B6;129-Tg(APPswe,tauP301L)1Lfa Psen1<sup>tm1Mmp</sup>/Mmjax

MMRRC Stock No: 34830-JAX | 3xTg-AD

Targeted Mutation, Transgenic

AVAILABLE NOW

ORDER AT MMRRC JAX

Live mice available in varying quantities. Ask Customer Service for details.
Also Known As: 3xTg-AD

3xTg-AD mice are useful when studying plaque and tangle pathology associated with synaptic dysfunction and Alzheimer’s disease.

Donating Investigator

Frank LaFerla, University of California, Irvine

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<th>GENETIC OVERVIEW</th>
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<td>Genetic Background</td>
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**Tg(APPswe,tauP301L)1Lfa**

Allele Type
Transgenic (Inserted expressed sequence, Humanized sequence)

**Psen1tm1Mpm**

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<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
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<td>Targeted</td>
<td>Psen1</td>
<td>presenilin 1</td>
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RESEARCH APPLICATIONS
Neurobiology Research
Developmental Biology Research
Mouse/Human Gene Homologs
Research Tools

Details

Detailed Description
Mice homozygous for all three mutant alleles (3xTg-AD; homozygous for the Psen1 mutation and homozygous for the co-injected APPSwe and tauP301L transgenes (Tg(APPswe,tauP301L)1Lfa)) are viable, fertile and display no initial gross physical or behavioral abnormalities. Translation of the overexpressed transgenes appears to be restricted to the central nervous system, notably in Alzheimer’s disease-relevant areas including the hippocampus and cerebral cortex. The initial characterization of this mouse line indicated a progressive increase in amyloid beta peptide deposition, with intracellular immunoreactivity being detected in some brain regions as early as 3-4 months. Synaptic transmission and long-term potentiation are demonstrably impaired in mice 6 months of age. Between 12-15 months aggregates of conformationally altered and hyperphosphorylated tau are detected in the hippocampus. This mutant mouse exhibits plaque and tangle pathology associated with synaptic dysfunction, traits similar to those observed in Alzheimer’s disease patients.

In February 2014, the donating investigator communicated that, in contrast to the initial observations, male transgenic mice may not exhibit the phenotypic traits originally described. No reports of diminished traits in female carriers have been reported.

Belfiore et al. 2019 Aging Cell 18:e12873 [PMID:30488653] characterized C57BL/6;129 genetic background 3xTg AD females for the onset, severity, and incidence of amyloid , phosphorylated tau, hippocampal and cortical plaques, neuroinflammation and cognitive decline. Most phenotypes that were evaluated were evident by 6 months of age. However, it was noted that cortical plaques were first detected at 12 months. For more detailed information, please see that publication. If any more detailed characterization is completed by The Jackson Laboratory, we will modify the strain description accordingly.

Development

Expression Data

Control Suggestions

Selected References

Genetics

Tg(APPswe,tauP301L)1Lfa

Psen1tm1Mp

VIEW GENETICS

VIEW ALL RESEARCH APPLICATIONS
Disease/Phenotype

Disease Terms

Research Areas By Genotype

Mammalian Phenotype Terms by Genotype

References

Technical Support

CONTACT TECHNICAL SUPPORT

Genotyping Protocols
Restriction Enzyme Digest: Psen1<sup>1m1Mpm</sup>
Pyrosequencing: Psen1<sup>1m1Mpm</sup>
End Point Analysis: Psen1<sup>1m1Mpm</sup>-EP
Melt Curve Analysis: Tg(TAU*P301S)#Elan
Standard PCR: Generic Tg(APP)
Probe: Tg(APPSw,tauP301L)1Lfa-Chr2-Probe-alt3
Genotyping resources and troubleshooting

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

Breeding Considerations
When maintaining a live colony, mice that are homozygous for the Psen1 mutation and homozygous for the co-injected APPSwe and tauP301L transgenes (Tg(APPSw,tauP301L)1Lfa) may be bred together.
Additional Breeding and Husbandry Support

Mating System
See “Breeding Considerations”

Citation

Animal Health Reports
Materials and Methods section.
Facility Barrier Level Descriptions

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ordering and performing tests on a small number of mice to determine suitability for your particular project.

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