B6.Cg-Tg(tetO-APPSwInd)107Dbo/Mmjax

MMRRC Stock No: 34846-JAX

Congenic, Transgenic

Also Known As: B6.Cg-Tg(tetO-APPSwInd)107Dbo/J

These TetAPPswe/ind mice express human APP bearing the Swedish and Indiana mutations in a tet-responsive manner. Amyloid pathology is observed when the transgene is expressed. This strain has been shown to be useful in studies correlating temporal expression of mutant APP expression with Alzheimer's-like amyloid pathology.

Donating Investigator

Dr. David R Borchelt, University of Florida

Genetic Background

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<th>Genetic Background</th>
<th>Generation</th>
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<td>Tg(tetO-APPSwInd)107Dbo</td>
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Allele Type

Transgenic (Inducible, Inserted expressed sequence, Humanized sequence)

Research Tools

Neurobiology Research
Mouse/Human Gene Homologs
Detailed Description

Hemizygotes for this tetO-APPSwe/ind transgene are viable and fertile. These transgenic mice express a chimeric mouse/human amyloid precursor protein (APP695) bearing the Swedish (KM570/571NL) and Indiana (V617F) mutations associated with Alzheimer's disease (APP695swe/ind) under the control of a tetracycline-responsive promoter element (TRE; tetO). When hemizygotes are bred with another transgenic mouse expressing either reverse tetracycline-controlled transactivator protein (rtTA) or tetracycline-controlled transactivator protein (tTA) under the regulation of a tissue-specific promoter, APP695swe/ind expression in the target tissue of the bi-transgenic offspring can be regulated with the tetracycline analog doxycycline (dox) in the resulting double mutant offspring.

These tetO-APPSwe/ind transgenic mice may be useful in studies of Alzheimer's disease and other neurodegenerative diseases. For example, when bred to a strain expressing tTA in brain tissues (Tg(Camk2a-tTA)1Mmay), bi-transgenic offspring show 10-30 fold greater transgenic APP695swe/ind protein expression than endogenous levels and nearly complete suppression following dox treatment. The donating investigators report some differences in APP695swe/ind expression in bi-transgenic offspring dependent upon which APP695swe/ind founder line was used; line B85 (B6.Cg-Tg(tetO-APPSwInd)885Dbo/Mmjax) shows the highest APP695swe/ind expression with greater dox requirements for transgene suppression, line 102 (B6.Cg-Tg(tetO-APPSwInd)102Dbo/Mmjax) has the greatest sensitivity to dox, and line 107 (B6.Cg-Tg(tetO-APPSwInd)107Dbo/Mmjax) and line 18 are similarly intermediate.

Note that tet alone may affect neuronal degeneration and behavioral phenotypes, depending on the genetic background used (see Han et al. J. Neurosci., 2012).

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. 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.
Genotyping Protocols
Standard PCR: Tg(APP) cDNA
Genotyping resources and troubleshooting

Breeding Considerations
When maintained as a live colony, hemizygous mice are bred to C57BL/6J or wildtype siblings.
Additional Breeding and Husbandry Support

Citation
When using the BAC Co.Tg(fetO::APPSwind)107Dbo/Mmjax mouse strain in a publication, please cite the originating article(s) and include MMRC stock #34546 in your Materials and Methods section.

Animal Health Reports
Production of mice from cryopreserved embryos or sperm occurs in a maximum barrier room, G200

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All

By Allele

By Gene

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