

***Katnb1* Cas9-CKO Strategy**

Designer:

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Design Date:

2019-7-25

Project Overview

Project Name

Katnb1

Project type

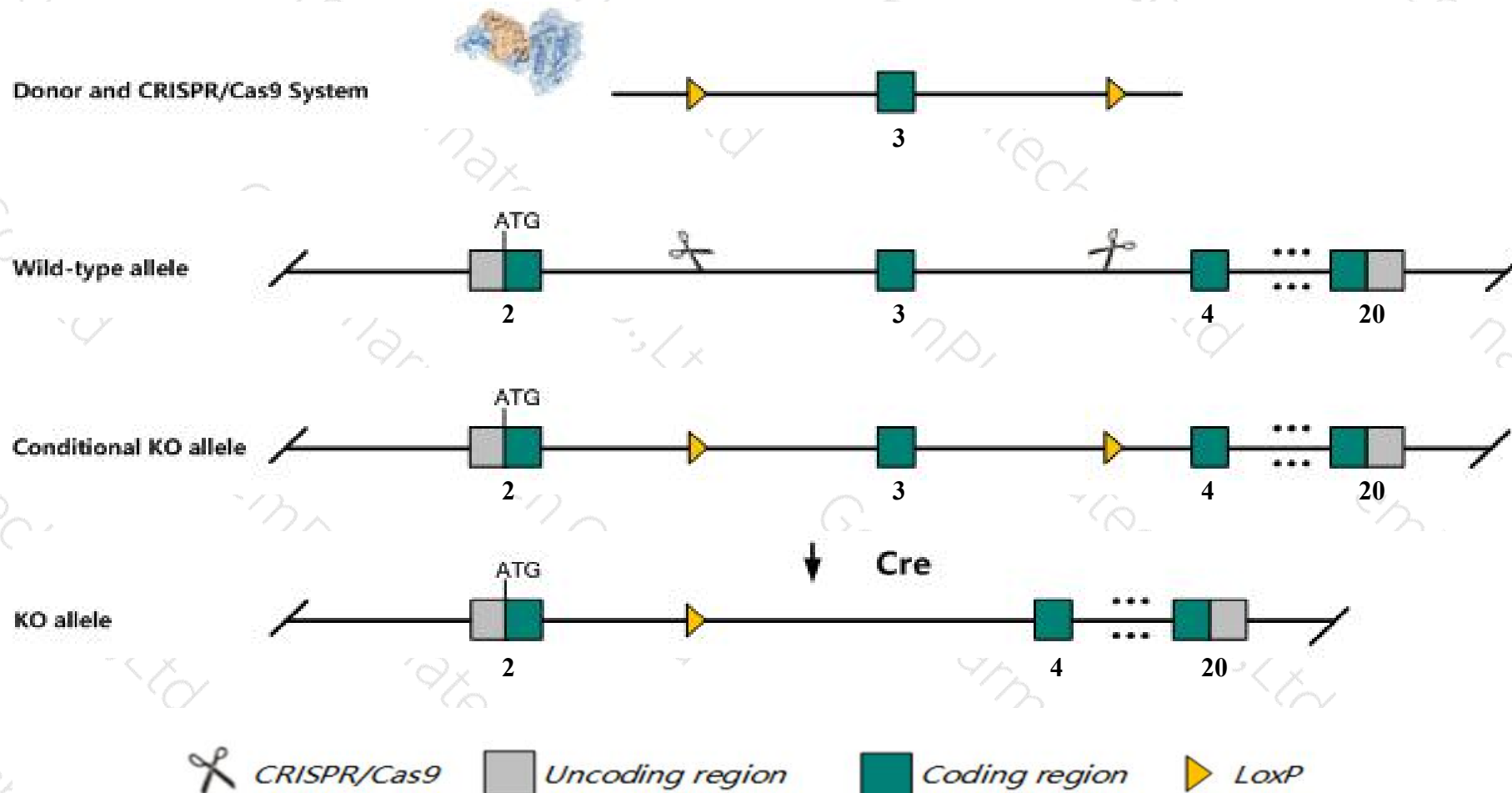
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Katnb1* gene. The schematic diagram is as follows:



Technical routes

- The *Katnb1* gene has 5 transcripts. According to the structure of *Katnb1* gene, exon3 of *Katnb1-201* (ENSMUST00000034239.8) transcript is recommended as the knockout region. The region contains 131bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Katnb1* 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, Nullizygous mice exhibit embryonic lethality, small embryo, brain and limb bud size, variable eye defects, holoprosencephaly, and thin cerebral cortex with fewer cortical progenitors and post-mitotic neurons. Mutant MEFs form multiple centrioles, multipolar spindles, and supernumerary primary cilia.
- The *Katnb1* gene is located on the Chr8. 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)

Katnb1 katanin p80 (WD40-containing) subunit B 1 [Mus musculus (house mouse)]

Gene ID: 74187, updated on 31-Jan-2019

Summary



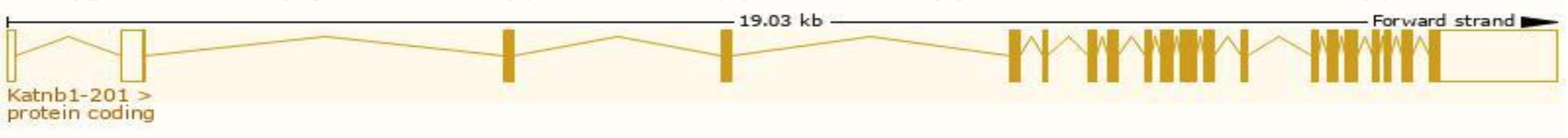
Official Symbol	Katnb1 provided by MGI
Official Full Name	katanin p80 (WD40-containing) subunit B 1 provided by MGI
Primary source	MGI:MGI:1921437
See related	Ensembl:ENSMUSG000000031787
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2410003J24Rik, KAT
Expression	Broad expression in testis adult (RPKM 79.1), whole brain E14.5 (RPKM 14.9) and 25 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

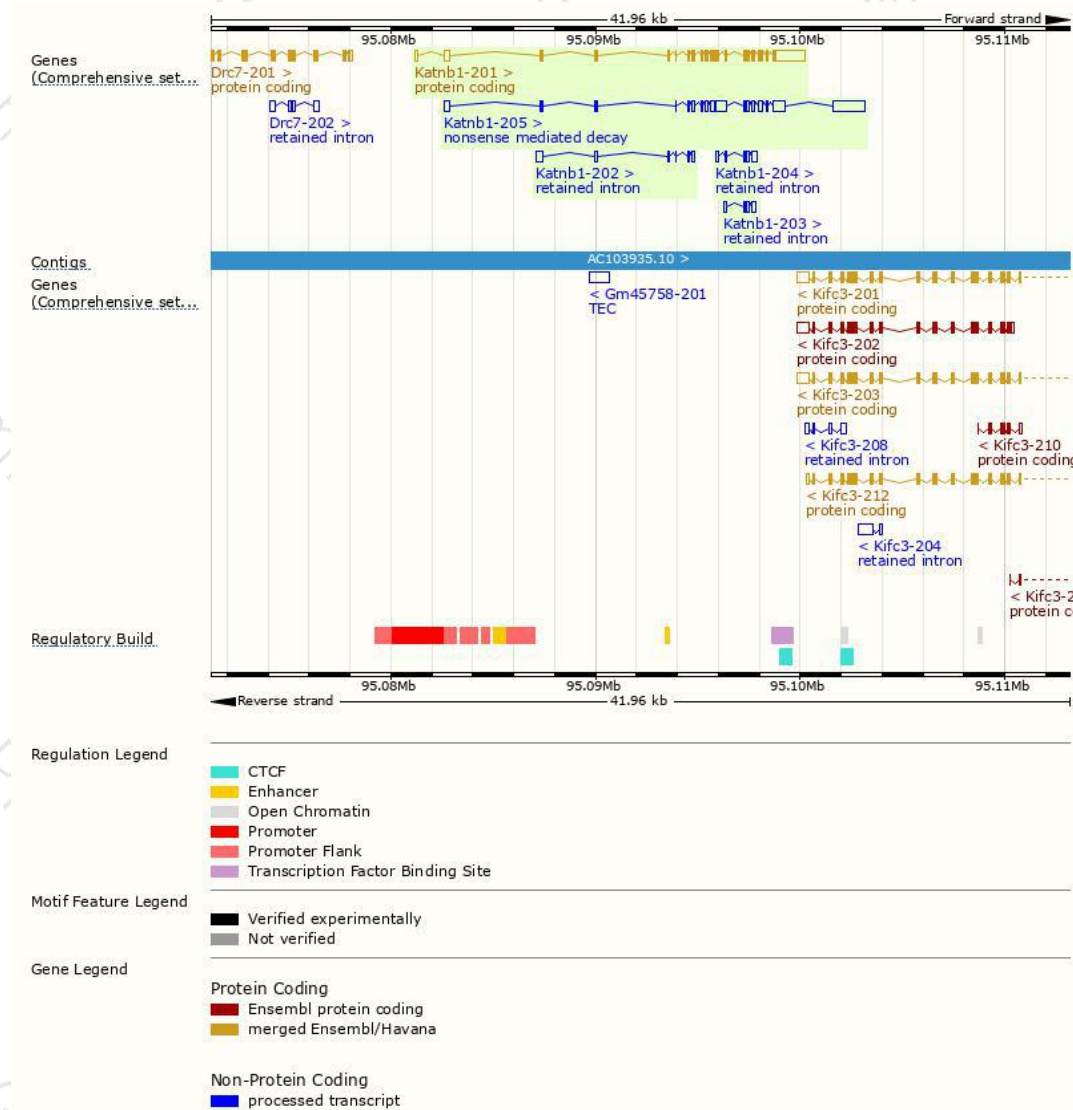
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Katnb1-201	ENSMUST00000034239.8	3777	658aa	Protein coding	CCDS22555	Q8BG40	TSL:1 GENCODE basic APPRIS P1
Katnb1-205	ENSMUST00000212968.1	4551	109aa	Nonsense mediated decay	-	A0A1D5RMH5	TSL:5
Katnb1-202	ENSMUST00000212528.1	799	No protein	Retained intron	-	-	TSL:3
Katnb1-204	ENSMUST00000212895.1	672	No protein	Retained intron	-	-	TSL:2
Katnb1-203	ENSMUST00000212565.1	600	No protein	Retained intron	-	-	TSL:3

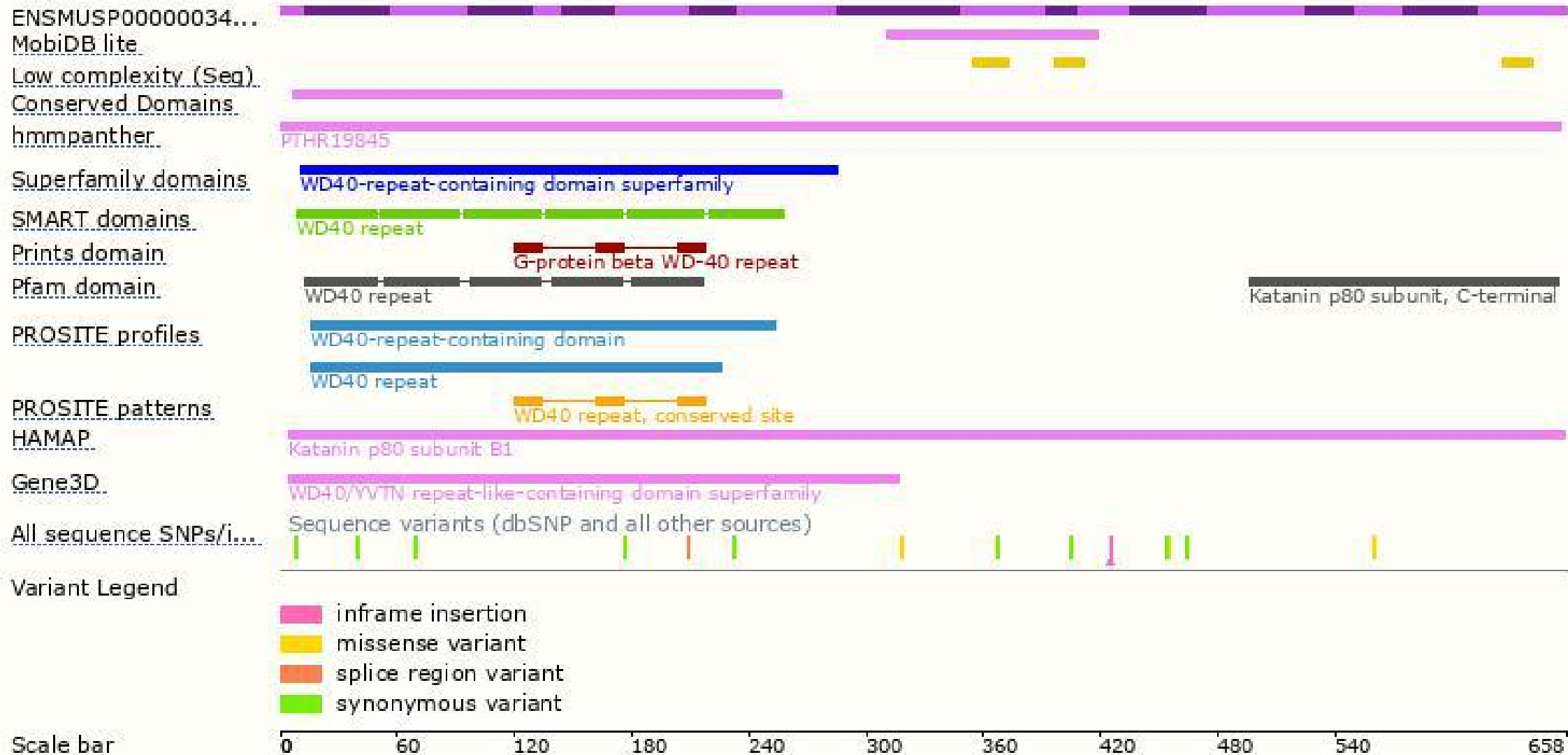
The strategy is based on the design of *Katnb1-201* transcript,The transcription is shown below



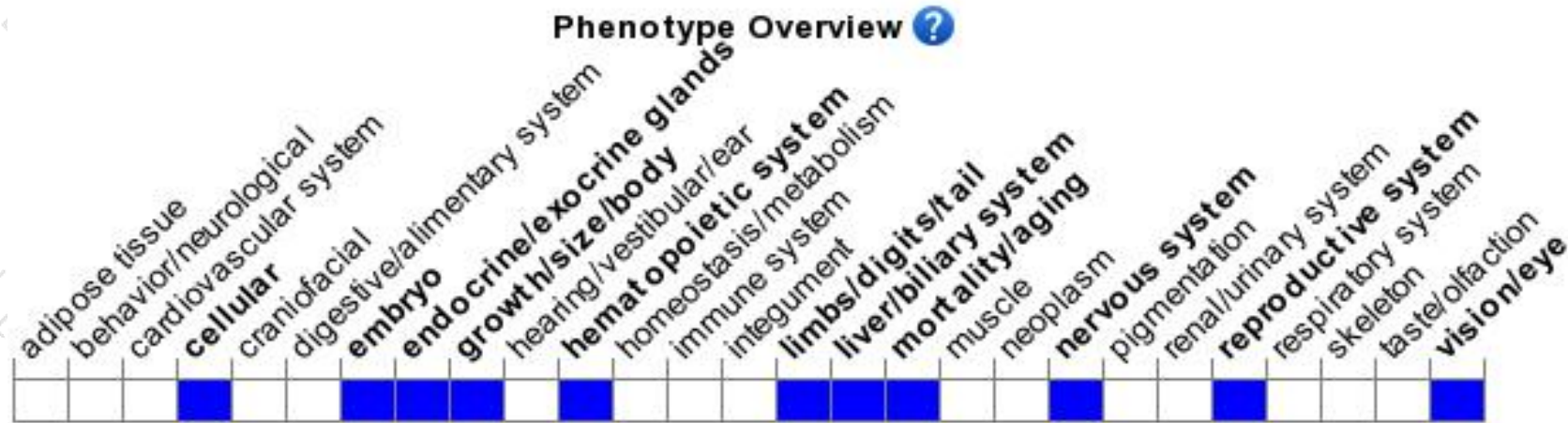
Genomic location distribution



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/>).

According to the existing MGI data, Nullizygous mice exhibit embryonic lethality, small embryo, brain and limb bud size, variable eye defects, holoprosencephaly, and thin cerebral cortex with fewer cortical progenitors and post-mitotic neurons. Mutant MEFs form multiple centrioles, multipolar spindles, and supernumerary primary cilia.

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

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