TRM: CD33 Null Mice A Murine Model for Alzheimer's Disease

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BACKGROUND

Although the CD33 null mouse was originally developed as a means of understanding the basic biology of human CD33 (hCD33 or Siglec-3), recent studies have identified the CD33 gene is a primary risk factor for Alzheimer's disease and allelic variants of CD33 may play a primary role in the clearance of amyloid beta by microglial cell in the brain.

TECHNOLOGY DESCRIPTION

B6.129-Cd33tm1Ajv/J ("CD33 null") mice are maintained at Jackson Laboratory and a full description of the mice is found at Jackson's website (see "State of Development", below). Mice were generated using a targeting vector containing a PGK-neomycin resistance cassette to disrupt 3.8kb of sequence encoding exons 1 through 5. The construct was electroporated into (129X1/SvJ x 129S1/Sv)F1-Kitl+ derived R1 embryonic stem (ES) cells. Correctly targeted ES cells were injected into recipient blastocysts. The resulting chimeric animals were crossed to C57BL/6 mice, and then backcrossed to the same for 13 generations before arriving at The Jackson Laboratory.

APPLICATIONS

May be useful as a tool to investigate Alzheimer's disease and inflammation that is mediated by CD33-positive cells.

ADVANTAGES

The CD33 null mouse were first developed in 2001 and in the past thirteen years these have been well-studied and characterized.

STATE OF DEVELOPMENT

A complete description, including genotyping, disease features, phenotyping, etc. is found at 006942 (also see "General Information", below).

INTELLECTUAL PROPERTY INFO

Non-exclusive license to property rights enables commercial entities to order from Jackson Laboratory.

RELATED MATERIALS

- Griciuc A., et al., (2013) Alzheimer's disease risk gene CD33 inhibits microglial uptake of amyloid beta,. Neuron 78(4):631-43. - 05/22/2013
- Brinkman-Van Der Linden EC, et al., (2003) CD33/Siglec-3 Binding Specificity, Expression Pattern, and Consequences of Gene Deletion in Mice, Mol Cell Biol 23(12):4199-206. - 06/01/2003

GENERAL INFORMATION

Jackson Laboratory Stock Number 006942

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OTHER INFORMATION

KEYWORDS

murine model, CD33, CD33 null, CD33 -/-, CD33 KO, knock-out, Siglec-3, Alzheimer's, Alzheimers, neurodegenerative, amyloid

CATEGORIZED AS

- **Medical**
  - Disease: Central Nervous System
  - Research Tools
- **Research Tools**
  - Animal Models

RELATED CASES

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