

STOCK *Igs2*^{tm2(ACTB-tdTomato,-EGFP)Luo} /J

Stock No: 013751 | MADM-11TM

Targeted Mutation

Typically mice are recovered in 10-14 weeks. Contact Customer Service to place an order or for more information.

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chromosome 11. This MADM system allows Cre- or FLP-mediated fluorescent labeling of daughter cells to ascertain lineal relationships and pleiotropic gene function in multicellular organisms. These mice may also be useful in studies of cell differentiation and mitosis.

Of note, an improved MADM design, called MADM-ML-11, is available: GT11ML (Stock No. [022976](#)) and TG11ML (Stock No. [022977](#)). Compared to the single *loxP* approach of the original MADM-11 design (Stock No. [013749](#) and Stock No. [013751](#)), the multiple self-recognizing *lox* variant sites present in the MADM-ML-11 system result in significantly improved recombination efficiency (4-8 fold higher) with no negative impact on G2-X segregation percentage (G2-X segregation produces the desired fluorescent homozygous mutant daughter cells).

Donating Investigator

Liquan Luo, Stanford University

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GENETIC OVERVIEW

Genetic Background

Generation

Igs2^{tm2(ACTB-tdTomato,-EGFP)Luo}

Allele Type

Targeted (Reporter,
Null/Knockout)

Gene Symbol

Igs2

Gene Name

intergenic site 2

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RESEARCH APPLICATIONS

Research Tools
Cell Biology Research

BASE PRICE

Starting at:

\$2,854.50 Domestic price Cryo Recovery

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Details

Detailed Description

Homozygous MADM-11^{TG} mice are viable and fertile with no gross behavioral or observable abnormalities. The MADM-11^{TG} allele has the CMV enhancer/chicken beta-actin core promoter, the N-terminal portion of a red fluorescent protein (tdTomato), a beta-globin intronic sequence containing an *ftt* site and a *loxP*-flanked neomycin resistance gene, and the C-terminal portion of a mutant enhanced green fluorescent protein (mut4-EGFP) all inserted into the *Hipp11* locus on chromosome 11 (cytoband A1 at ~3cM between the *Eif4enif1* and *Drg1* loci). These MADM-11^{TG} mutants are designed for MADM (mosaic analysis with double markers), and must be crossed to MADM-11^{GT} mice harboring a reciprocal mutation at the same locus (see Stock No. [013749](#)). The resulting TG/GT offspring have one copy of each reciprocal mutation on homologous chromosomes ("trans-heterozygous"), and must also be bred to harbor a *cre*- or *FLP*-recombinase to induce fluorescent protein expression. Prior to Cre- or FLP-recombination, trans-heterozygous mutant mice do not have colored cells: the chimeric genes do not produce functional proteins because their coding sequences are interrupted by the beta-globin intron in different reading frames. After DNA replication (G2 phase) in double mutant mice, introduction of Cre- or FLP-recombinase that facilitates inter-chromosomal recombination aligns the respective N- and C-terminal coding sequences for each of the reporter genes on the same chromosome. The subsequent chromatid segregation (X or Z) determines daughter cell phenotype: recombinant sister chromatids into the same daughter cell (a G2-Z event) leads to double reporter expression or no reporter expression, while independent segregation into separate daughter cells (a G2-X event) leads to expression of either EGFP or tdTomato-MYC. If an additional targeted mutation of interest is introduced distal to the MADM-11 locus on chromosome 11, only homozygous cells will be singly labeled following G2 *cre* or *FLP* introduction. The homozygous mutant and wildtype cells can then be distinguished by which single reporter they express. Most heterozygous cells will be unlabeled, but some heterozygous cells will be yellow (both markers expressed). Reporter protein tissue specificity, expression levels, and frequency of recombination are thus determined by the promoter controlling Cre- or FLP-recombinase expression. Using this MADM system, a researcher can generate genetic mosaics in which an individual organism contains somatic cells of different genotypes. This allows the researcher to ascertain lineal relationships and pleiotropic gene function in multicellular organisms. These mice may also be useful in studies of cell differentiation and mitosis.

Other important features of the MADM-11 system are listed below. Because of its placement ~3kb from the centromere, MADM-11 allows >99% of genes on chromosome 11 to be subjected to MADM-based mosaic analyses. Cre- or FLP-recombinase introduction in cell phase G0 or G1 results in double reporter expression. The donating investigator also reports the MADM-11 design has several advantages compared to the original MADM(-6) mice. Specifically, MADM-11 allows direct fluorescent visualization of both EGFP and tdTomato in live animals/cells: permitting genotypes of distinctly labeled cells in mosaic animals to be unequivocally determined prior to fixation and/or immunostaining. Also, MADM-11 contains both *loxP* sites and a *ftt* site; allowing the induction of MADM-labeling by either Cre recombinase or FLP recombinase. In addition, the interchromosomal recombination rate in MADM-11 is markedly increased compared with the original MADM(-6) system; allowing greater temporal control of clone induction if using concomitantly with an inducible Cre recombinase (or FLP recombinase).

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[+ References](#)

[- Technical Support](#)

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

Probe:[Generic EGFP-MADM TG](#)

QPCR:[Generic GFP/EGFP qPCR](#)

Standard PCR:[Igs2](#)

[Genotyping resources and troubleshooting](#)

Breeding Considerations

When maintaining a live colony, homozygous mice may be bred together.

Additional Breeding and Husbandry Support

Citation

When using the MADM-11^{TG} mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #013751 in your Materials and Methods section.

Animal Health Reports

[Facility Barrier Level Descriptions](#)

Production of mice from cryopreserved embryos or sperm occurs in a maximum barrier room, [G200](#)

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Cryo
Recovery

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SERVICE/PRODUCT	DESCRIPTION	PRICE
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Frozen Mouse Embryo	STOCK Igs2<tm2(ACTB-tdTomato -EGFP)Luo>/J Frozen Embryo	\$2595.00
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