The Jackson Laboratory

STOCK Tg(tetO-CHRM3*)1Blr/J

Stock No: **014093** | TRE-hM3Dq

Transgenic

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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(inducible/reversible) expression of hM3Dq; a mutant G protein-coupled receptor (GPCR) that activates the canonical G_q pathway specifically following administration of the pharmacologically inert molecule clozapine-*N*-oxide (CNO). TRE-hM3Dq transgenic mice may be useful for chemogenetic/pharmacogenetic applications to study receptor-specific functions or general downstream cellular signaling emanating from the activated GPCR.

Donating Investigator

Bryan L Roth, University of North Carolina at Chapel Hill

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GENETIC OVERVIEW

Genetic Background **Generation**

Tg(tetO-CHRM3*)1Blr

Allele Type

Transgenic (Inducible, Inserted expressed sequence)

VIEW GENETICS

RESEARCH APPLICATIONS

Research Tools
Neurobiology Research
Diabetes and Obesity Research
Immunology, Inflammation and Autoimmunity Research
Cell Biology Research
Cancer Research

VIEW ALL RESEARCH APPLICATION

BASE PRICE

Starting at:

$2,854.50 Domestic price Cryo Recovery

VIEW PRICE LIST

Details

Detailed Description

Hemizygous TRE-hM3Dq transgenic mice are viable and fertile, with no reported phenotypic abnormalities. The TRE-hM3Dq transgene has a modified Tet response element (TRE or *tetO*) upstream of the mutant G protein-coupled receptor, hM3Dq (a human muscarinic 3 receptor with two amino acid substitutions ($Y149C^{3.33}$/$A239G^{5.46}$) that abolish receptor affinity for the native ligand, acetylcholine (ACh), but allow receptor binding and subsequent activation by the small pharmacologically inert molecule clozapine-*N*-oxide (CNO)). When bred with another mouse expressing tetracycline-controlled transactivator protein (tTA) or reverse tetracycline-controlled transactivator protein (rtTA), hM3Dq expression in the resulting double mutant offspring can be regulated with tetracycline or its analog doxycycline (dox). As designed, TRE-hM3Dq transgenic mice have no reported levels of hM3Dq activity in tTA(+dox) or rtTA(-dox) cell types. In TRE-hM3Dq transgenic tTA(-dox) or TRE-hM3Dq transgenic rtTA(+dox) cells types, hM3Dq expression results in activation of the canonical G_q pathway only following administration of CNO.

These TRE-hM3Dq transgenic mice may be useful to study receptor-specific functions or general downstream cellular signaling emanating from the activated G protein-coupled receptor (GPCR). For example, when bred to a strain expressing tTA in forebrain neurons (Camk2a-tTA; see Stock No. 003010), these transgenic mice are a model allowing *in vivo* chemical control of neuronal activity, neuronal firing, and non-neuronal signaling.

In addition, breeding TRE-hM3Dq mice with cfos-htTA mice (Stock No. 018306) generates double transgenic offspring with hM3Dq expression in excitatory neurons that are sufficiently active to drive the c-fos promoter. Those $hM_3D_q^{fos}$ double transgenic mice allow CNO ligand-induced, artificial reactivation of neurons associated with a specific memory. Temporal modulation may also be employed using dox. Such $hM_3D_q^{fos}$ double transgenic mice allow one to generate and artificially-activate a synthetic memory trace, and may be useful in studying the spatial pattern of activity at the time of learning and retrieval.

Of note, several chemogenetic/pharmacogenetic tool strains are available from The Jackson Laboratory Repository; including these Tet-responsive TRE-hM3Dq transgenic mice (Stock No. 014093),
the adora2A-rM3Ds transgenic mice (Stock No. 017863),
the Tet-responsive TRE-hM4Di transgenic mice (Stock No. 024114),
the Cre-inducible R26-LSL-Gi-DREADD mice (R26-hM4Di/mCitrine; Stock No. 026219)
and the Cre-inducible CAG-LSL-Gq-DREADD mice (Tg-hM3Dq/mCitrine [formerly R26-LSL-Gq-DREADD]; Stock No. 026220).

For CNO protocol, see the detailed protocol for dissolving CNO obtained from the attachments section of the Designer Receptors Exclusively Activated by Designer Drugs DREADD wiki webpage.

- Development
- Expression Data
- Control Suggestions
- Selected References

Genetics

- Tg(tetO-CHRM3*)1Blr

Disease/Phenotype

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

Technical Support

CONTACT TECHNICAL SUPPORT

Genotyping Protocols

Pyrosequencing:** human CHRM3*Y149C
Pyrosequencing:** human CHRM3*A239G
Standard PCR:Tg(tetO-CHRM3*)1Blr
Separated PCR:Tg(tetO-CHRM3*)1Blr
Standard PCR:Tg(tetO-CHRM3*)1Blr
Genotyping resources and troubleshooting

Breeding Considerations

When maintaining a live colony, transgene carrier mice may be bred together or to wildtype (noncarrier) mice from the colony. The donating investigator reports they have not tried to generate homozygous mice (November 2011).

Additional Breeding and Husbandry Support

Citation

When using the TRE-hM3Dq mouse strain in a publication, please cite the originating article(s) and include JAX stock #014093 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	Hemizygous or Non carrier for Tg(tetO-CHRM3*)1Blr	$2,854.50

RELATED PRODUCTS AND SERVICES

Frozen Mouse Embryo	STOCK Tg(tetO-CHRM3*)1Blr/J Frozen Embryo	$2595.00

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THE JACKSON LABORATORY'S GENOTYPE PROMISE

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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Use of MICE by companies or for-profit entities requires a license prior to shipping.

LICENSING INFORMATION

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Email: TechTran@jax.org

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