

Fosb Cas9-CKO Strategy

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Project Overview

Project Name

Fosb

Project type

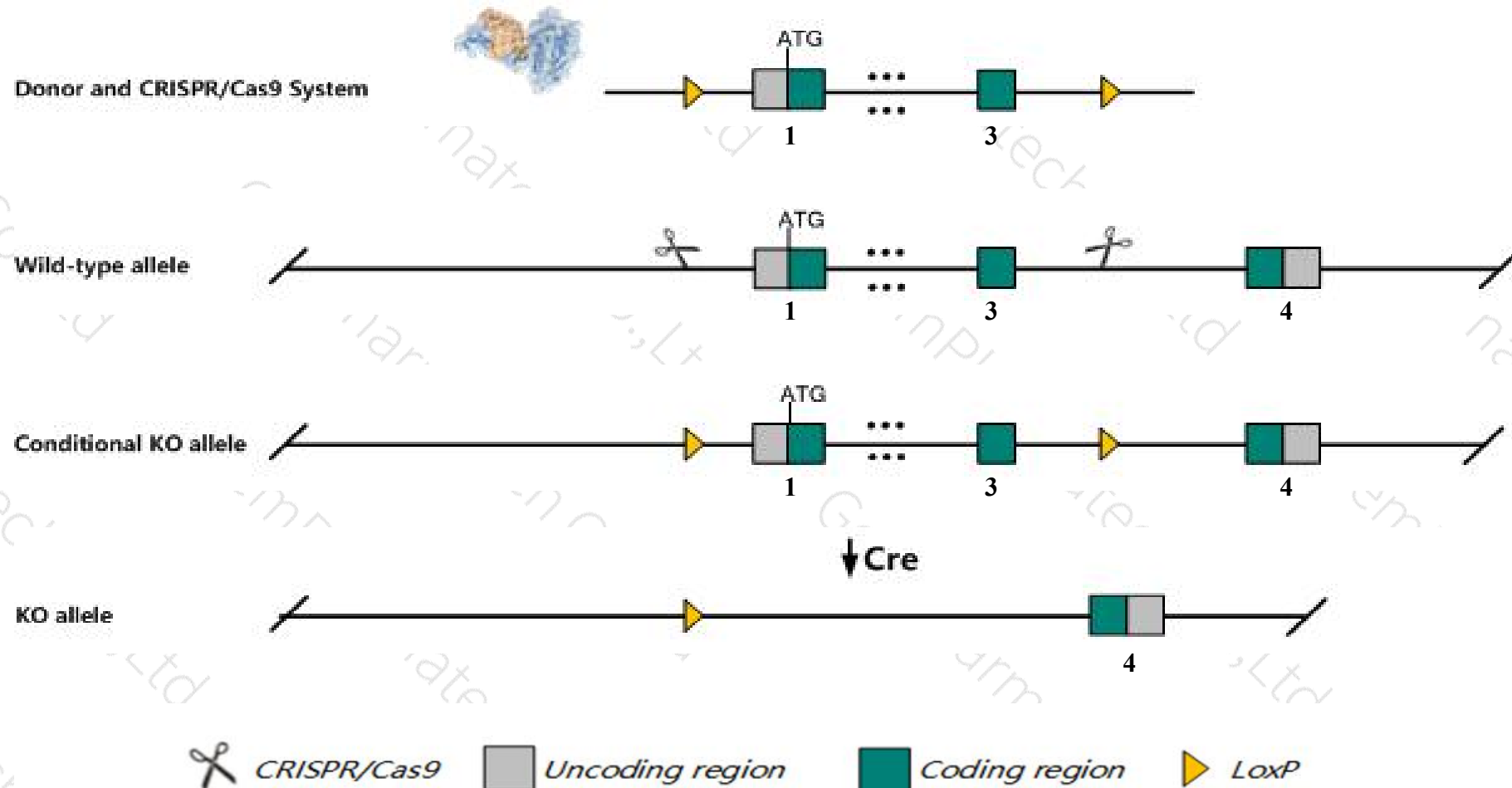
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Fosb* gene has 7 transcripts. According to the structure of *Fosb* gene, exon1-exon3 of *Fosb-201* (ENSMUST00000003640.3) 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 *Fosb* 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, Homozygotes for a null allele show impaired nurturing behavior, altered behavioral tolerance to repeated motor seizures, reduced NMDA-mediated synaptic currents, and altered paradoxical sleep. Aging mice homozygous for another null allele may exhibit occasional tonic-clonic or generalized seizures.
- The *Fosb* gene is located on the Chr7. 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.

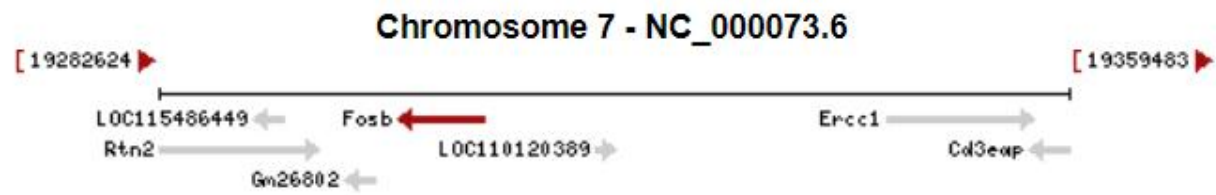
Gene information (NCBI)

Fosb FBJ osteosarcoma oncogene B [*Mus musculus* (house mouse)]

Gene ID: 14282, updated on 11-Sep-2019

Summary

Official Symbol	Fosb provided by MGI
Official Full Name	FBJ osteosarcoma oncogene B provided by MGI
Primary source	MGI:MGI:95575
See related	Ensembl:ENSMUSG000000003545
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Broad expression in frontal lobe adult (RPKM 2.7), small intestine adult (RPKM 1.8) and 18 other tissues See more
Orthologs	human all

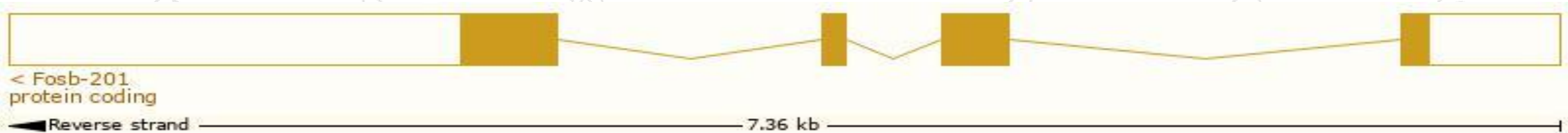


Transcript information (Ensembl)

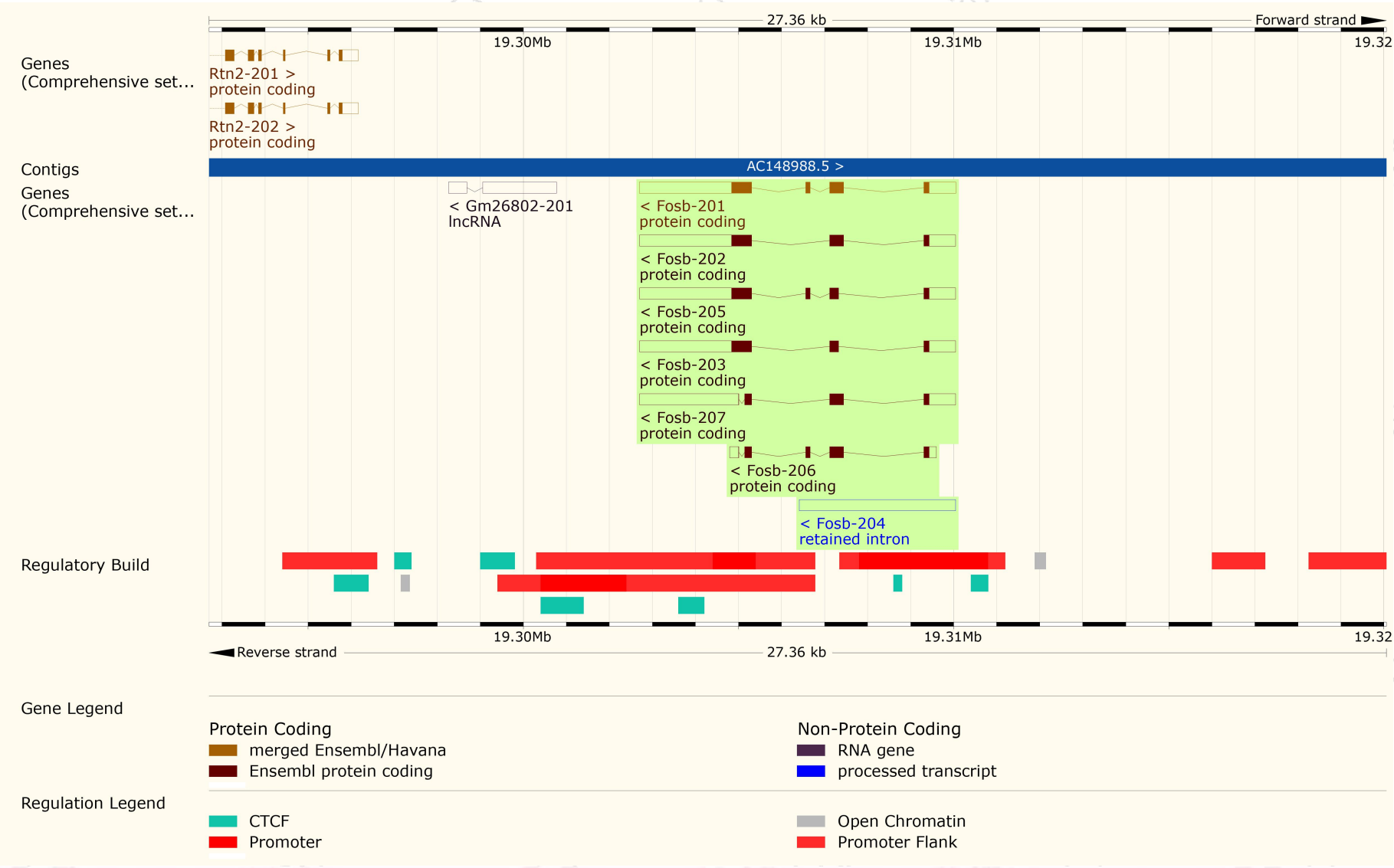
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Fosb-201	ENSMUST00000003640.3	3782	338aa	ENSMUSP00000003640.2	Protein coding	CCDS20897	A2RSD4 P13346	TSL:1 GENCODE basic APPRIS P1
Fosb-206	ENSMUST00000208446.1	1090	237aa	ENSMUSP00000146789.1	Protein coding	CCDS85225	A0A140LIE4	TSL:1 GENCODE basic
Fosb-202	ENSMUST00000207334.1	3664	302aa	ENSMUSP00000147210.1	Protein coding	-	A0A140LJH0	TSL:5 GENCODE basic
Fosb-205	ENSMUST00000208326.1	3654	299aa	ENSMUSP00000146569.1	Protein coding	-	A0A140LHW0	TSL:5 GENCODE basic
Fosb-203	ENSMUST00000207716.1	3546	263aa	ENSMUSP00000146949.1	Protein coding	-	A0A140LIT4	TSL:5 GENCODE basic
Fosb-207	ENSMUST00000208505.1	3523	201aa	ENSMUSP00000146525.1	Protein coding	-	A0A140LHS3	TSL:5 GENCODE basic
Fosb-204	ENSMUST00000208230.1	3629	No protein	-	Retained intron	-	-	TSL:NA

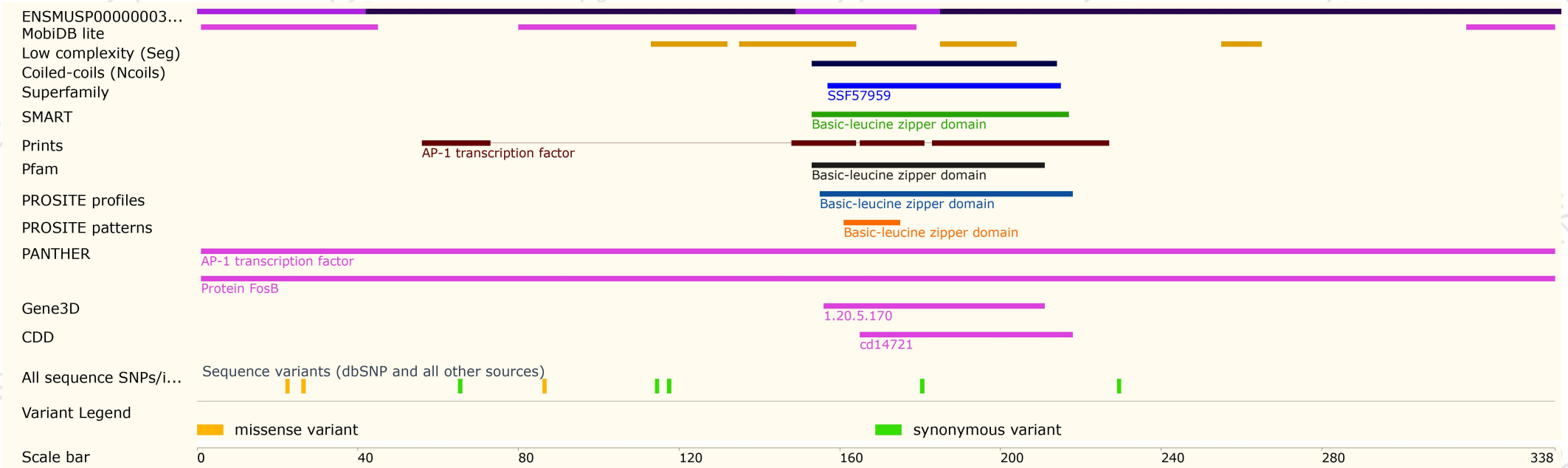
The strategy is based on the design of *Fosb-201* transcript,The transcription is shown below



Genomic location distribution

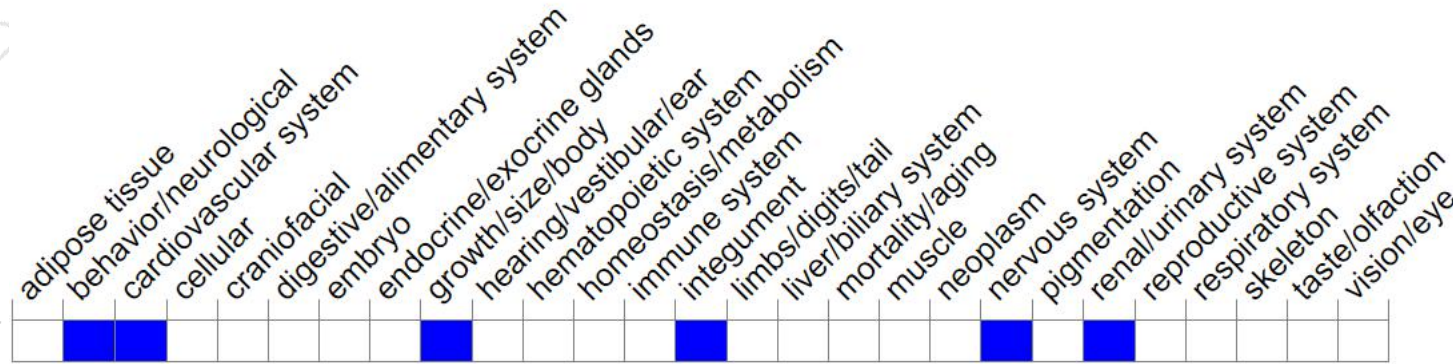


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



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, Homozygotes for a null allele show impaired nurturing behavior, altered behavioral tolerance to repeated motor seizures, reduced NMDA-mediated synaptic currents, and altered paradoxical sleep. Aging mice homozygous for another null allele may exhibit occasional tonic-clonic or generalized seizures.

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

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