

Panx1 Cas9-CKO Strategy

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Project Overview

Project Name

Panx1

Project type

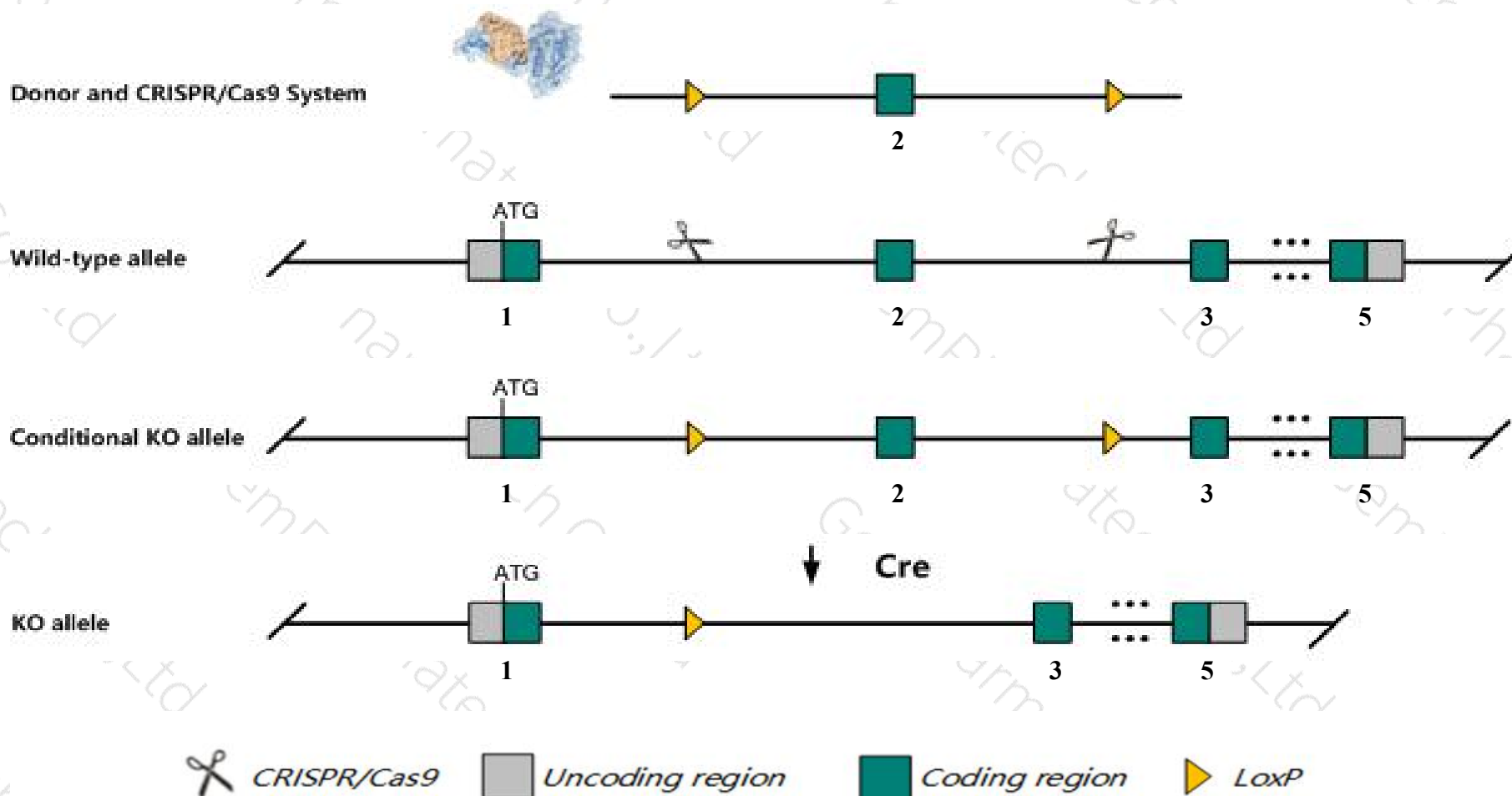
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Panx1* gene. The schematic diagram is as follows:



- The *Panx1* gene has 4 transcripts. According to the structure of *Panx1* gene, exon2 of *Panx1*-202 (ENSMUST00000164273.8) transcript is recommended as the knockout region. The region contains 140bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Panx1* 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, mice homozygous for a knock-out allele exhibit impaired macrophage recruitment, yo-pro-1 dye uptake, atp release by apoptotic thymocytes, hippocampal neurons, and astrocytes. mice homozygous for a different knock-out allele exhibit protection from i/r-induced retinal ganglion cell loss.
- The *Panx1* gene is located on the Chr9. 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)

Panx1 pannexin 1 [Mus musculus (house mouse)]

Gene ID: 55991, updated on 25-Mar-2019

Summary



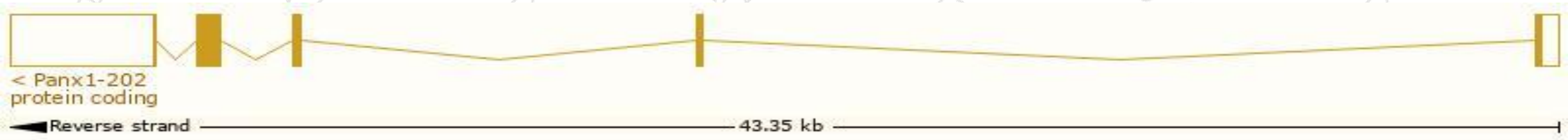
Official Symbol	Panx1 provided by MGI
Official Full Name	pannexin 1 provided by MGI
Primary source	MGI:MGI:1860055
See related	Ensembl:ENSMUSG00000031934
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI847747
Expression	Broad expression in whole brain E14.5 (RPKM 36.0), CNS E18 (RPKM 33.5) and 20 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

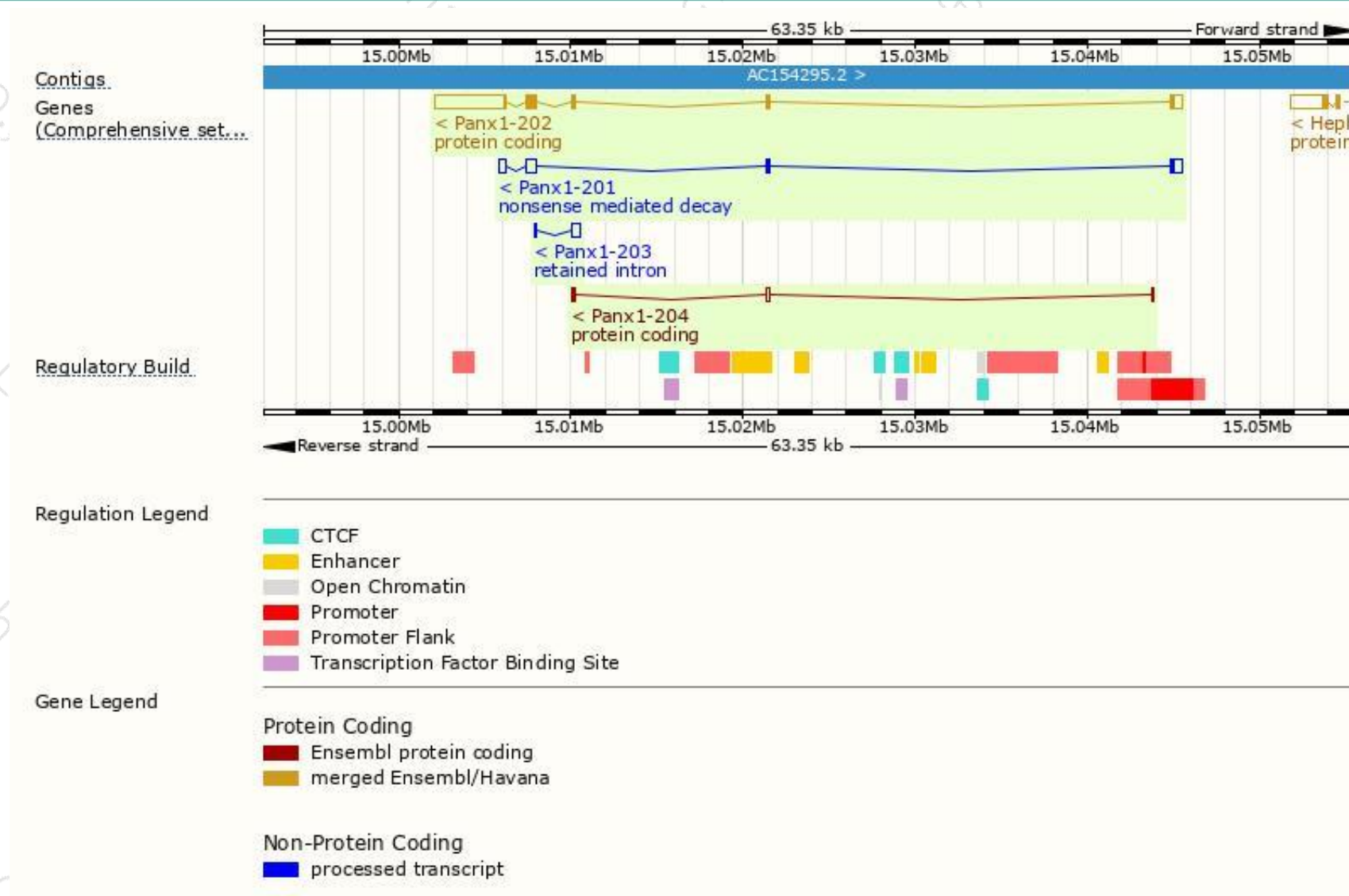
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Panx1-202	ENSMUST00000164273.8	5732	426aa	Protein coding	CCDS22832	Q9JIP4	TSL:1 GENCODE basic APPRIS P1
Panx1-204	ENSMUST00000169288.1	357	22aa	Protein coding	-	E9PY07	CDS 3' incomplete TSL:3
Panx1-201	ENSMUST00000056755.7	1854	112aa	Nonsense mediated decay	-	B1PL19	TSL:1
Panx1-203	ENSMUST00000166933.1	575	No protein	Retained intron	-	-	TSL:1

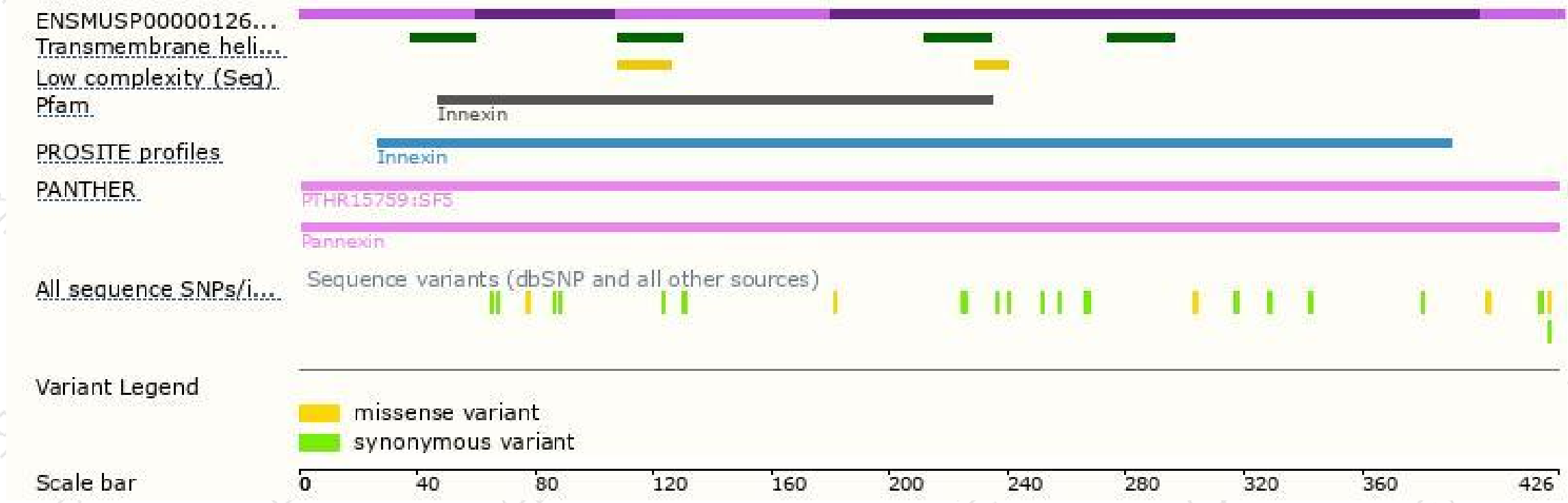
The strategy is based on the design of *Panx1-202* transcript,the transcription is shown below:



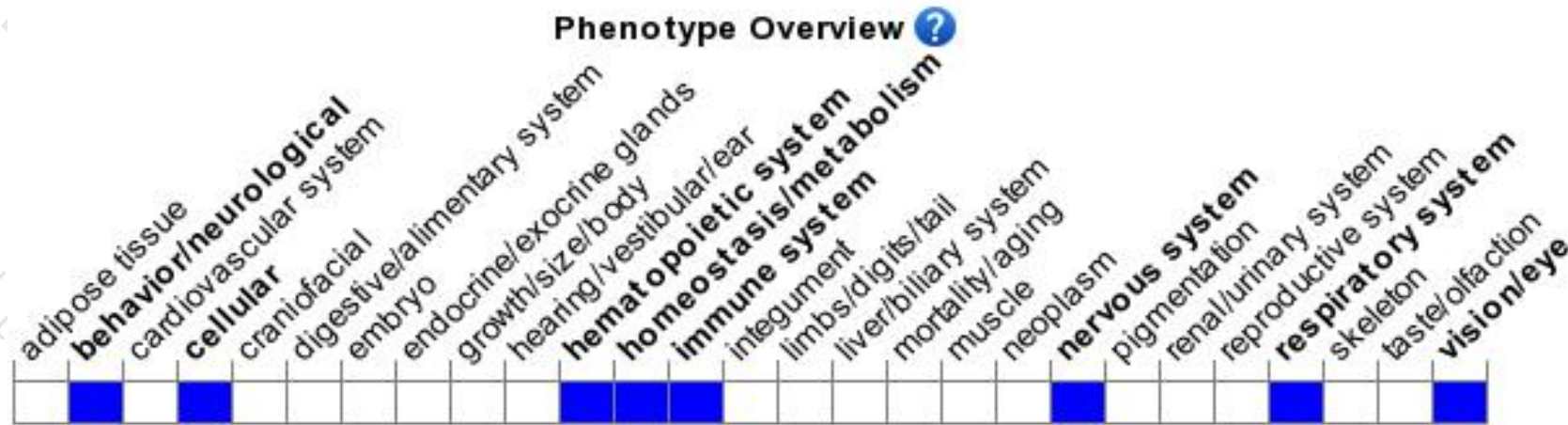
Genomic location distribution



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, mice homozygous for a knock-out allele exhibit impaired macrophage recruitment, YO-PRO-1 dye uptake, ATP release by apoptotic thymocytes, hippocampal neurons, and astrocytes. Mice homozygous for a different knock-out allele exhibit protection from I/R-induced retinal ganglion cell loss.

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

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