

Efna2 Cas9-CKO Strategy

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Project Overview

Project Name

Efna2

Project type

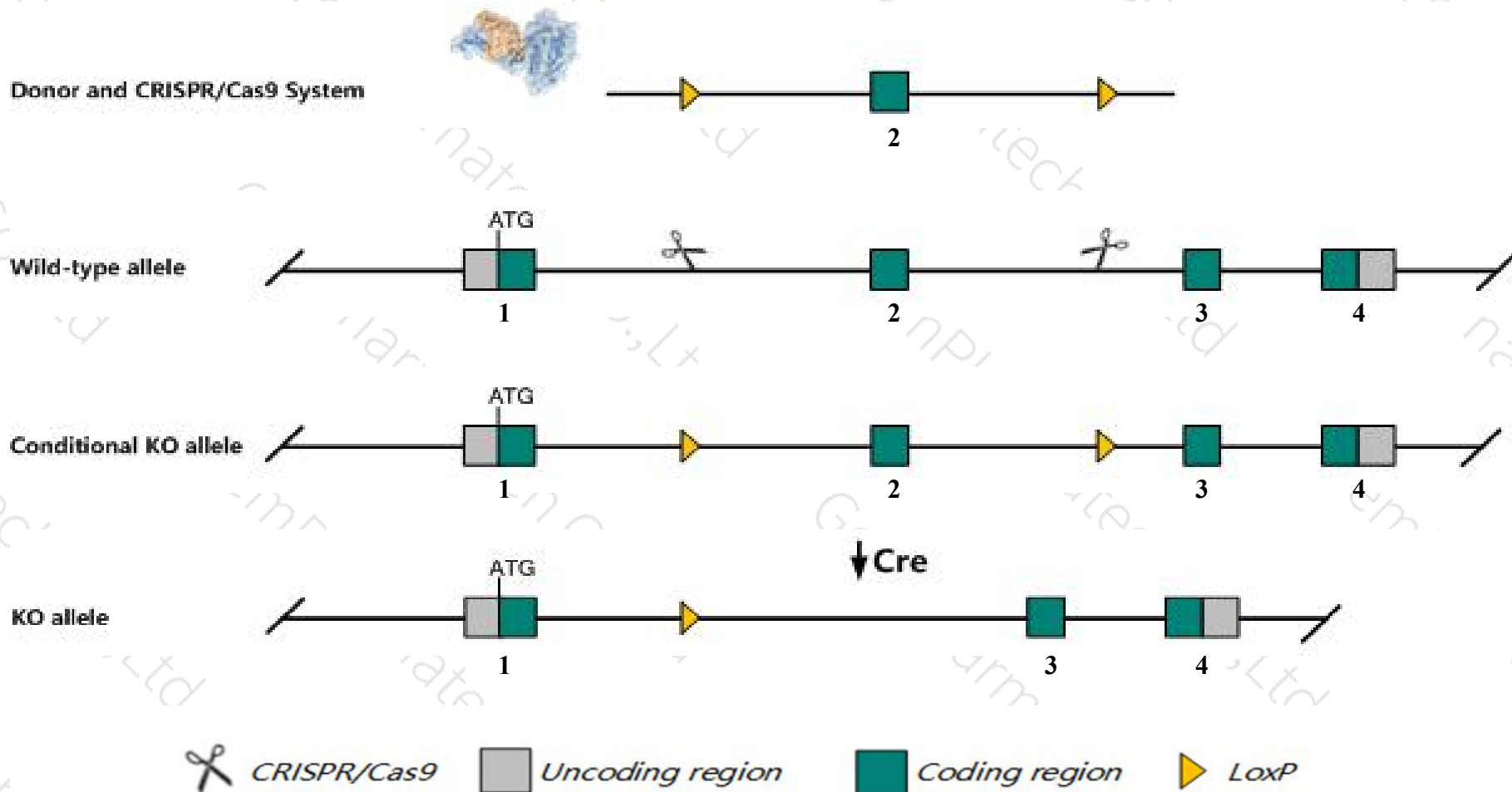
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Efna2* gene. The schematic diagram is as follows:



Technical routes

- The *Efna2* gene has 1 transcript. According to the structure of *Efna2* gene, exon2 of *Efna2-201* (ENSMUST00000003154.6) transcript is recommended as the knockout region. The region contains 314bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Efna2* 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.

- According to the existing MGI data, Homozgous null mice exhibit increased neural progenitor cell proliferation and abnormalities in sensory projections to the superior colliculus
- The *Efna2* gene is located on the Chr10. 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)

Efna2 ephrin A2 [*Mus musculus* (house mouse)]

Gene ID: 13637, updated on 12-Aug-2019

Summary

Official Symbol Efna2 provided by [MGI](#)
Official Full Name ephrin A2 provided by [MGI](#)
Primary source [MGI:MGI:102707](#)
See related [Ensembl:ENSMUSG00000003070](#)
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 Elf1; Epl6; CEK7L; Eplg6; Lerk6
Expression Broad expression in CNS E11.5 (RPKM 20.0), whole brain E14.5 (RPKM 18.4) and 16 other tissues [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: 10 C1; 10 39.72 cM

See Efna2 in [Genome Data Viewer](#)

Exon count: 4

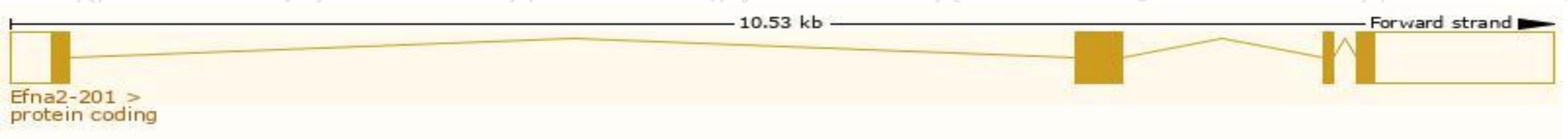
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	10	NC_000076.6 (80179482..80190010)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	10	NC_000076.5 (79642227..79652755)

Transcript information (Ensembl)

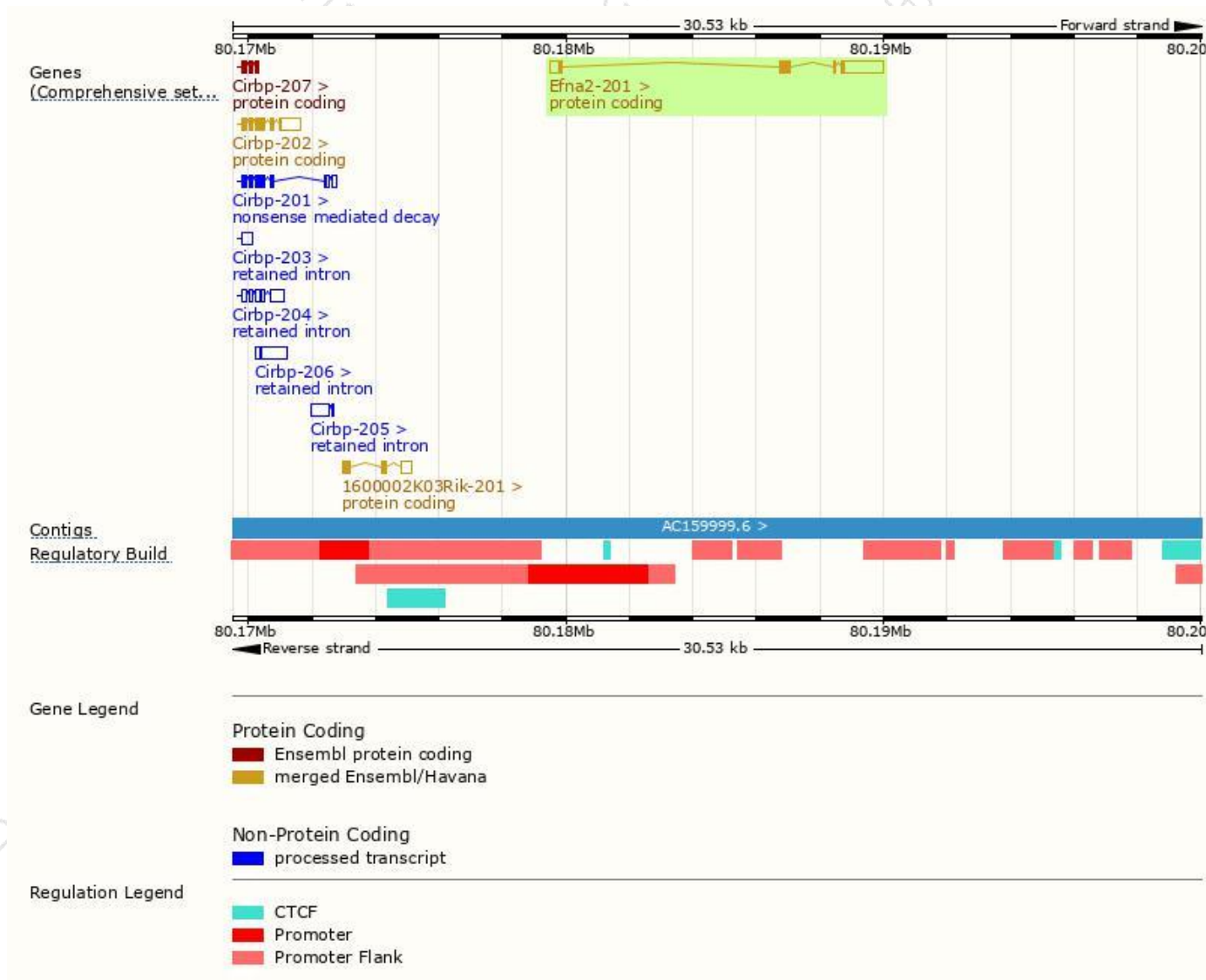
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Efna2-201	ENSMUST00000003154.6	2131	209aa	Protein coding	CCDS24013	P52801	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Efna2-201* transcript, The transcription is shown below



Genomic location distribution



Protein domain

ENSMUSP000000003...

Low complexity (Seg)

Cleavage site (Sign...

Superfamily

ProDom

Prints

Pfam

PROSITE profiles

PROSITE patterns

PANTHER

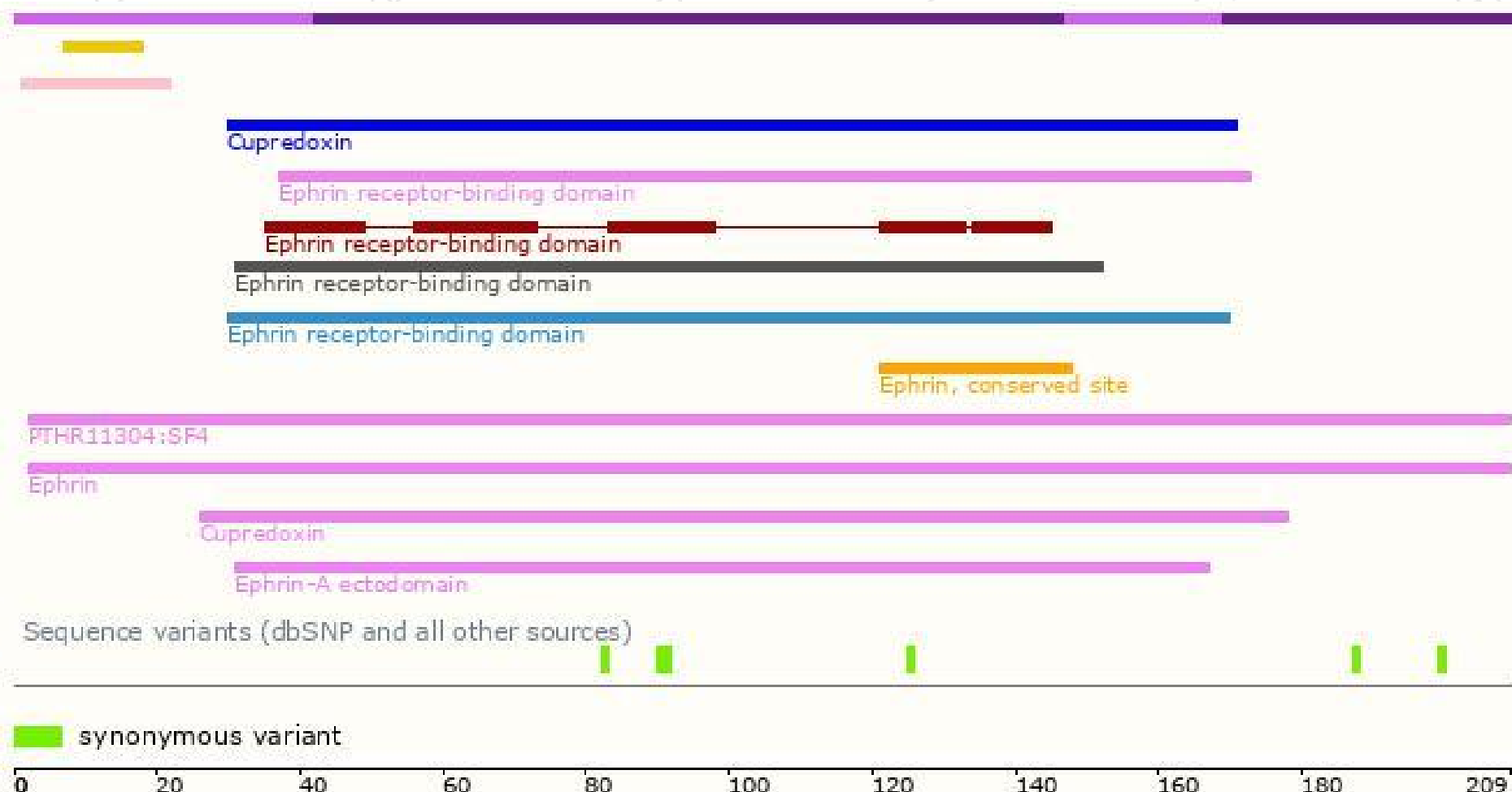
Gene3D

CDD

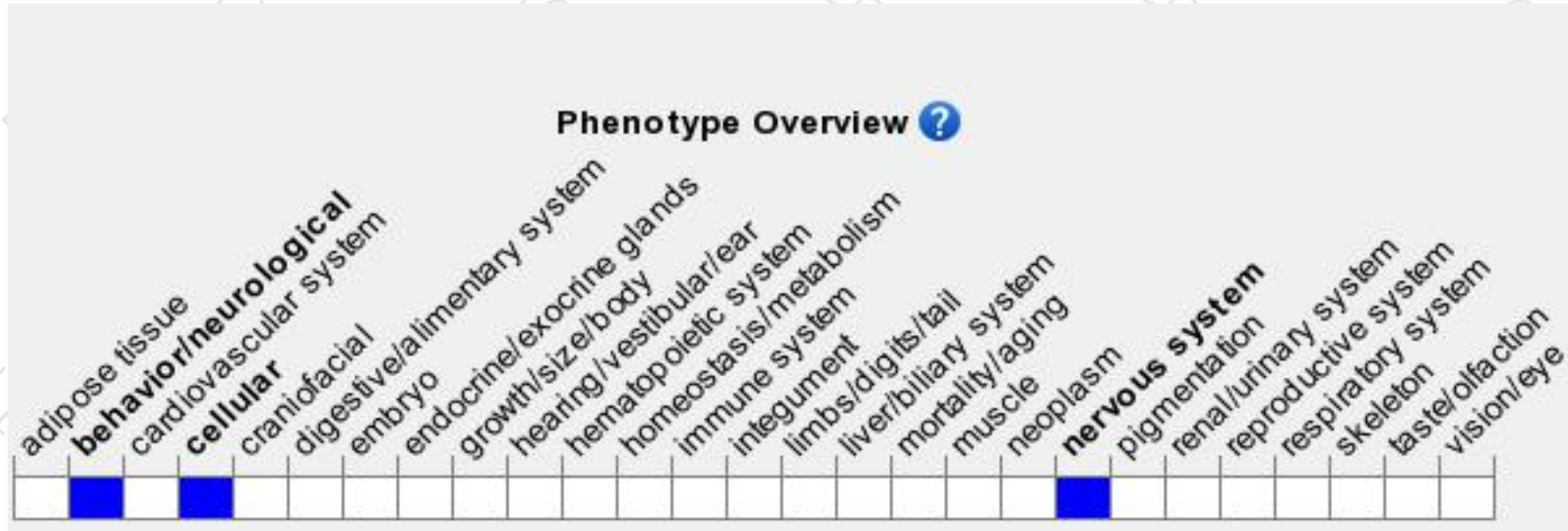
All sequence SNPs/i...

Variant Legend

Scale bar



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, Homozgous null mice exhibit increased neural progenitor cell proliferation and abnormalities in sensory projections to the superior colliculus

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

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