

STOCK Tg(Jam2-cre/ERT2)2Jrs/J

Stock No: **029417** | JAM-B-CreER

 Transgenic

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RGCs). These mice may be useful for tamoxifen-inducible recombination of *lox*-flanked (floxed) alleles in studying photoreceptors and retinal circuitry.

Donating Investigator

Joshua R Sanes, Harvard University

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GENETIC OVERVIEW

Genetic Background

Generation

Tg(Jam2-cre/ERT2)2Jrs

Alele Type

Transgenic (Recombinase-expressing, Inducible)

VIEW GENETICS

RESEARCH APPLICATIONS

Cancer Research

Research Tools

Neurobiology Research

VIEW ALL RESEARCH APPLICATIONS

BASE PRICE

Starting at:

\$2,854.50 Domestic price Cryo Recovery

V I E W P R I C E L I S T

Details

Detailed Description

Complex neural circuits underlie mental activities, and defects in circuit assembly may be associated with behavioral disorders. The mouse retina has emerged as an excellent model system for studying neural circuitry. Photoreceptors synapse on bipolar and horizontal interneurons in the outer plexiform layer. Bipolar cells (BCs) carry visual information to the inner plexiform layer (IPL) where the information is processed by amacrine cells and retinal ganglion cells (RGCs); the RGCs carry information to the brain. Junction adhesion molecule 2 (*Jam2* or JAM-B) is a type I membrane protein that is localized at the tight junctions (details below).

The ~85 kbp JAM-B-CreER BAC transgene has the junction adhesion molecule B promoter/enhancer regions directing tamoxifen-inducible Cre recombinase expression. CreER^{T2} fusion gene activity is inducible; observed following tamoxifen administration. When JAM-B-CreER transgenic mice are bred with mice containing *lox*-flanked (floxed) sequences, tamoxifen-inducible Cre-mediated recombination will result in deletion of floxed sequences in *Jam2*-expressing cells in the offspring.

Specifically, tamoxifen-inducible Cre recombinase activity recapitulates the endogenous *Jam2* expression pattern. The donating investigator summarizes that JAM-B-CreER mice have CreER^{T2} expression in OFF direction-selective retinal ganglion cells that respond to upward/dorsal motion (J-RGCs). J-RGCs comprise ~5% of all RGCs, and can be identified by markedly asymmetric dendritic arbors confined to the outermost edge of the inner plexiform layer.

The donating investigator has not observed Cre recombinase activity prior to tamoxifen exposure. They report homozygous and hemizygous mice are viable and fertile with no reported phenotype abnormalities to date (August 2016) - although homozygous mice may be smaller (see genotyping note below). Compared to JAM-B-CreER BAC hemizygous mice, JAM-B-CreER BAC homozygous mice exhibit greater tamoxifen-inducible Cre recombinase expression (as measured by expression of the Cre-inducible fluorescent reporter Thy1-LSL-YFP line 15 [Stock No. [005630](#)]).

Genotyping note: In 2017, it is the experience at The Jackson Laboratory that breeding JAM-B-CreER BAC transgene hemizygous mice together only produces offspring that genotype (via Cre qPCR) as hemizygous or non-carrier - no homozygotes are observed. This suggests that in our colony, homozygous mice may not be viable, and may also indicate a single copy of the transgene has integrated into the genome.

The Cre-ERT2 fusion protein consists of Cre recombinase fused to a triple mutant form of the human estrogen receptor which does not bind its natural ligand (17 β -estradiol) at physiological concentrations but will bind the synthetic estrogen receptor ligands 4-hydroxytamoxifen (OHT or tamoxifen) and, with lesser sensitivity, ICI 182780. Restricted to the cytoplasm, Cre-ERT2 can only gain access to the nuclear compartment after exposure to tamoxifen. To counteract the mixed estrogen agonist effects of tamoxifen injections, which can result in late fetal abortions in pregnant mice, progesterone may be coadministered.

Development

Expression Data

[+ Control Suggestions](#)

[+ Selected References](#)

[- Genetics](#)

[+ Tg\(Jam2-cre/ERT2\)2Jrs](#)

[- Disease/Phenotype](#)

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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\(Jam2-cre/ERT2\)2Jrs](#)

Probe:[Generic Cre Probe](#)

[Genotyping resources and troubleshooting](#)

Breeding Considerations

When maintaining a live colony, hemizygous mice may be bred together, to wildtype mice from the colony or to C57BL/6J inbred mice (Stock No. [000664](#)).

The donating investigator reports that homozygous and hemizygous mice are viable and fertile with no reported phenotype abnormalities to date (August 2016) - although homozygous mice may be smaller (see genotyping note below).

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[Additional Breeding and Husbandry Support](#)

Citation

When using the JAM-B-CreER mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #029417 in your Materials and Methods section.

Animal Health Reports

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