# *Camk1g* Cas9-KO Strategy

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**Reviewer：**          **Xiaojing Li**

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# Project Overview

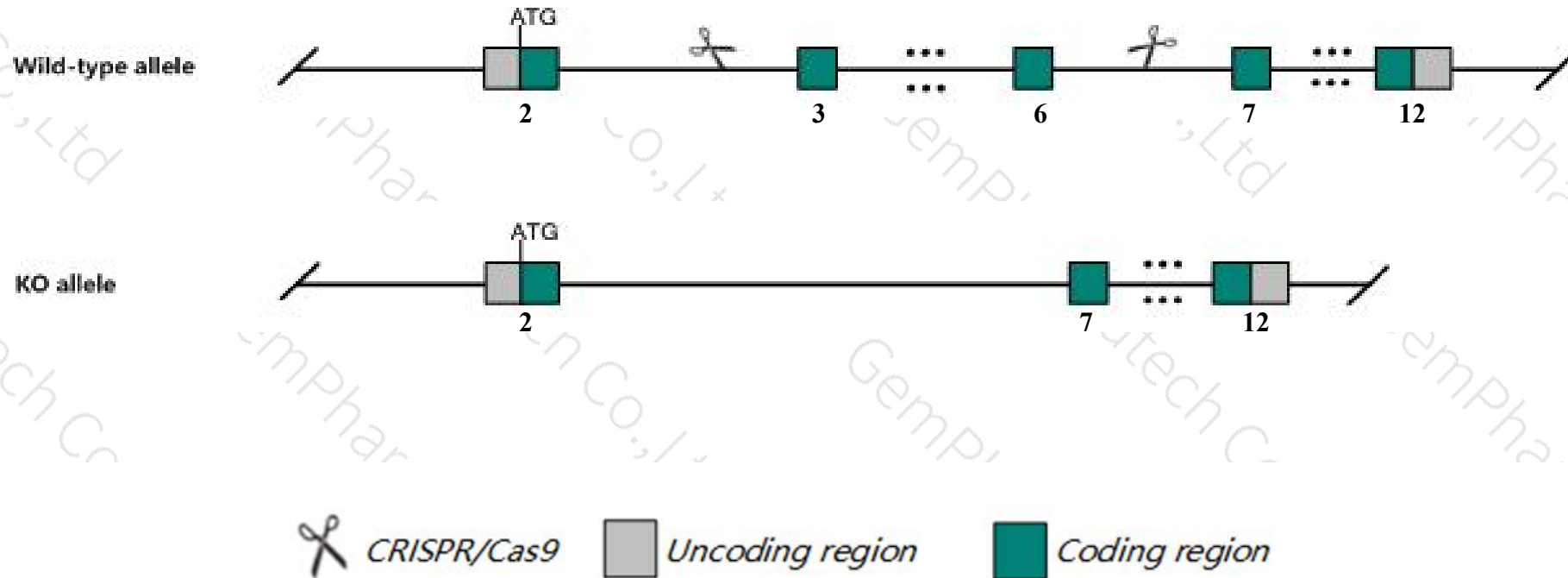| | |
|---|---|
| **Project Name** | ***Camk1g*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Camk1g* gene. The schematic diagram is as follows:

# Technical routes

➢ The *Camk1g* gene has 4 transcripts. According to the structure of *Camk1g* gene, exon3-exon6 of *Camk1g-201* (ENSMUST00000016323.10) transcript is recommended as the knockout region.The region contains 467bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Camk1g* gene. The brief process is as follows: CRISPR/Cas9 syste

# Notice

➢ According to the existing MGI data,Mice homozygous for a knock-out allele exhibit impaired dendritogenesis.

➢ The *Camk1g* gene is located on the Chr1. 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）

## Camk1g calcium/calmodulin-dependent protein kinase I gamma [Mus musculus (house mouse)]

Gene ID: 215303, updated on 31-Jan-2019

### ▲ Summary

| | |
|---|---|
| **Official Symbol** | Camk1g provided by MGI |
| **Official Full Name** | calcium/calmodulin-dependent protein kinase I gamma provided by MGI |
| **Primary source** | MGI:MGI:2388073 |
| **See related** | Ensembl:ENSMUSG00000016179 |
| **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** | CLICK-III, CaMKIgamma |
| **Expression** | Biased expression in CNS E18 (RPKM 15.3), whole brain E14.5 (RPKM 12.6) and 12 other tissuesSee 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 |
|------|--------------|-----|---------|---------|------|---------|-------|
| Camk1g-201 | ENSMUST00000016323.10 | 2469 | 477aa | Protein coding | CCDS15638 | Q91VB2 | TSL:1 GENCODE basic APPRIS P1 |
| Camk1g-204 | ENSMUST00000169907.7 | 1968 | 359aa | Protein coding | - | E9Q679 | TSL:5 GENCODE basic |
| Camk1g-202 | ENSMUST00000163202.1 | 754 | 252aa | Protein coding | - | F6YRI7 | 5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3 |
| Camk1g-203 | ENSMUST00000165718.3 | 783 | No protein | Retained intron | - | - | TSL:3 |

The strategy is based on the design of *Camk1g-201* transcript,The transcription is shown below



< Camk1g-201
protein coding

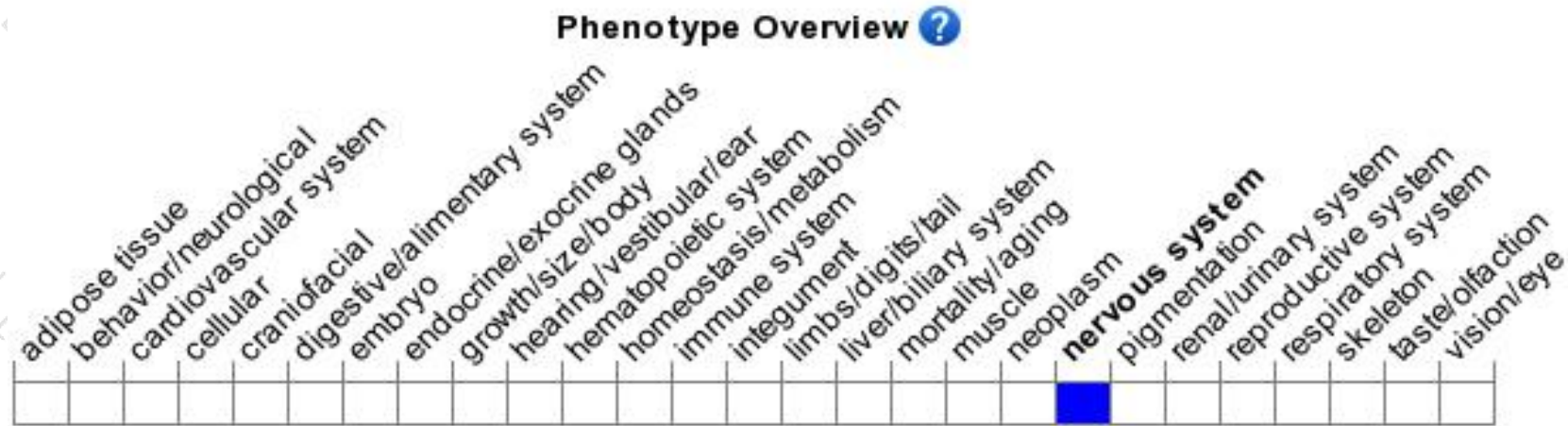◀ Reverse strand ──────────── 23.95 kb ────────────
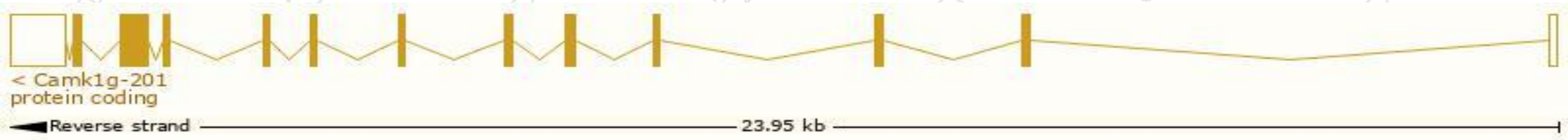
# Genomic location distribution
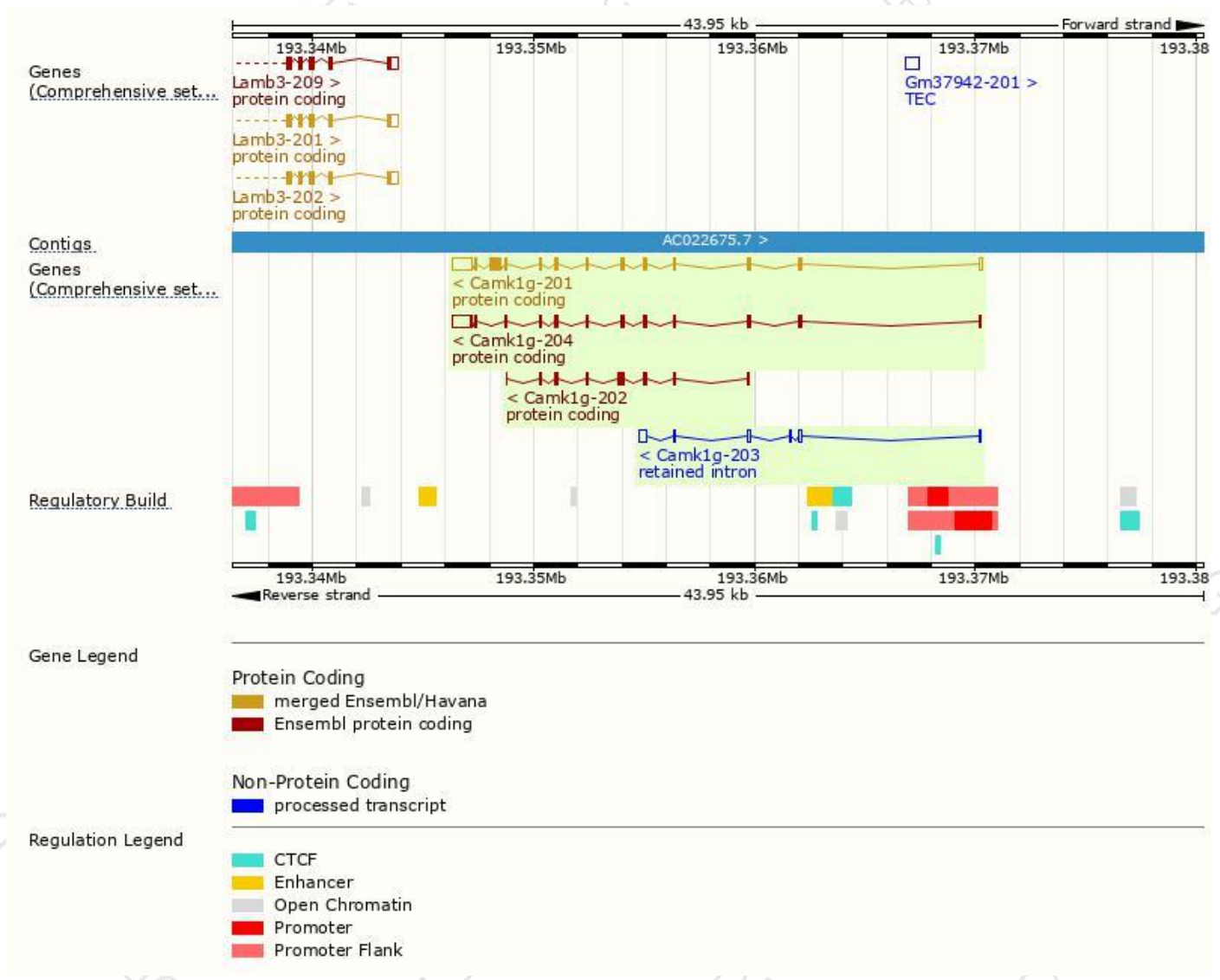
# Protein domain
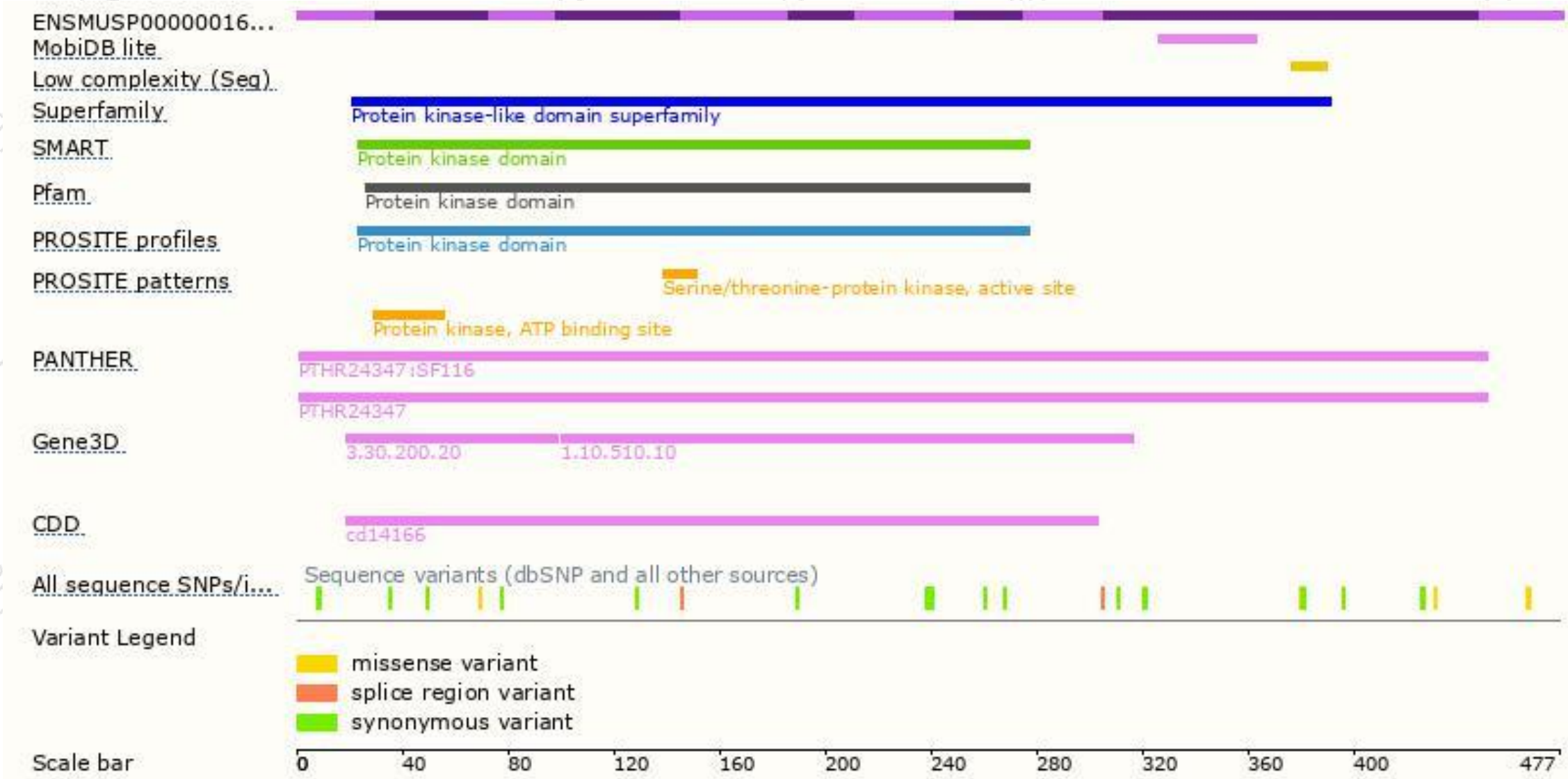
# Mouse phenotype description(MGI )



*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 knock-out allele exhibit impaired dendritogenesis.

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