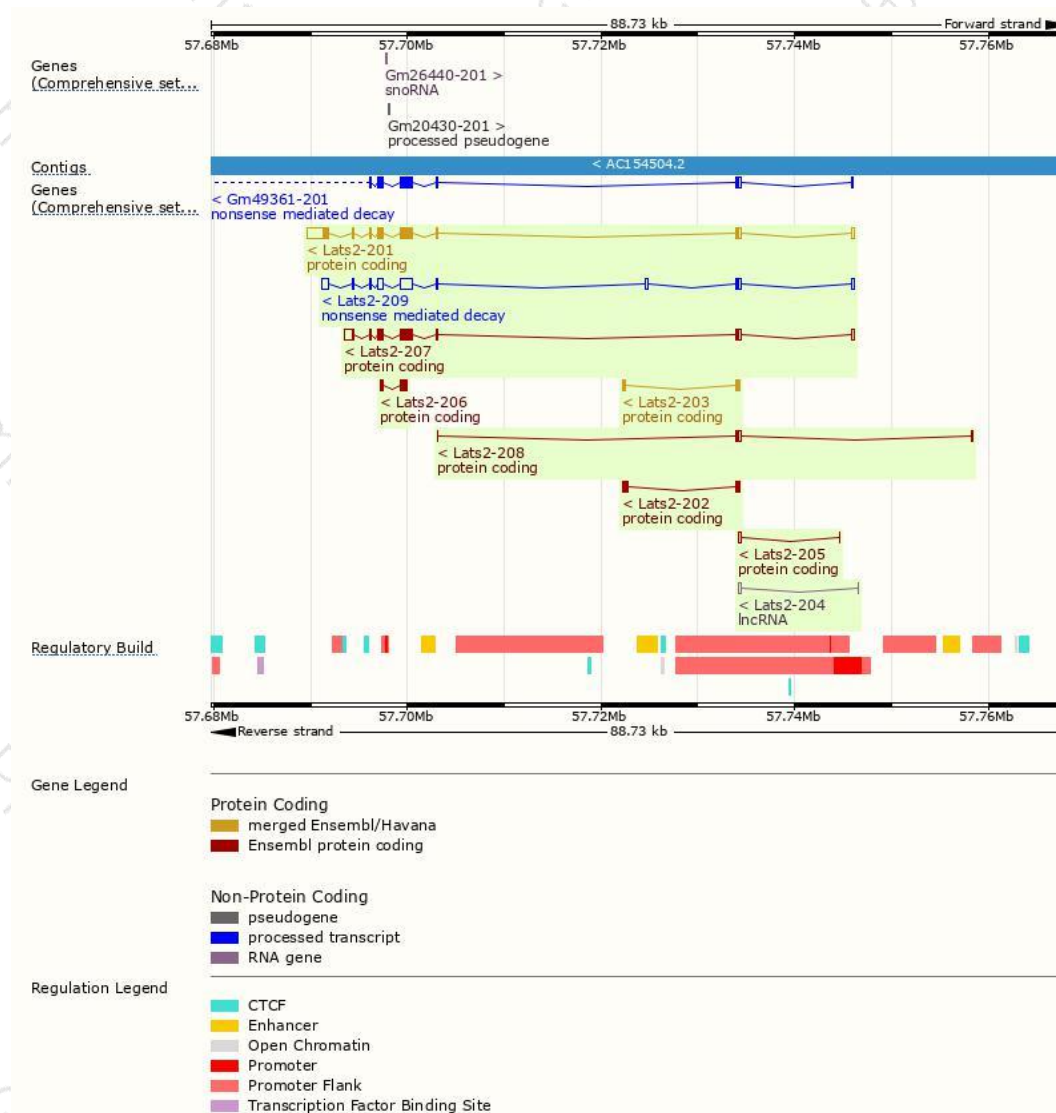
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lats2-201	ENSMUST00000022531.13	5191	1042aa	Protein coding	CCDS27158	Q7TSJ6	TSL:1 GENCODE basic APPRIS P1
Lats2-203	ENSMUST00000077981.6	786	176aa	Protein coding	CCDS49508	Q8VHE2	TSL:1 GENCODE basic
Lats2-207	ENSMUST00000173990.7	3834	895aa	Protein coding	-	G3UY78	TSL:1 GENCODE basic
Lats2-202	ENSMUST00000038381.13	933	225aa	Protein coding	-	Q8VHE1	TSL:1 GENCODE basic
Lats2-206	ENSMUST00000173964.1	866	288aa	Protein coding	-	G3UYM3	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Lats2-208	ENSMUST00000174166.1	681	114aa	Protein coding	-	G3UWQ0	CDS 3' incomplete TSL:5
Lats2-205	ENSMUST00000173732.1	302	12aa	Protein coding	-	G3UXX1	CDS 3' incomplete TSL:3
Lats2-209	ENSMUST00000174213.7	4001	119aa	Nonsense mediated decay	-	G3UZ29	TSL:1
Lats2-204	ENSMUST00000173077.1	219	No protein	lncRNA	-	-	TSL:5

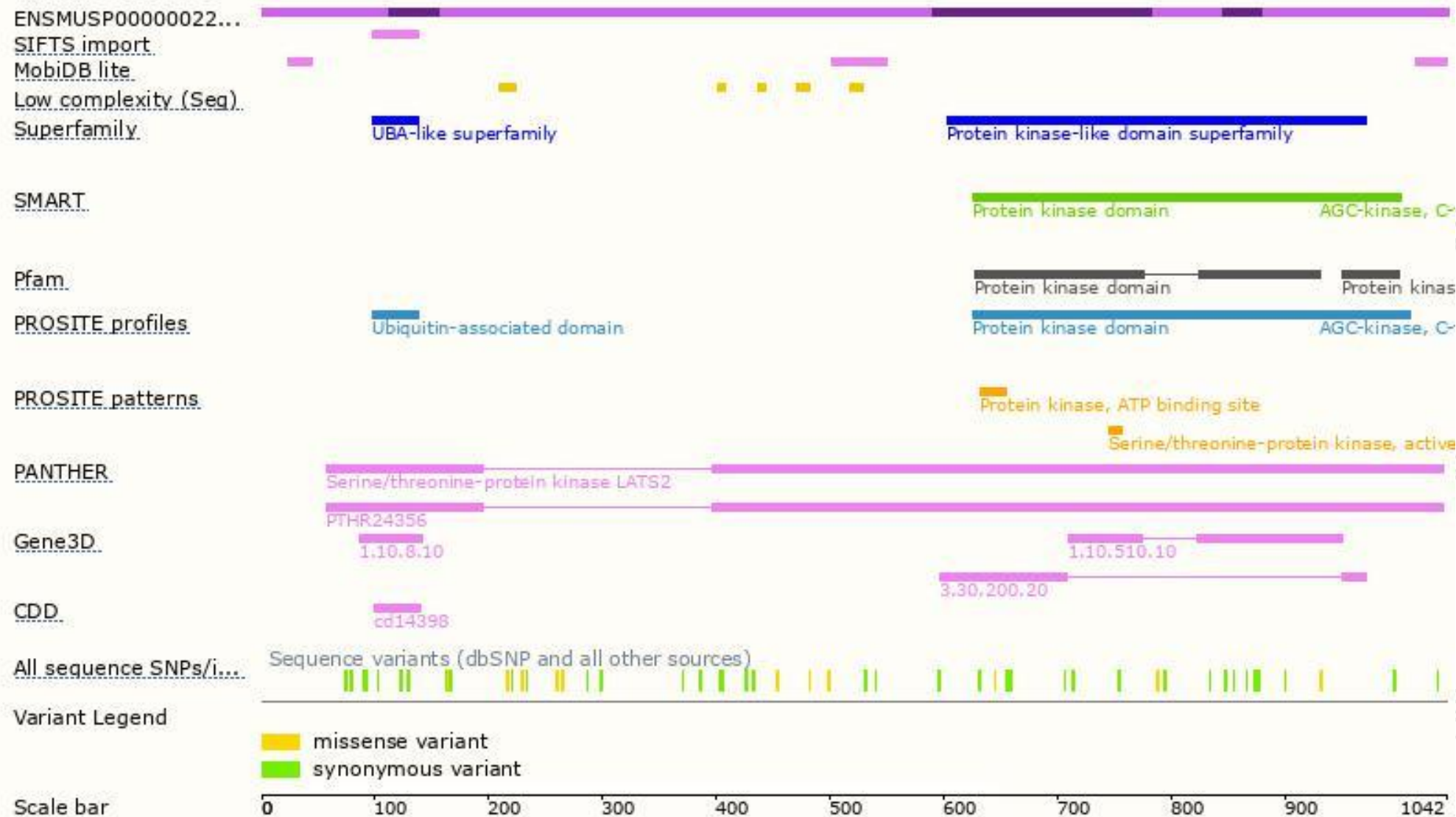
The strategy is based on the design of *Lats2-201* transcript,The transcription is shown below



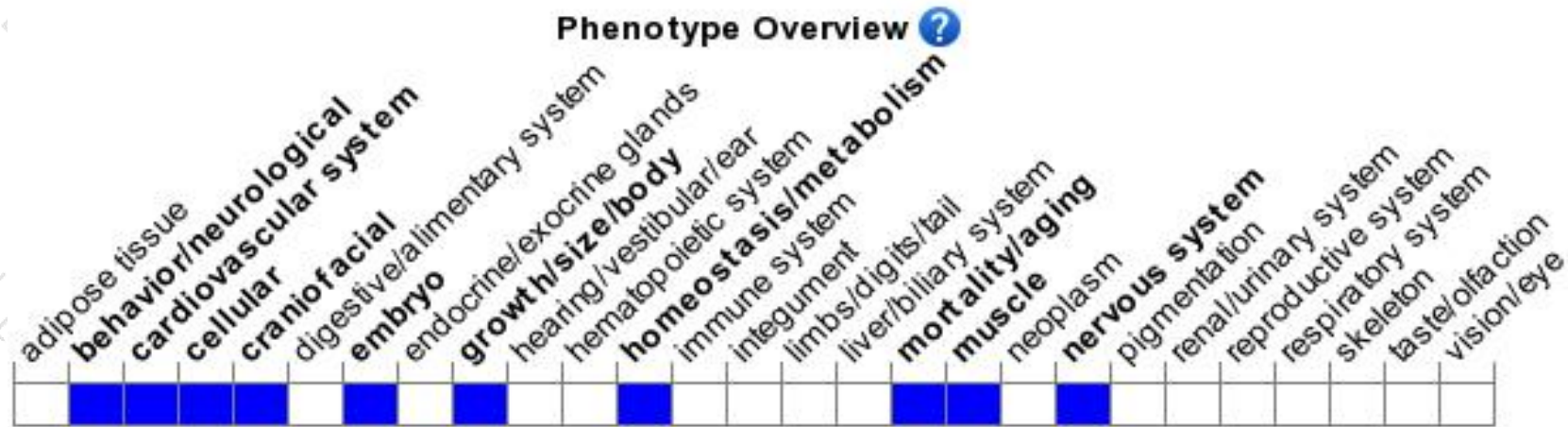
Genomic location distribution



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, Homozygous null mice display embryonic lethality with decreased cell proliferation, chromosomal instability, atrial hyperplasia, ventricular hypoplasia, delayed embryonic development, an irregular neural tube, and hemorrhages.

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

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