Ptpn13 Cas9-CKO Strategy

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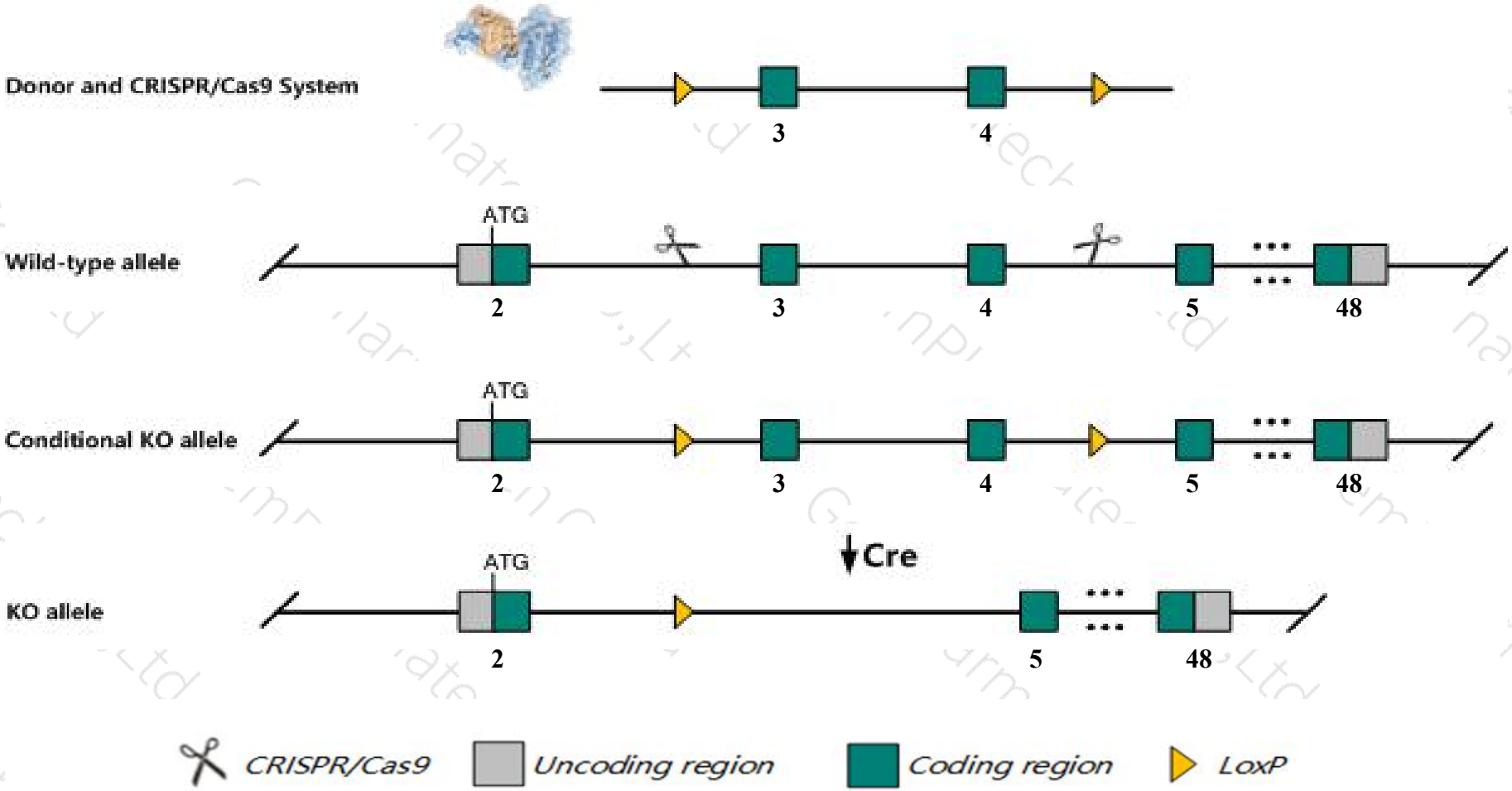
Project Overview

Project Name	***Ptpn13***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptpn13* gene. The schematic diagram is as follows:



Technical routes

- The *Ptpn13* gene has 5 transcripts. According to the structure of *Ptpn13* gene, exon3-exon4 of *Ptpn13-201* (ENSMUST00000048957.10) transcript is recommended as the knockout region.The region contains 245bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ptpn13* 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.

Notice

- According to the existing MGI data,Mice homozygous for a null allele exhibit abnormal T-helper cell differentiation.

- The *Ptpn13* gene is located on the Chr5. 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）

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Ptpn13 protein tyrosine phosphatase, non-receptor type 13 [Mus musculus (house mouse)]

Gene ID: 19249, updated on 3-Feb-2019

Summary

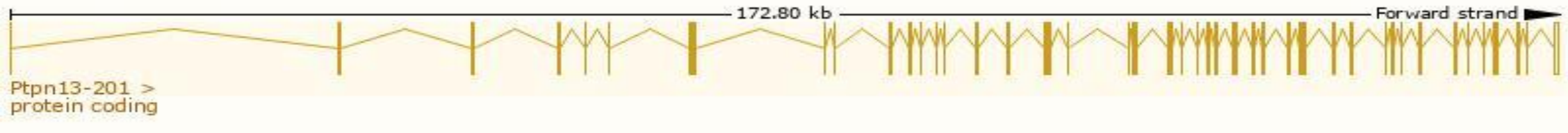
Official Symbol	Ptpn13 provided by MGI
Official Full Name	protein tyrosine phosphatase, non-receptor type 13 provided by MGI
Primary source	MGI:MGI:103293
See related	Ensembl:ENSMUSG00000034573
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI324989, PTP-BL, PTPL1, Ptpri, RIP
Expression	Broad expression in bladder adult (RPKM 15.0), ovary adult (RPKM 11.2) and 21 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

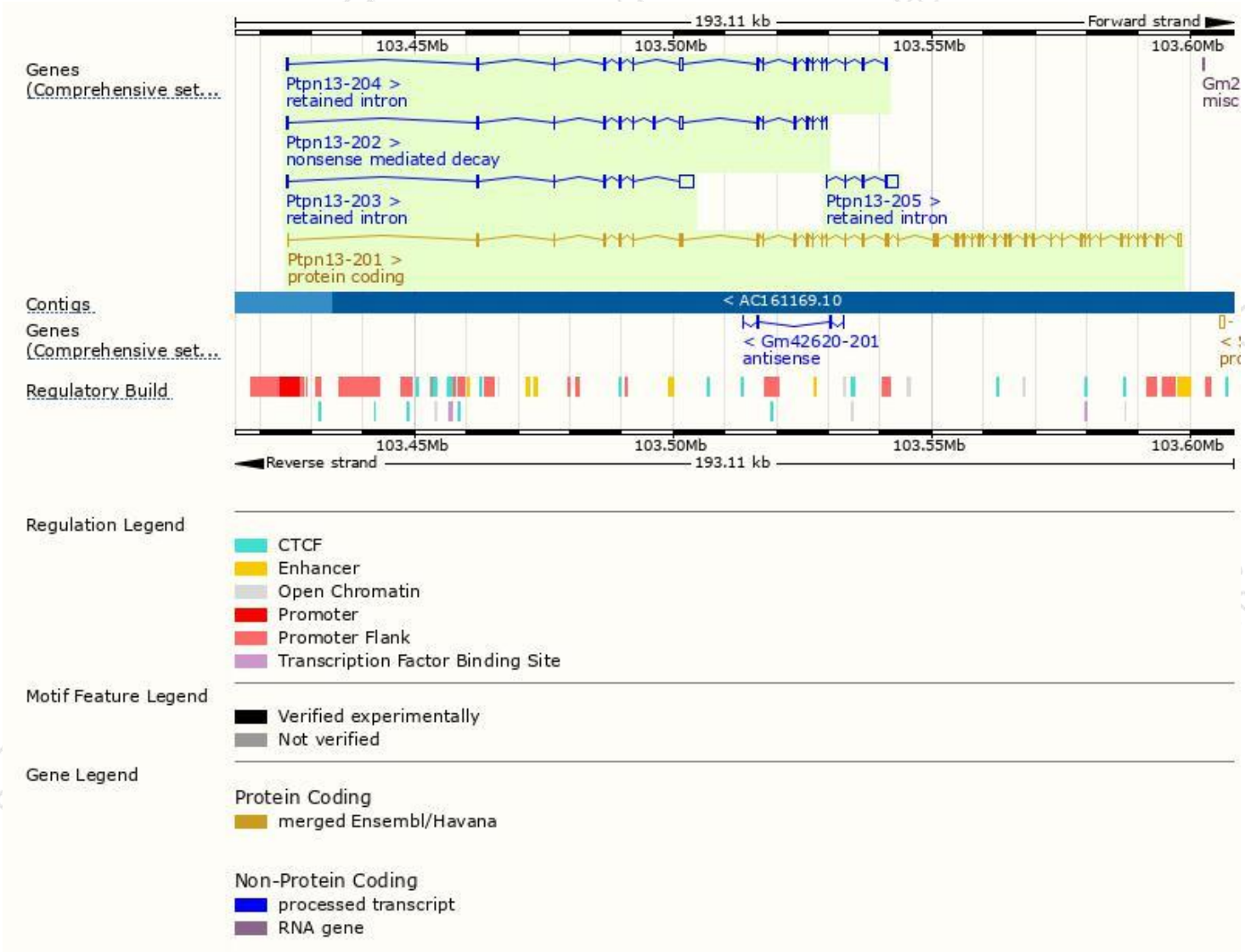
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptpn13-201	ENSMUST00000048957.10	7915	2451aa	Protein coding	CCDS39186	G5E8B1	TSL:2 GENCODE basic APPRIS P1
Ptpn13-202	ENSMUST00000196014.4	2608	247aa	Nonsense mediated decay	-	A0A0G2JGH9	TSL:1
Ptpn13-204	ENSMUST00000199412.4	3439	No protein	Retained intron	-	-	TSL:1
Ptpn13-203	ENSMUST00000196800.1	3408	No protein	Retained intron	-	-	TSL:1
Ptpn13-205	ENSMUST00000200581.1	2814	No protein	Retained intron	-	-	TSL:1

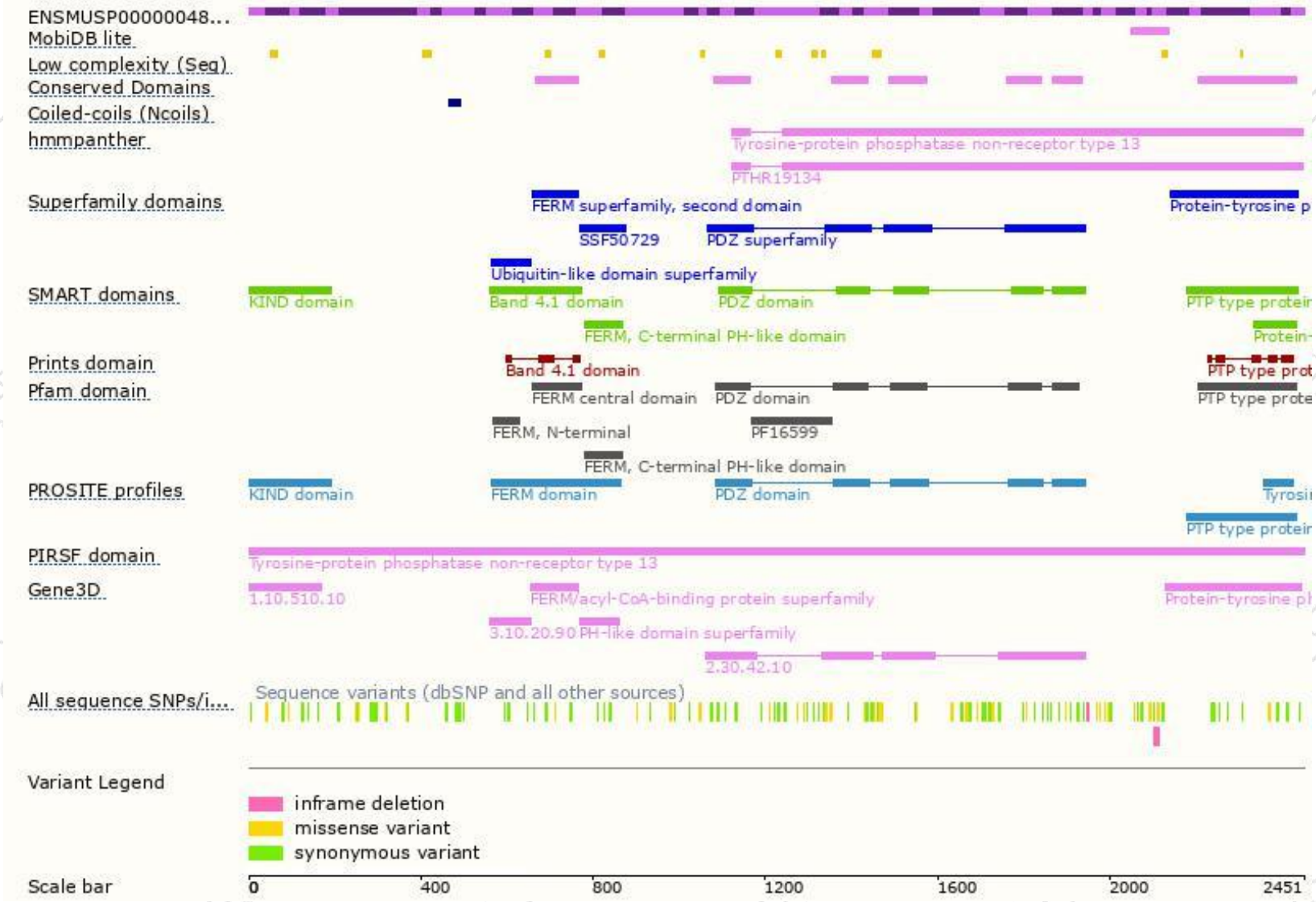
The strategy is based on the design of *Ptpn13-201* transcript,The transcription is shown below



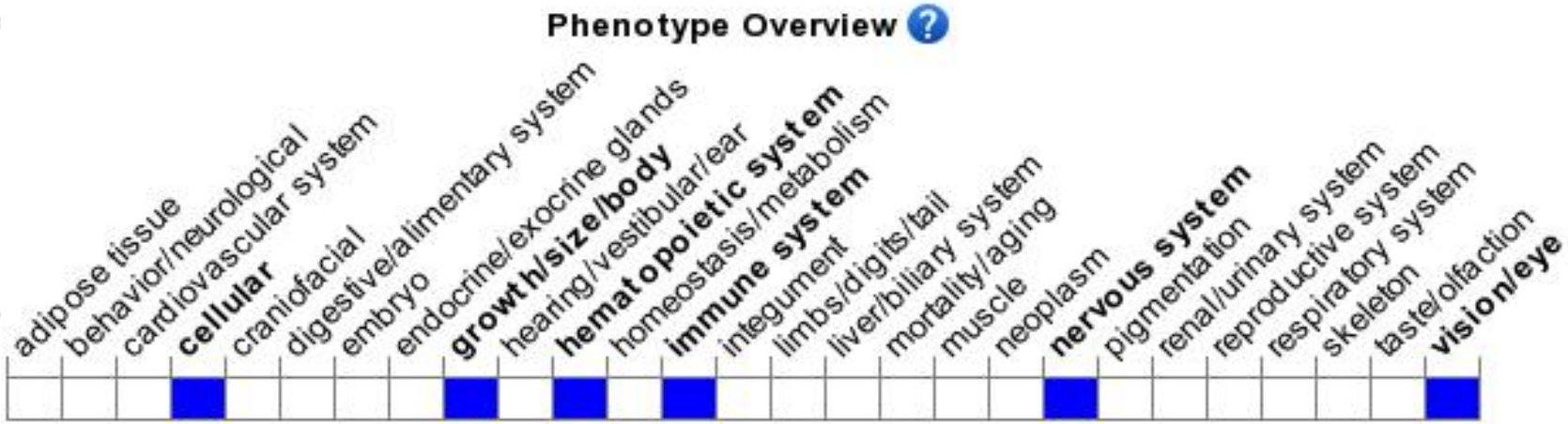
Genomic location distribution



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,Mice homozygous for a null allele exhibit abnormal T-helper cell differentiation.

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

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