

# ***Phldb2 Cas9-KO Strategy***

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**Reviewer: Daohua Xu**

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# Project Overview

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**Project Name**

*Phldb2*

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**Project type**

**Cas9-KO**

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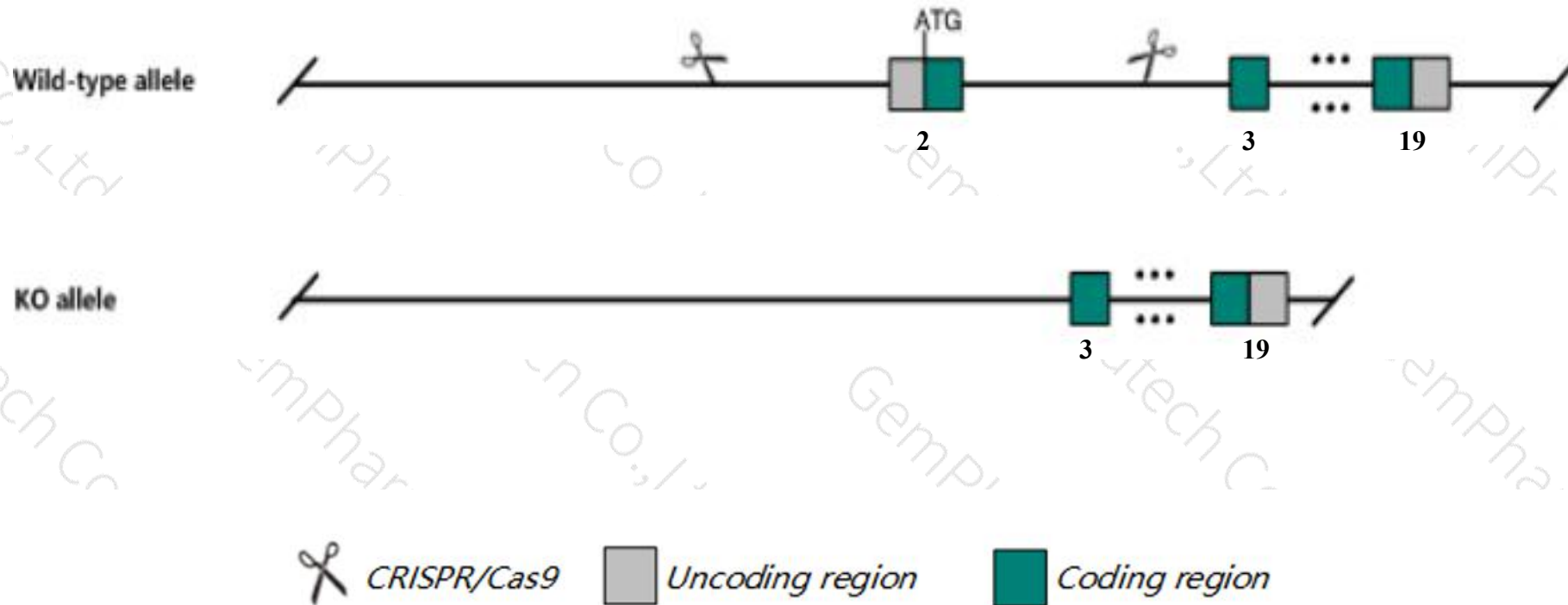
**Strain background**

**C57BL/6JGpt**

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# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Phldb2* gene. The schematic diagram is as follows:



- The *Phldb2* gene has 11 transcripts. According to the structure of *Phldb2* gene, exon2 of *Phldb2*-202(ENSMUST00000076333.11) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Phldb2* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, mice homozygous for a conditional allele activated in neurons exhibit impaired LTP.
- Transcript *Phldb2*-204&206&208&210&211 may not be affected.
- The effect on transcript *Phldb2*-205&209 is unknown.
- The *Phldb2* gene is located on the Chr16. 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)

## Phldb2 pleckstrin homology like domain, family B, member 2 [Mus musculus (house mouse)]

Gene ID: 208177, updated on 13-Mar-2020

### Summary



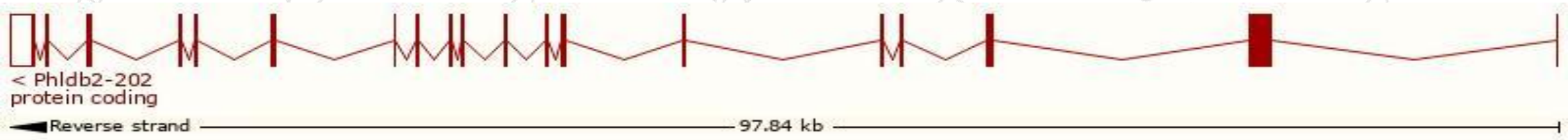
<b>Official Symbol</b>	Phldb2 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	pleckstrin homology like domain, family B, member 2 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:2444981</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000033149</a>
<b>Gene type</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>	AV253284, C820004H04Rik, LL5b, LL5beta
<b>Expression</b>	Broad expression in bladder adult (RPKM 19.0), limb E14.5 (RPKM 13.1) and 20 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

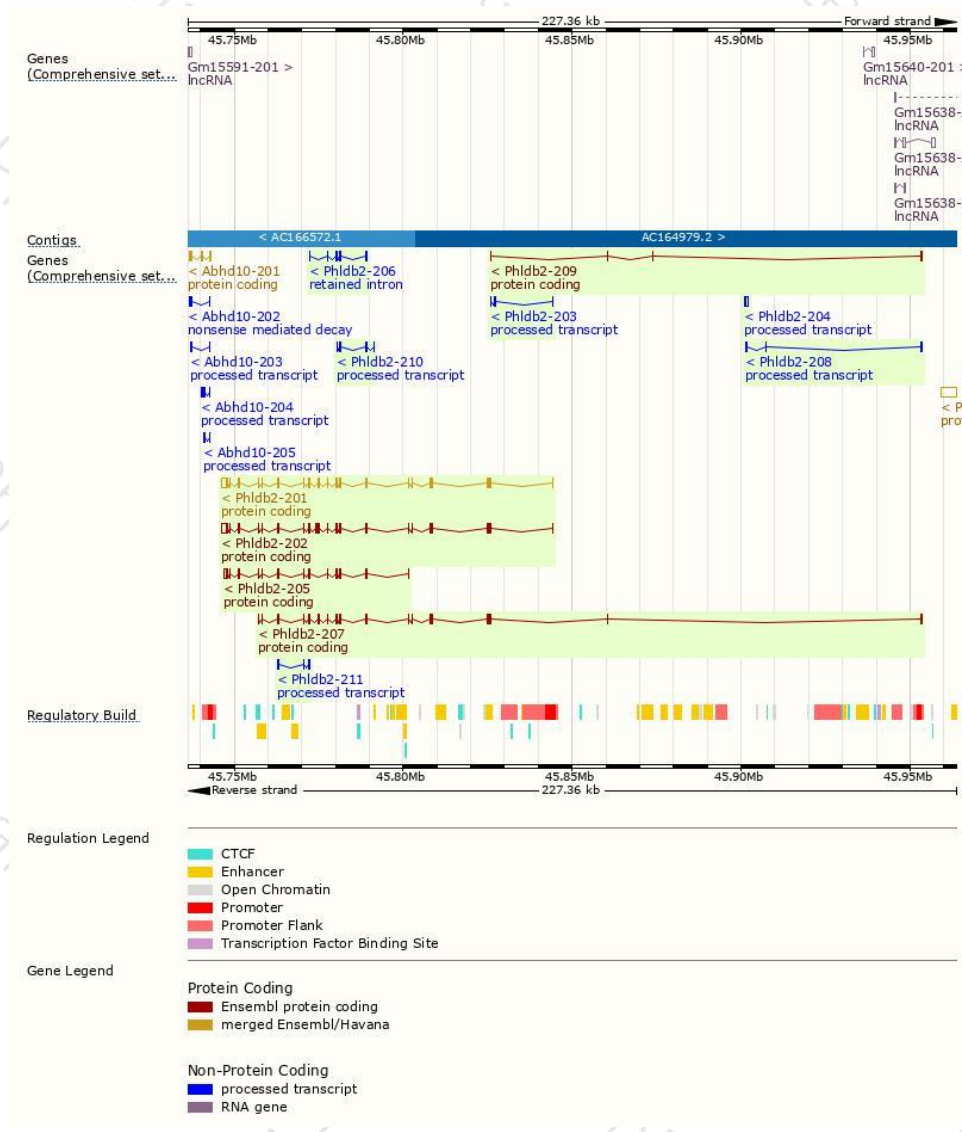
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Phldb2-201	<a href="#">ENSMUST00000036355.12</a>	5483	<a href="#">1249aa</a>	Protein coding	<a href="#">CCDS28202</a>	<a href="#">Q8K1N2</a>	TSL:1 GENCODE basic APPRIS P3
Phldb2-202	<a href="#">ENSMUST00000076333.11</a>	5347	<a href="#">1302aa</a>	Protein coding	<a href="#">CCDS57031</a>	<a href="#">Q8K1N2</a>	TSL:1 GENCODE basic APPRIS ALT2
Phldb2-207	<a href="#">ENSMUST00000134802.7</a>	3612	<a href="#">1131aa</a>	Protein coding	-	<a href="#">D3Z069</a>	CDS 3' incomplete TSL:1
Phldb2-205	<a href="#">ENSMUST00000131003.7</a>	2328	<a href="#">565aa</a>	Protein coding	-	<a href="#">F6QU68</a>	CDS 5' incomplete TSL:1
Phldb2-209	<a href="#">ENSMUST00000136405.1</a>	595	<a href="#">133aa</a>	Protein coding	-	<a href="#">D3Z231</a>	CDS 3' incomplete TSL:3
Phldb2-204	<a href="#">ENSMUST00000128365.2</a>	831	No protein	Processed transcript	-	-	TSL:5
Phldb2-211	<a href="#">ENSMUST00000151300.1</a>	664	No protein	Processed transcript	-	-	TSL:3
Phldb2-208	<a href="#">ENSMUST00000136317.1</a>	497	No protein	Processed transcript	-	-	TSL:2
Phldb2-210	<a href="#">ENSMUST00000142697.1</a>	467	No protein	Processed transcript	-	-	TSL:5
Phldb2-203	<a href="#">ENSMUST00000125433.1</a>	343	No protein	Processed transcript	-	-	TSL:3
Phldb2-206	<a href="#">ENSMUST00000133111.2</a>	614	No protein	Retained intron	-	-	TSL:5

The strategy is based on the design of *Phldb2-202* transcript,the transcription is shown below:

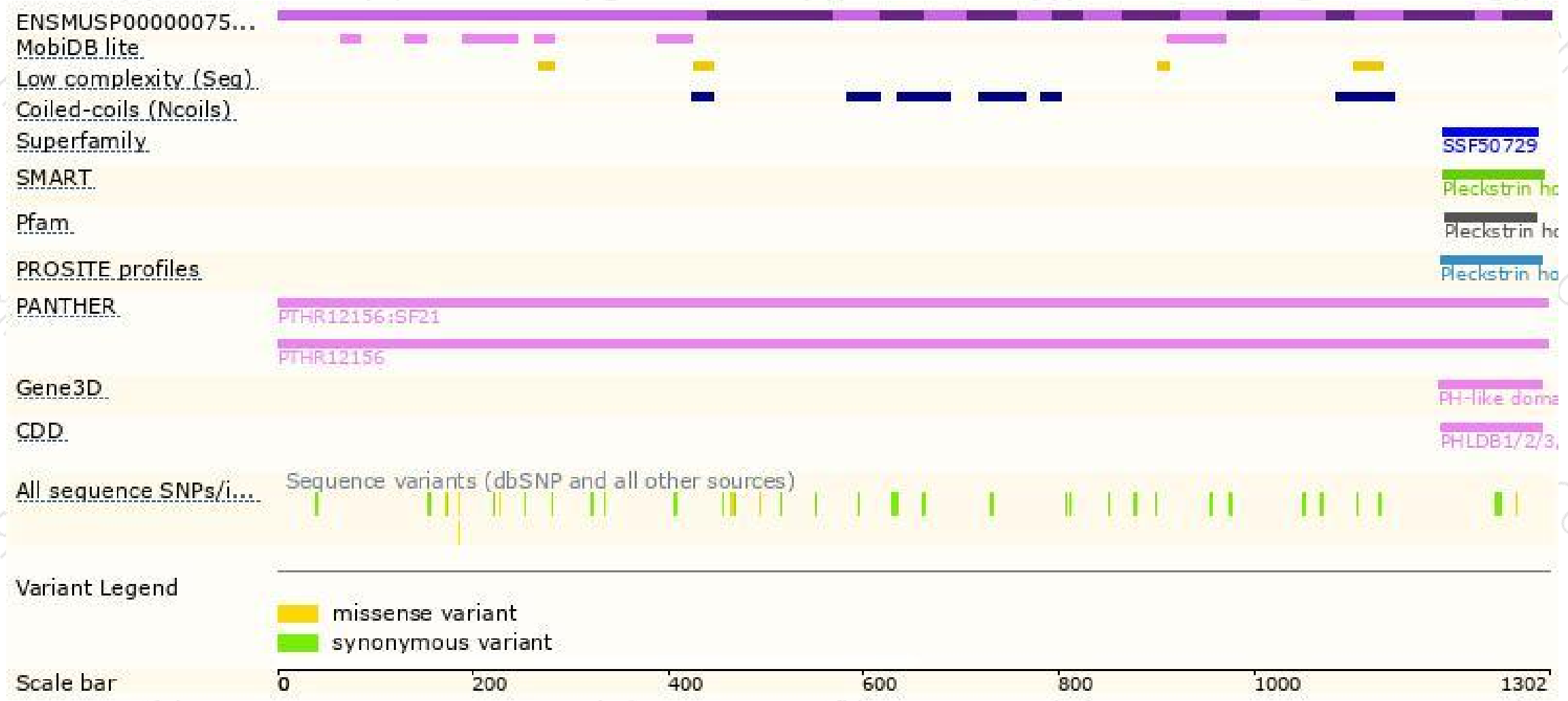


# Genomic location distribution

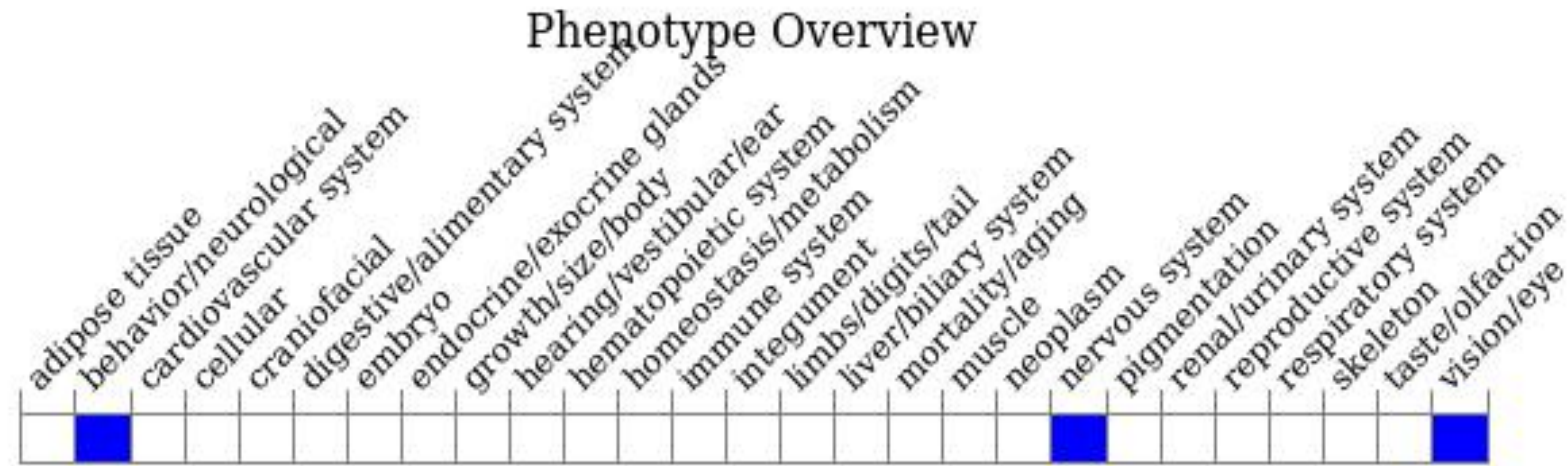




# Protein domain



# 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 conditional allele activated in neurons exhibit impaired LTP.

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

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