B6.Cg-Tg(APPSwFlLon,PSEN1*M146L*L286V)6799Vas/Mmjax

MMRRC Stock No: 34848-JAX | 5XFAD

Also Known As: B6.Cg-Tg(APPSwFlLon,PSEN1*M146L*L286V)6799Vas/J, 5XFAD

5XFAD transgenic mice overexpress both mutant human APP(695) with the Swedish (K670N, M671L), Florida (I716V), and London (V717I) Familial Alzheimer’s Disease (FAD) mutations and human PS1 harboring two FAD mutations, M146L and L286V. Expression of both transgenes is regulated by neural-specific elements of the mouse Thy1 promoter to drive overexpression in the brain. These 5XFAD transgenic mice rapidly recapitulate major features of Alzheimer’s Disease amyloid pathology and may be useful models of intraneuronal A-42 induced neurodegeneration and amyloid plaque formation.

Donating Investigator
IMR Colony, The Jackson Laboratory

GENETIC OVERVIEW

<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
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<td>N6+N1F7</td>
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Tg(APPSwFlLon,PSEN1*M146L*L286V)6799Vas

Allele Type
Transgenic (Inserted expressed sequence, Humanized sequence)

RESEARCH APPLICATIONS
Neurobiology Research
Research Tools
Mouse/Human Gene Homologs
Details

Detailed Description

Hemizygous mice are viable and fertile. These 5XFAD transgenic mice overexpress both mutant human APP(695) with the Swedish (K670N, M671L), Florida (I716V), and London (V717I) Familial Alzheimer’s Disease (FAD) mutations and human PS1 harboring two FAD mutations, M146L and L286V. Expression of both transgenes is regulated by neural-specific elements of the mouse Thy1 promoter to drive overexpression in the brain. Mice from this founder line have high APP expression correlating with high burden and accelerated accumulation of the 42 amino acid species of beta-amyloid (Aβ42). 5XFAD mice generate Aβ42 almost exclusively and rapidly accumulate massive cerebral levels. On the mixed C57BL/6 and SJL background background (see MMRC stock 34840), intraneuronal Aβ42 accumulation is observed starting at 1.5 months of age, just prior to amyloid deposition and gliosis, which begins at two months of age. On a congenic C57BL/6J genetic background (see MMRC stock 34848) it has been the observation of the MMRC that this phenotype is not as robust as that demonstrated in the mixed C57BL/6 and SJL background (view data). In addition, these mice have reduced synaptic marker protein levels, increased p25 levels, neuron loss, and memory impairment in the Y-maze test. 5XFAD transgenic mice rapidly recapitulate major features of Alzheimer’s Disease amyloid pathology and may be useful models of intraneuronal Aβ42 induced neurodegeneration and amyloid plaque formation.

This strain does not carry the retinal degeneration allele Pde6b<sup>od1</sup>.

In an attempt to offer alleles on well-characterized or multiple genetic backgrounds, alleles are frequently moved to a genetic background different from that on which an allele was first characterized. This is the case for the strain above. It should be noted that the phenotype could vary from that originally described. We will modify the strain description if necessary as published results become available.

development

Expression Data

Control Suggestions

Selected References

Genetics

Tg(APPswFlLon,PSEN1*146L*L286V)6799Vas

Disease/Phenotype

Disease Terms

Research Areas By Genotype

Mammalian Phenotype Terms by Genotype

References

Technical Support
Genotyping Protocols
QPCR: Generic App Version 1 QPCR
High Resolution Melting: Tg(APPswFILon.PSEN1*M146L*L286V)6799Vas-Chr3
Genotyping resources and troubleshooting

Dietary Information
LabDiet® 5K52 formulation (6% fat)

Breeding Considerations
When maintaining a live colony, hemizygous mice may be bred to C57BL/6J mice.
Additional Breeding and Husbandry Support

Mating System
Noncarrier x Hemizygote

Citation
When citing the Jackson Laboratory mouse strain in a publication, please cite the originating article(s) and include MMRRC stock #34848 in your Materials and Methods section.

Animal Health Reports
Facility Barrier Level Descriptions
AX12 (Maximum)

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All

By Allele

By Gene

By Collection

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