

# ***Lasp1*** Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

***Lasp1***

**Project type**

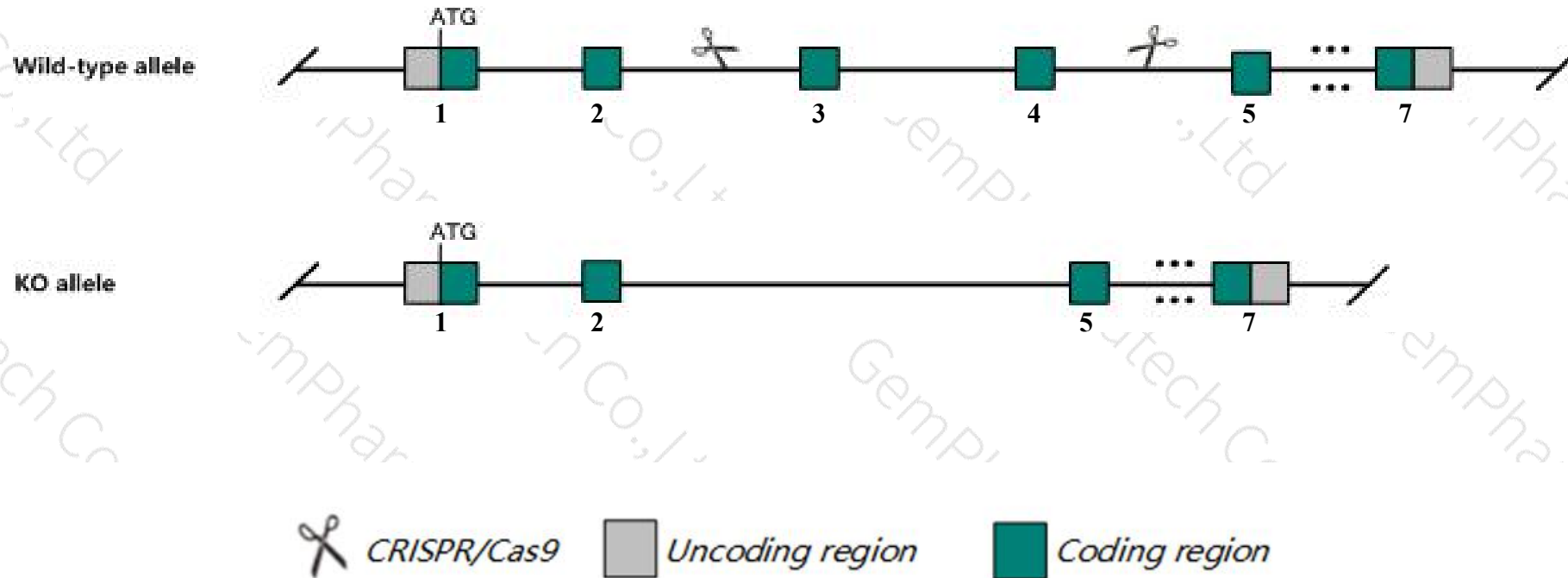
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



- The *Laspl* gene has 16 transcripts. According to the structure of *Laspl* gene, exon3-exon4 of *Laspl*-201 (ENSMUST00000043843.11) transcript is recommended as the knockout region. The region contains 193bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Laspl* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit reduced histamine-stimulated gastric acid secretion and enlarged heart and testes on a mixed background. Mice homozygous for a transgene insertion exhibit abnormal tail vertebrae with scoliosis, transient spina bifida occulta, and a bent tail.
- Transcript *Laspl-210 and Laspl-211* may not be affected.
- The *Laspl* gene is located on the Chr11. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information (NCBI)

## Lasp1 LIM and SH3 protein 1 [Mus musculus (house mouse)]

Gene ID: 16796, updated on 7-Apr-2019

### Summary



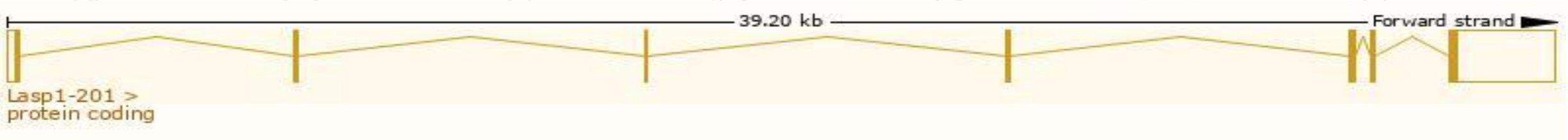
<b>Official Symbol</b>	Lasp1 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	LIM and SH3 protein 1 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:109656</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000038366</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	AA408629, Def-4, LASP-1, MLN 50, SH3P6, Tg(Col1a1-lacZ)1Ngma
<b>Expression</b>	Ubiquitous expression in large intestine adult (RPKM 112.9), duodenum adult (RPKM 108.0) and 28 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

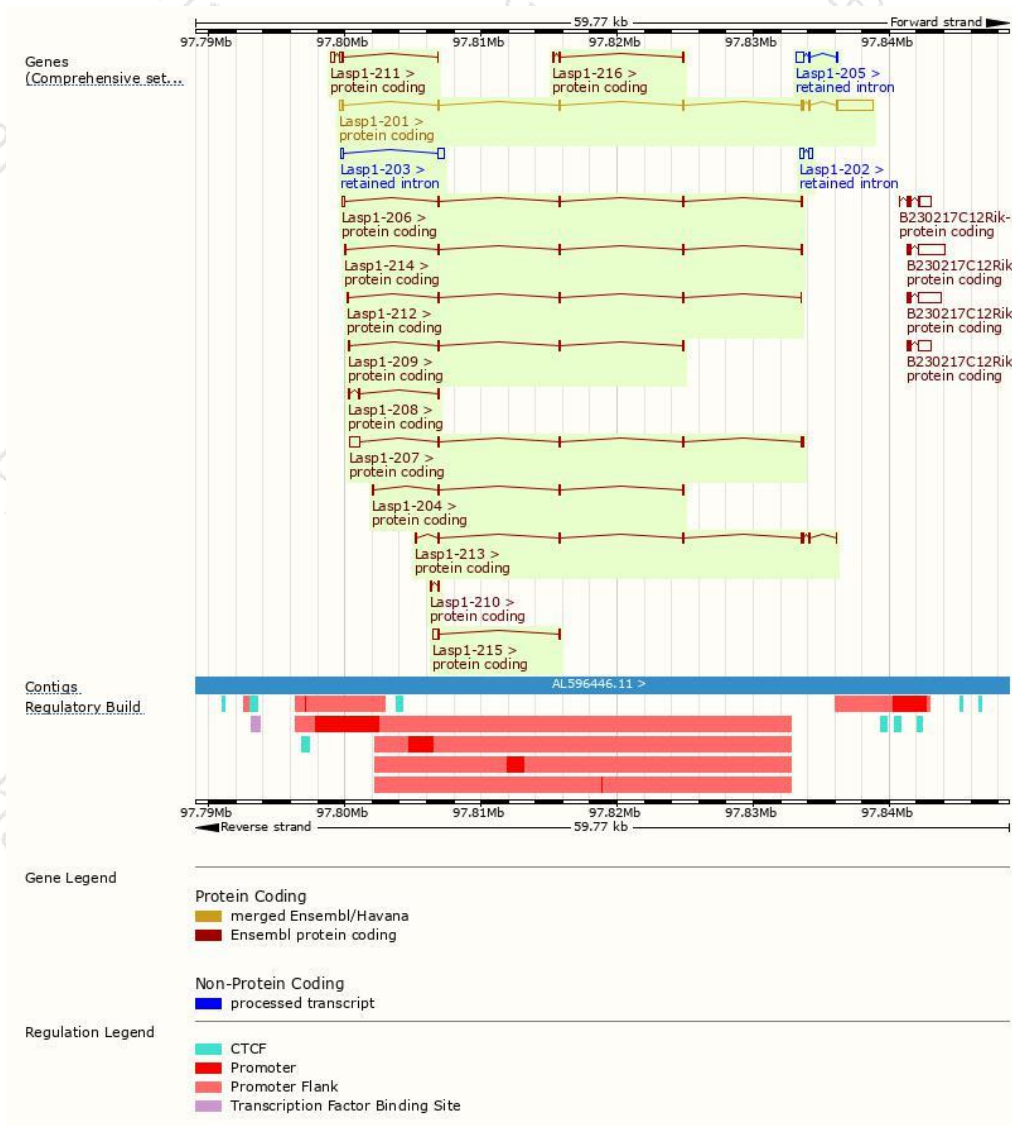
The gene has 16 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lasp1-201	<a href="#">ENSMUST00000043843.11</a>	3540	<a href="#">263aa</a>	Protein coding	<a href="#">CCDS25332</a>	<a href="#">Q543N3</a> <a href="#">Q61792</a>	TSL:1 GENCODE basic APPRIS P1
Lasp1-207	<a href="#">ENSMUST000000129828.7</a>	1207	<a href="#">129aa</a>	Protein coding	-	<a href="#">A2A6G9</a>	CDS 3' incomplete TSL:3
Lasp1-213	<a href="#">ENSMUST000000148280.2</a>	686	<a href="#">186aa</a>	Protein coding	-	<a href="#">A2A6H0</a>	CDS 3' incomplete TSL:3
Lasp1-215	<a href="#">ENSMUST000000153520.2</a>	503	<a href="#">47aa</a>	Protein coding	-	<a href="#">A2A6G4</a>	CDS 3' incomplete TSL:1
Lasp1-206	<a href="#">ENSMUST000000129558.7</a>	487	<a href="#">103aa</a>	Protein coding	-	<a href="#">A2A6G8</a>	CDS 3' incomplete TSL:2
Lasp1-214	<a href="#">ENSMUST000000152962.7</a>	433	<a href="#">99aa</a>	Protein coding	-	<a href="#">A2A6G7</a>	CDS 3' incomplete TSL:3
Lasp1-211	<a href="#">ENSMUST000000143571.1</a>	429	<a href="#">28aa</a>	Protein coding	-	<a href="#">A2A6G0</a>	CDS 3' incomplete TSL:5
Lasp1-204	<a href="#">ENSMUST000000127033.8</a>	386	<a href="#">70aa</a>	Protein coding	-	<a href="#">E9Q0N6</a>	CDS 3' incomplete TSL:3
Lasp1-212	<a href="#">ENSMUST000000146572.7</a>	376	<a href="#">89aa</a>	Protein coding	-	<a href="#">A2A6G6</a>	CDS 3' incomplete TSL:5
Lasp1-208	<a href="#">ENSMUST000000134428.1</a>	337	<a href="#">18aa</a>	Protein coding	-	<a href="#">A2A6G3</a>	CDS 3' incomplete TSL:3
Lasp1-209	<a href="#">ENSMUST000000136723.7</a>	322	<a href="#">69aa</a>	Protein coding	-	<a href="#">A2A6G5</a>	CDS 3' incomplete TSL:5
Lasp1-216	<a href="#">ENSMUST000000155762.2</a>	310	<a href="#">56aa</a>	Protein coding	-	<a href="#">A2A6H1</a>	CDS 3' incomplete TSL:3
Lasp1-210	<a href="#">ENSMUST000000138919.1</a>	112	<a href="#">12aa</a>	Protein coding	-	<a href="#">A2A6G2</a>	CDS 3' incomplete TSL:3
Lasp1-205	<a href="#">ENSMUST000000127575.1</a>	758	No protein	Retained intron	-	-	TSL:2
Lasp1-203	<a href="#">ENSMUST000000107569.2</a>	686	No protein	Retained intron	-	-	TSL:2
Lasp1-202	<a href="#">ENSMUST000000107568.1</a>	580	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Lasp1-201* transcript,The transcription is shown below



# Genomic location distribution

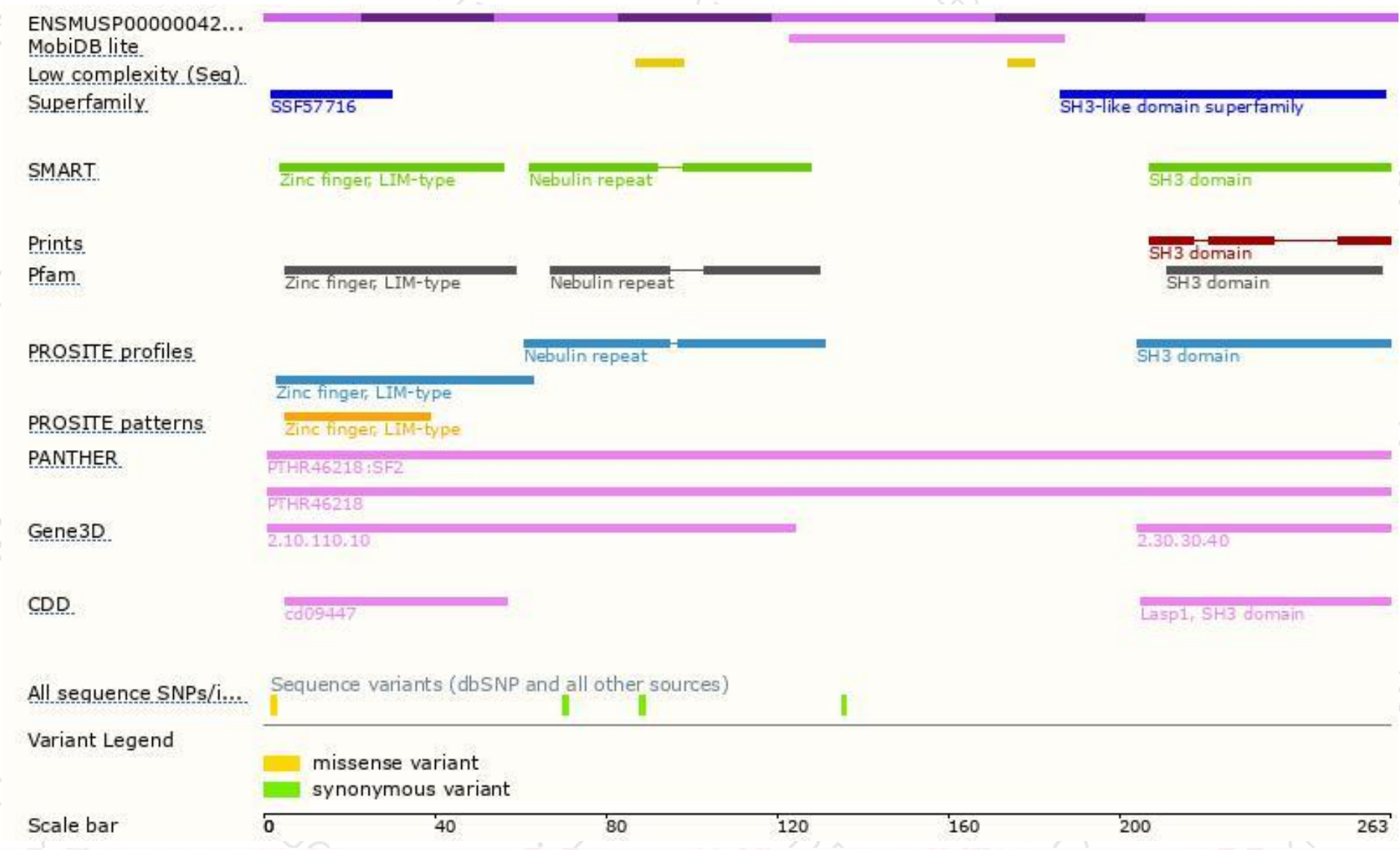




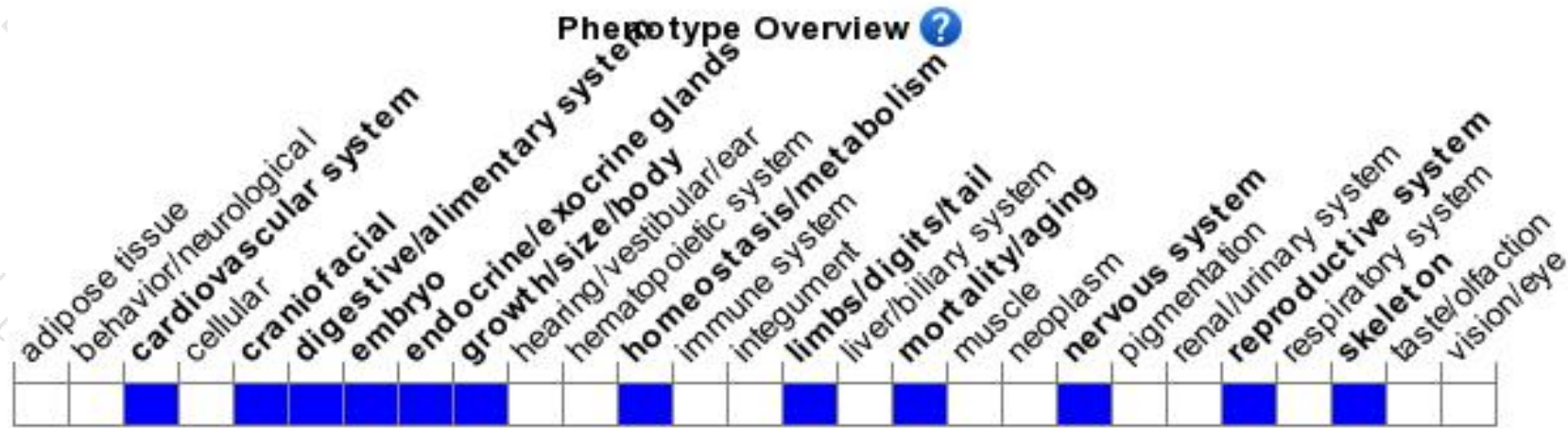
# Protein domain



集萃药康  
GemPharmatech



# 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 reduced histamine-stimulated gastric acid secretion and enlarged heart and testes on a mixed background. Mice homozygous for a transgene insertion exhibit abnormal tail vertebrae with scoliosis, transient spina bifida occulta, and a bent tail.

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

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