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MMRRC Stock No: 34836-JAX | J20

Congenic, Transgenic



AVAILABLE

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Live mice available in varying quantities. Ask Customer Service for details.

Overview

Also Known As: J20

These transgenic mice express a mutant form of the human amyloid protein precursor bearing both the Swedish (K670N/M671L) and the Indiana (V717F) mutations (APPSwInd). They show progressive amyloid deposition as they age. This mutant mouse strain represents a model that may be useful in studies of the pathogenesis of Familial Alzheimer's Disease and possible therapeutic treatments.

Donating Investigator

Lennart Mucke, Gladstone Inst of Neurological Disease

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GENETIC OVERVIEW

Genetic Background

Generation

[N12+N27](#)

(2019-08-30 00:00:00)

[Zbtb20^{Tg}\(PDGFB-APPSwInd\)20Lms](#)

Allele Type

Transgenic (Null/Knockout, Inserted expressed sequence, Humanized sequence)

VIEW GENETICS

RESEARCH APPLICATIONS

Mouse/Human Gene Homologs

Neurobiology Research

VIEW ALL RESEARCH APPLICATIONS

Details

Important Note

In March 2010, the donating investigator performed quantitative PCR on genomic DNA and determination of amyloid-beta levels in brain extract from the JAX Stock No. 006293 distribution colony (B6.Cg-Tg(PDGFB-APPSwInd)20Lms/2J also called "J20" line). Results of these analyses demonstrate that the current distribution colony maintains similar transgene copy number and expression as previously published (Mucke et. al. J Neurosci. 2000 Jun 1; 20(11): 4050-8).

Detailed Description

These transgenic mice express a mutant form of the human amyloid protein precursor bearing both the Swedish (K670N/M671L)

and the Indiana (V717F) mutations (*APPSwInd*). Expression of the transgenic insert is directed by the human platelet-derived growth factor beta polypeptide (*PDGFB*) promoter. The transgene integrated into chromosome 16 causing a 40.7 Kb deletion in an intron of the *Zbtb20* (zinc finger and BTB domain containing 20) gene. The deletion results in a functional knock-out of *Zbtb20* in homozygous mice. Founder line 20 has a copy number of greater than 10. Hemizygotes express immunodetectable transgene product in cerebral neurons, with the highest level of expression occurring in the neocortex and hippocampus. Enzyme-linked immunosorbent assay (ELISA) analysis reveals approximate total amyloid beta peptides and 42 amino acid length amyloid beta peptides in neocortical and hippocampal tissue from mutant mice. At five to seven months of age diffuse amyloid beta peptides deposition in the dentate gyrus and neocortex forms. Amyloid deposition is progressive with all transgenic mice exhibiting plaques by age eight to 10 months. Pups born of carrier females have shown an increased mortality rate in our colonies. The Donating Researcher has observed an approximately 15% mortality rate in the first 6 months of life.

Video-EEG monitoring of 4 to 7 month old hemizygous transgenic mice, N10+ on the C57BL/6J background, reveals hippocampal hyperexcitability and cortical and hippocampal spontaneous nonconvulsive seizures. The mice are immobile, with no myoclonic behavior observed, during the non-convulsive electroencephalographic seizures. Pentylentetrazole induced seizures have earlier onset, are more severe and result in more frequent deaths (50% develop fatal status epilepticus) than wildtype controls (Palop et al. Neuron 2007).

This mutant mouse strain represents a model that may be useful in studies of the pathogenesis of Familial Alzheimer's Disease and possible therapeutic treatments.

+ Development

+ Expression Data

+ Control Suggestions

+ Selected References

- Genetics

+ *Zbtb20*^{Tg(PDGFB-APPSwInd)20Lms}

- Disease/Phenotype

+ Disease Terms

+ Research Areas By Genotype

+ Mammalian Phenotype Terms by Genotype

+ References

- Technical Support

C H A T O  F L I N E

C O N T A C T T E C H N I C A L S U P P O R T

Genotyping Protocols

Standard PCR: [Tg\(PDGFB-APPSwInd\)20Lms](#)
[Genotyping resources and troubleshooting](#)

Breeding Considerations

When maintaining a live colony, hemizygous males are bred to wildtype siblings or to C57BL/6J inbred females. Pups born of carrier females have shown an increased mortality rate in our colonies. The Donating Researcher has observed an approximately 15% mortality rate in the first 6 months of life.

[Additional Breeding and Husbandry Support](#)

Mating System

C57BL/6J (000664) x Hemizygote

Citation

When using the J20 mouse strain in a publication, please [cite the originating article\(s\)](#) and include MMRRC stock #34836 in your Materials and Methods section.
[Facility Barrier Level Descriptions](#)

 [AX10 \(Standard\)](#)

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