The Jackson Laboratory

STOCK *Iis6* $^{tm1.1(ACTB-tdTomato,-EFGP)Luo}$ /J

Stock No: **021461** | MADM-12 ^{TG} (*John12* ^{TG})

Targeted Mutation

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

PLACE ORDER

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tdTomato, a beta-globin intronic sequence (containing an *frt* site and *loxP* site), and the C-terminal portion of mut4-EGFP all inserted into the *John12* locus on chromosome 12 (~1.71 cM; ~16 kbp downstream of exon 1 of the *Rab10* gene). These MADM-12^{TG} mutants are designed for MADM (mosaic analysis with double markers), and must be crossed to MADM-12^{GT} mice harboring a reciprocal mutation at the same locus (Stock No. 021460). This MADM system allows Cre recombinase-induced 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, mitosis, and imprinting.

Donating Investigator

Liqun Luo, Stanford University

Simon Hippenmeyer, IST Austria (Institute of Science and Technology Austria)

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GENETIC OVERVIEW

Genetic Background	Generation

Igs6$^{tm1.1(ACTB-tdTomato,-EFGP)Luo}$

Allele Type	Gene Symbol	Gene Name
Targeted (Reporter, Null/Knockout)	*Igs6*	intergenic site 6

VIEW GENETICS

RESEARCH APPLICATIONS

Neurobiology Research
Research Tools

Developmental Biology Research
Cell Biology Research

VIEW ALL RESEARCH APPLICATION

BASE PRICE

Starting at:

$2,854.50 Domestic price Cryo Recovery

VIEW PRICE LIST

Details

Detailed Description

Mice homozygous for the MADM-12^{TG} (*John12*^{TG}) allele are viable and fertile with no reported abnormalities. The MADM-12^{TG} allele has the CMV enhancer/chicken beta-actin core promoter, the N-terminal portion of tdTomato, a beta-globin intronic sequence (containing an *frt* site and a *loxP* site), and the C-terminal portion of mut4-EGFP all inserted into the *John12* locus on chromosome 12 (~1.71 cM; ~16 kbp downstream of exon 1 of the *Rab10* gene). These MADM-12^{TG} mutants are designed for MADM (mosaic analysis with double markers), and must be crossed to MADM-12^{GT} mice harboring a reciprocal mutation at the same locus (Stock No. 021460).

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 *John12* locus on chromosome 12, 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-12 system are listed below. Because of its placement ~3.3 Mbp from the centromere, MADM-12 allows almost all of the genes on chromosome 12 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-12 design has several advantages compared to the original MADM(-6) mice. Specifically, MADM-12 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-12 contains both *loxP* and frt sites; allowing the induction of MADM-labeling by either Cre recombinase or FLP recombinase.

The same donating investigator has several mice with MADM applications on different chromosomes:

On chromosome 6, the *Gt(ROSA)26Sor* knockin mutations include MADM-6^{GR} (Stock Nos. 006041 / 006075),
MADM-6^{RG} (Stock Nos. 006067 / 006080),
MADM-6^{GG} (Stock Nos. 006053 / 006071),
R26^{GT} (Stock No. 017912),
R26^{TG} (Stock No. 017921),
R26^{TT} (Stock No. 017922),
and R26$^{G\text{-}tTA2}$ (Stock No. 017909).

On chromosome 7, the centromeric insertions are MADM-7^{GT} (*Hipp7*^{GT}; Stock No. 021457) and MADM-7^{TG} (*Hipp7*^{TG}; Stock No. 021458).

On chromosome 10, the centromeric insertions are MADM-10^{GT} (*Miya10*^{GT}; Stock No. 017923) and MADM-10^{TG} (*Miya10*^{TG}; Stock No. 017932).

On chromosome 11, the centromeric insertions are MADM-11^{GT} (*Hipp11*^{GT}; Stock No. 013749) and MADM-11^{TG} (*Hipp11*^{TG}; Stock No. 013751).

On chromosome 12, the centromeric insertions are MADM-12^{GT} (*John12*^{GT}; Stock No. 021460) and MADM-12^{TG} (*John12*^{TG}; Stock No. 021461).

- Development
- Expression Data
- Control Suggestions
- Selected References

Genetics

- *Igs6*$^{tm1.1(ACTB\text{-}tdTomato,\text{-}EFGP)Luo}$

Disease/Phenotype

- Disease Terms
- Research Areas By Phenotype
- Mammalian Phenotype Terms by Genotype
- References

Technical Support

CONTACT TECHNICAL SUPPORT

Genotyping Protocols
Separated PCR:Iis (GT vs TG)
Standard PCR:Iis6alternate1
Separated PCR:Iis6
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-12^{TG} (*John12*^{TG}) mouse strain in a publication, please cite the originating article(s) and include JAX stock #021461 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

Pricing & Availability

Cryo Recovery

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

Domestic | **Internatic**

Pricing effective for USA, Canada and Mexico shipping destinations

CRYORECOVERY - DOMESTIC PRICING

SERVICE/PRODUCT	DESCRIPTION	PRICE
Cryo Recovery	Heterozygous for Iis6<tm1.1(ACTB-tdTomato,-EFGP)Luo>	$2,854.50

RELATED PRODUCTS AND SERVICES

Frozen Mouse Embryo	STOCK Iis6<tm1.1(ACTB-tdTomato -EFGP)Luo>/J	$2595.00

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The Jackson Laboratory has rigorous genetic quality control and mutant gene genotyping programs to ensure the genetic background of JAX® Mice strains as well as the genotypes of strains with identified molecular mutations. JAX® Mice strains are only made available to researchers after meeting our standards. However, the phenotype of each strain may not be fully characterized and/or captured in the strain data sheets. **Therefore, we cannot guarantee a strain's phenotype will meet all expectations.** To ensure that JAX® Mice will meet the needs of individual research projects or when requesting a strain that is new to your research, we suggest ordering and performing tests on a small number of mice to determine suitability for your particular project. We do not guarantee breeding performance and therefore suggest that investigators order more than one breeding pair to avoid delays in their research.

Terms Of Use

TERMS OF USE

General Terms and Conditions

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Related Strains

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By Allele

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