

***Mapkbp1* Cas9-CKO Strategy**

Designer: Xueting Zhang

Reviewer: Daohua Xu

Design Date: 2020-9-9

Project Overview

Project Name

Mapkbp1

Project type

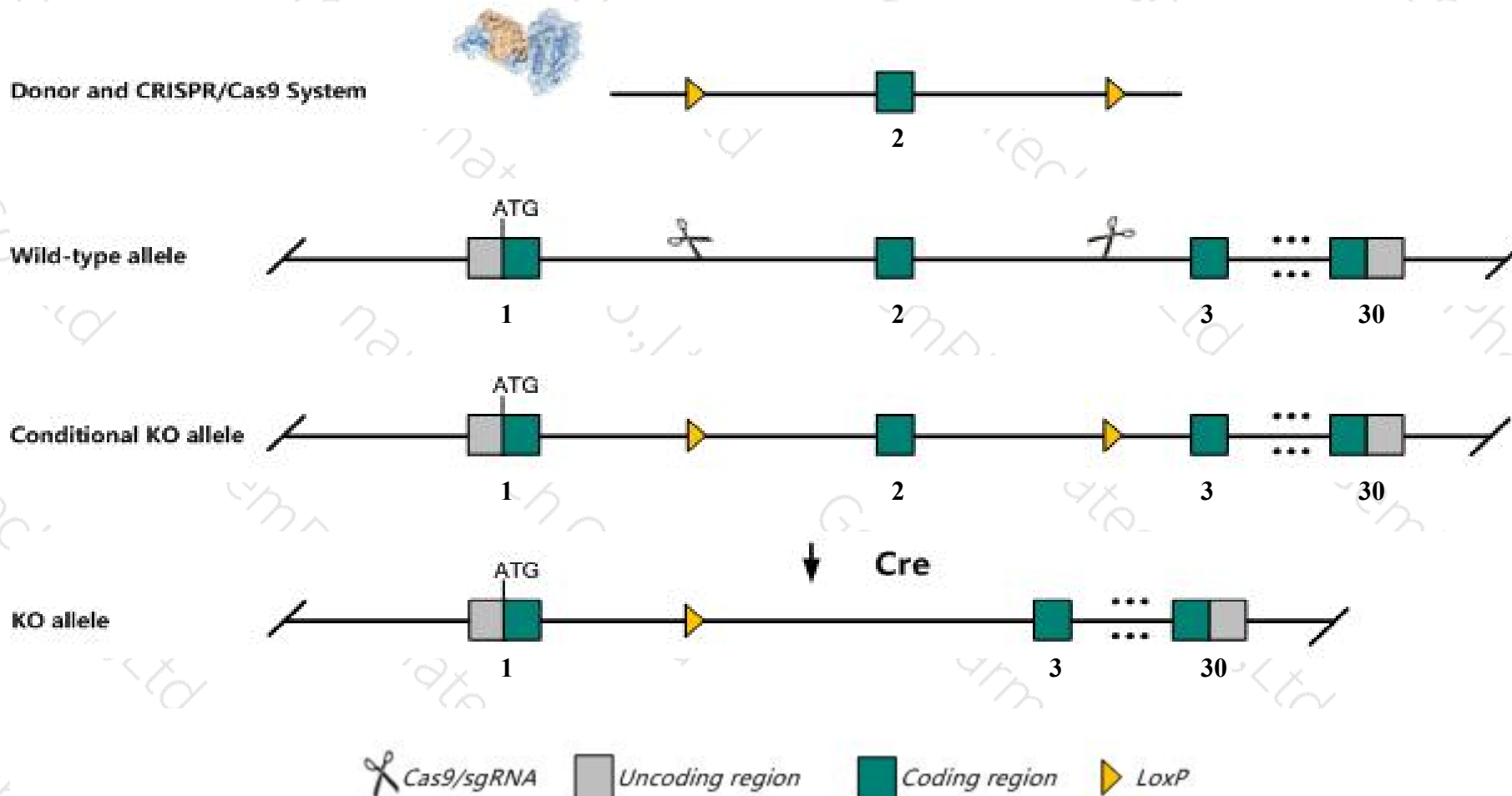
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mapkbp1* gene. The schematic diagram is as follows:



Technical routes

- The *Mapkbp1* gene has 5 transcripts. According to the structure of *Mapkbp1* gene, exon2 of *Mapkbp1*-201(ENSMUST00000066058.7) transcript is recommended as the knockout region. The region contains 92bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mapkbp1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

Notice

- The *Mapkbp1* 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.
- Transcript *Mapkbp1*-202&203&204 may not be affected.
- 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)

Mapkbp1 mitogen-activated protein kinase binding protein 1 [Mus musculus (house mouse)]

Gene ID: 26390, updated on 13-Mar-2020

Summary



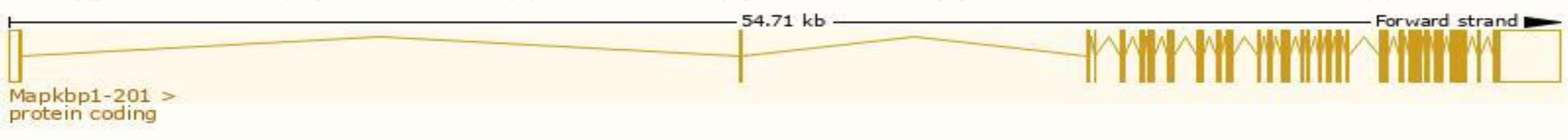
Official Symbol	Mapkbp1 provided by MGI
Official Full Name	mitogen-activated protein kinase binding protein 1 provided by MGI
Primary source	MGI:MGI:1347004
See related	Ensembl:ENSMUSG00000033902
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2810483F24Rik, AW123212, JNKBP-1, Jnkbp1, mKIAA0596
Expression	Ubiquitous expression in testis adult (RPKM 18.0), lung adult (RPKM 10.0) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

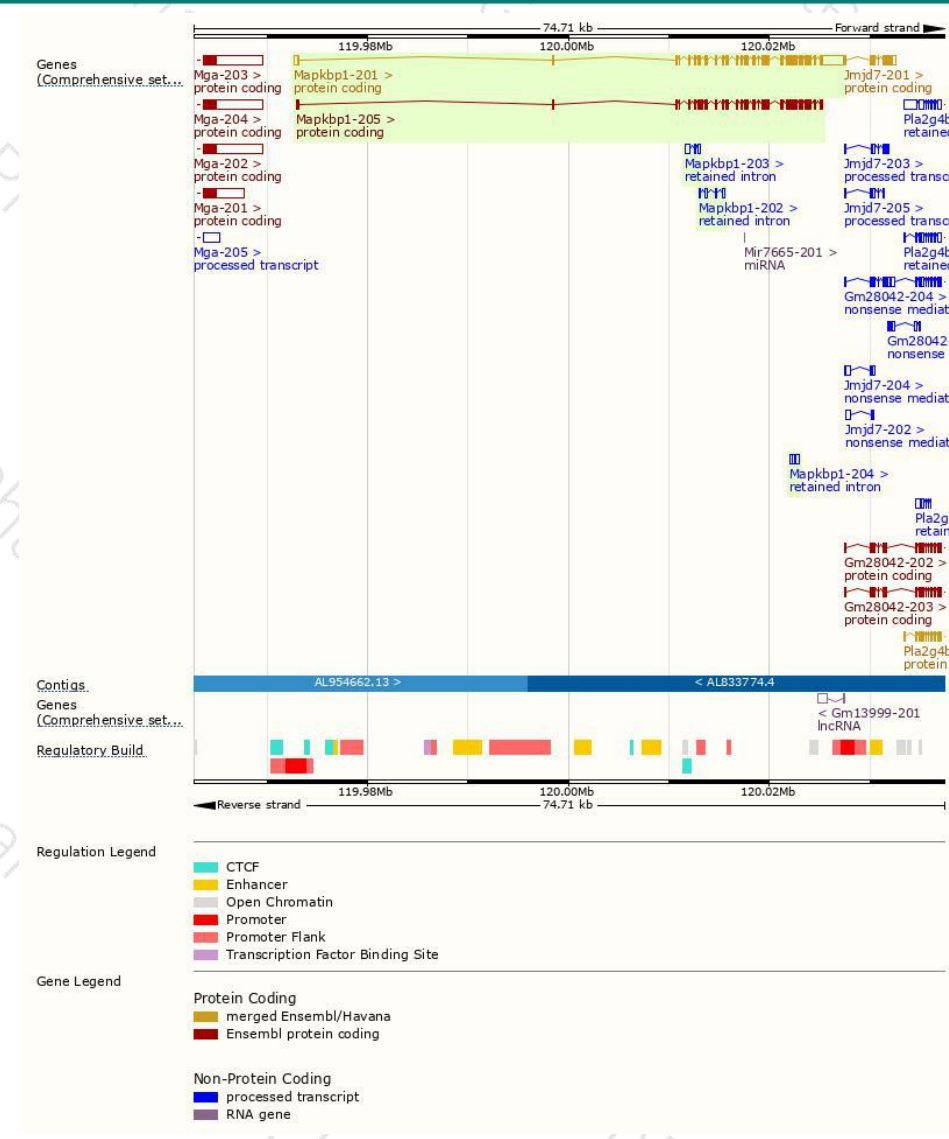
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mapkbp1-201	ENSMUST00000066058.7	6942	1503aa	Protein coding	CCDS16612	A0A0A0MQA2	TSL:1 GENCODE basic APPRIS P2
Mapkbp1-205	ENSMUST00000229024.1	4687	1509aa	Protein coding	-	A0A2R8VK23	GENCODE basic APPRIS ALT2
Mapkbp1-203	ENSMUST00000137760.1	738	No protein	Retained intron	-	-	TSL:3
Mapkbp1-204	ENSMUST00000148161.1	709	No protein	Retained intron	-	-	TSL:5
Mapkbp1-202	ENSMUST00000128077.1	666	No protein	Retained intron	-	-	TSL:3

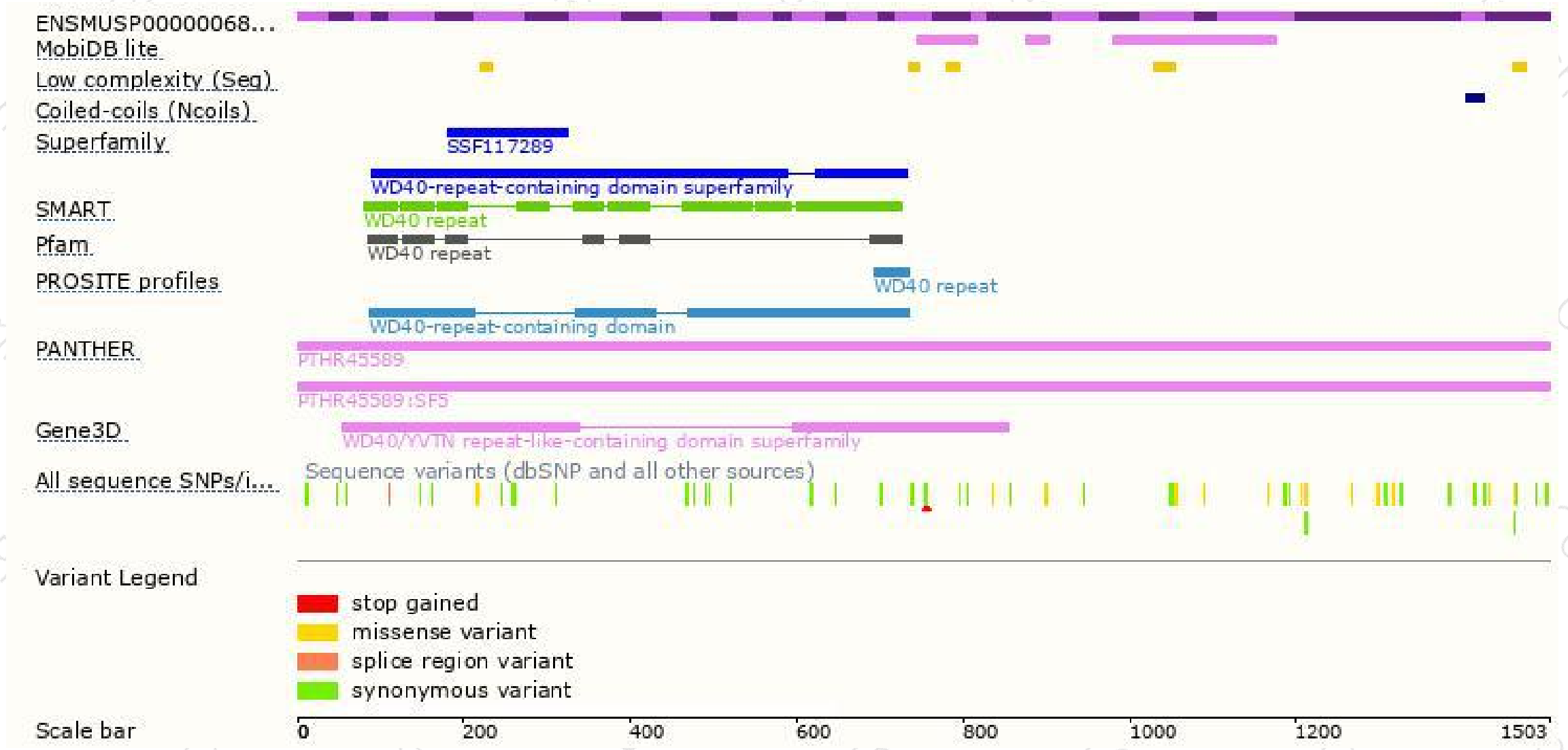
The strategy is based on the design of *Mapkbp1-201* transcript,the transcription is shown below:



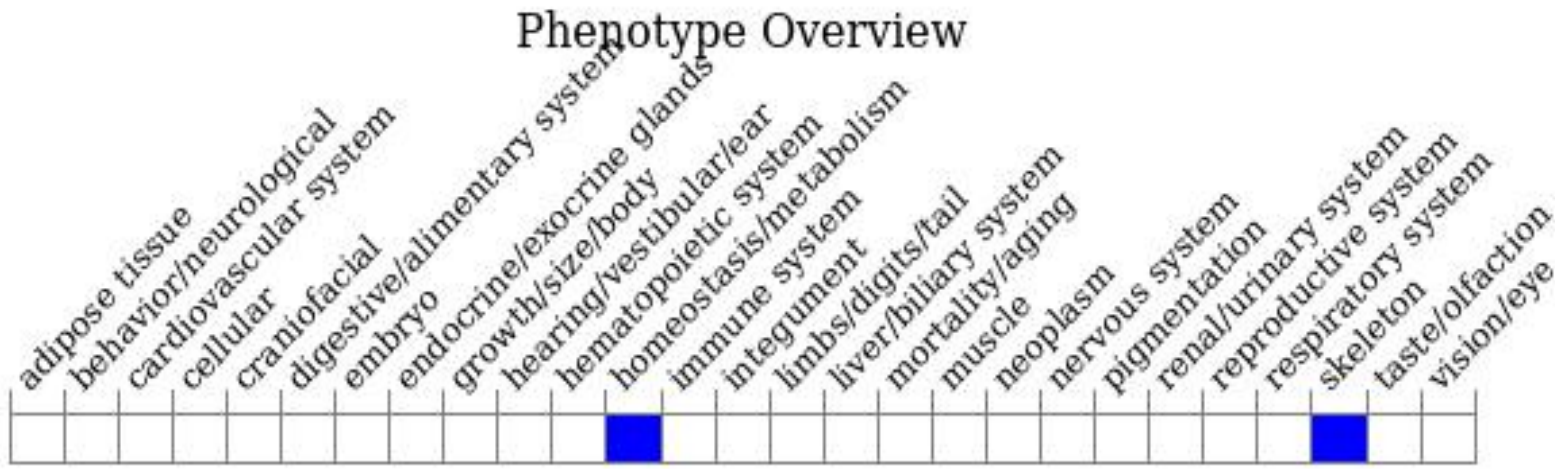
Genomic location distribution



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/>).

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

Tel: 025-5864 1534

