Fos Cas9-CKO Strategy

Designer: Yanhua Shen
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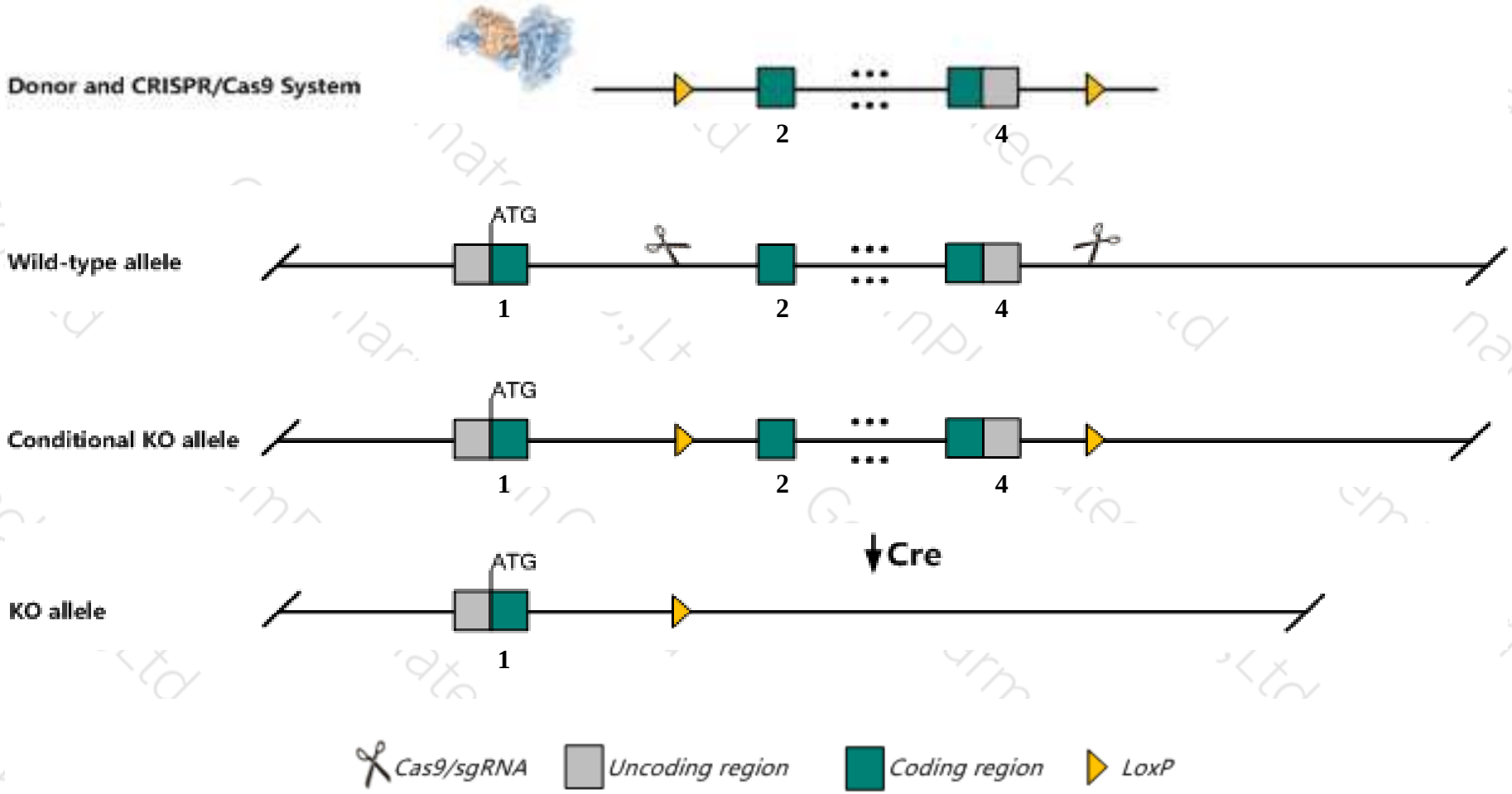
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Fos* gene has 4 transcripts. According to the structure of *Fos* gene, exon2-exon4 of *Fos-201* (ENSMUST00000021674.6) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

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

➢ According to the existing MGI data,Null mutants are growth-retarded, most dying perinatally. Survivors have osteopetrosis and abnormal tooth eruption, gametogenesis, hemopoiesis, behavior and photoreceptor apoptosis. Hippocampal-specific mutants have seizures and highly excitable neurons.

➢ The *Fos* gene is located on the Chr12. 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）

集萃药康 GemPharmatech

Fos FBJ osteosarcoma oncogene [Mus musculus (house mouse)]

Gene ID: 14281, updated on 19-Mar-2019

Summary

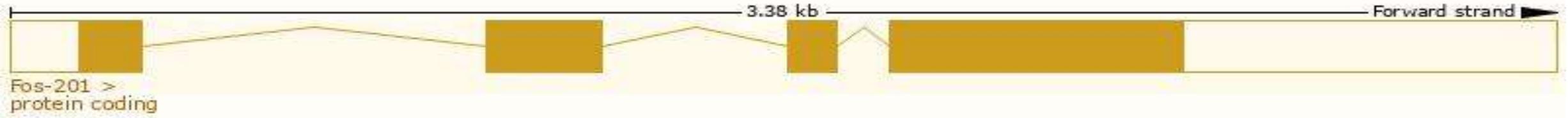
Official Symbol	Fos provided by MGI
Official Full Name	FBJ osteosarcoma oncogene provided by MGI
Primary source	MGI:MGI:95574
See related	Ensembl:ENSMUSG00000021250
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	D12Rfj1, c-fos, cFos
Expression	Biased expression in duodenum adult (RPKM 93.1), small intestine adult (RPKM 77.3) and 11 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

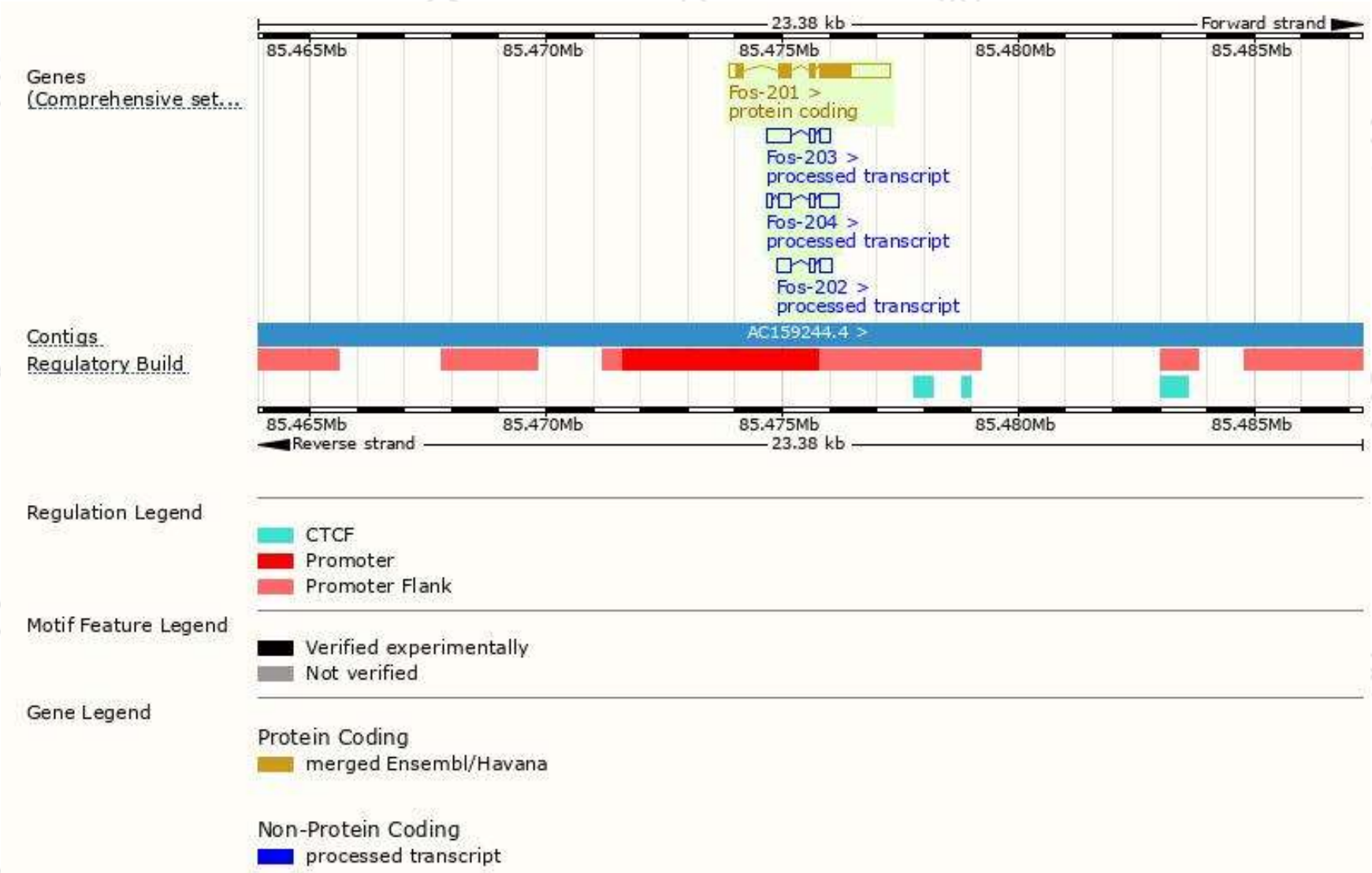
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fos-201	ENSMUST00000021674.6	2108	380aa	Protein coding	CCDS26059	P01101	TSL:1 GENCODE basic APPRIS P1
Fos-204	ENSMUST00000140525.7	834	No protein	Processed transcript	-	-	TSL:5
Fos-203	ENSMUST00000136122.7	795	No protein	Processed transcript	-	-	TSL:2
Fos-202	ENSMUST00000134311.1	631	No protein	Processed transcript	-	-	TSL:2

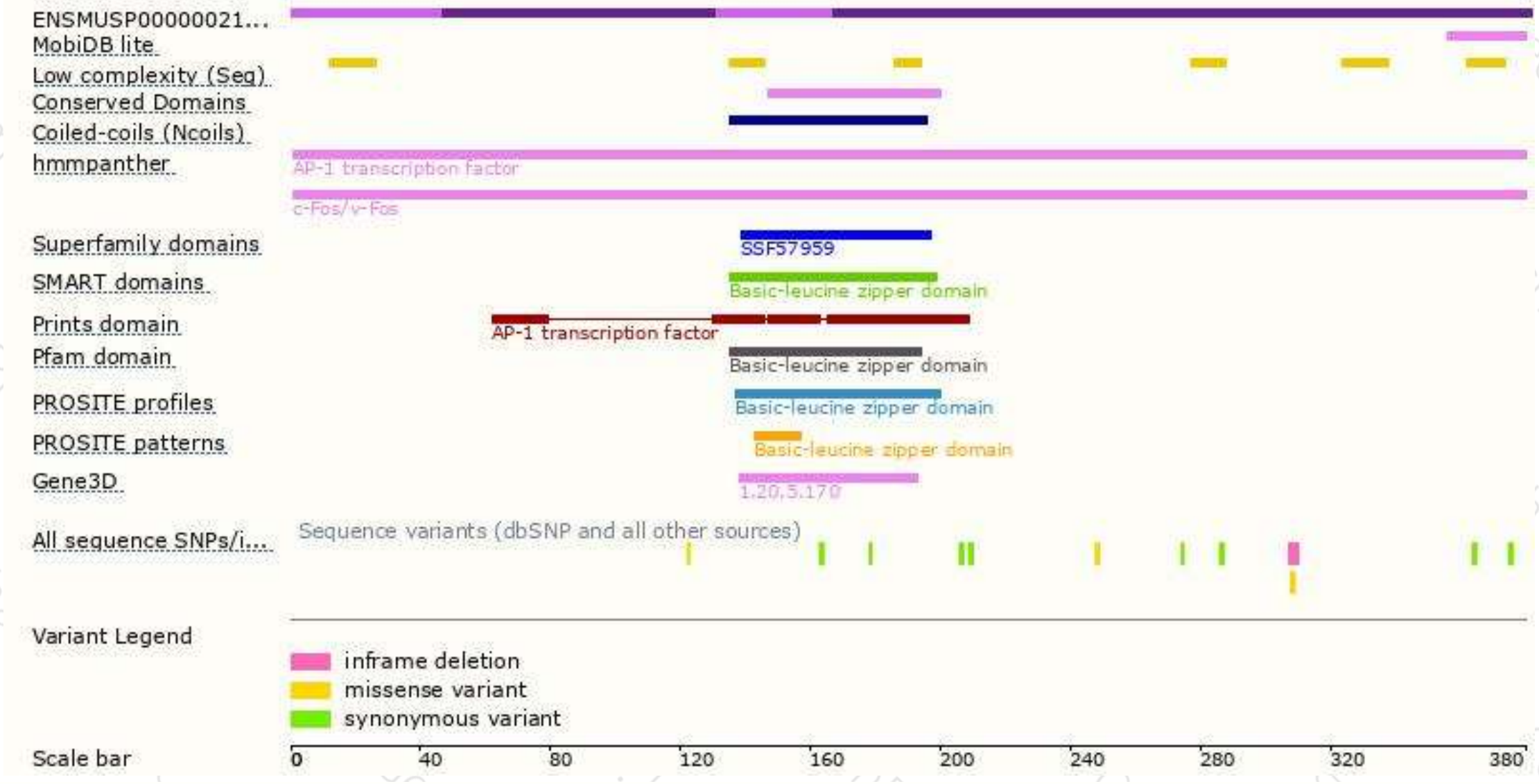
The strategy is based on the design of *Fos-201* transcript,The transcription is shown below



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/).

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集萃药康
GemPharmatech

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

Tel: 025-5864 1534

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GemPharmatech Co.,Ltd