

B6;SJL-Tg(Tph2-COP4*H134R/EYFP)5Gfng/J

Stock No: **014555** | Tph2-ChR2(H134R)-EYFP line 5

 Transgenic

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

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labeling of serotonergic neuronal populations.

Donating Investigator

Guoping Feng, Massachusetts Institute of Technology

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GENETIC OVERVIEW

Genetic Background

Generation

Tg(Tph2-COP4*H134R/EYFP)5Gfng

Alele Type

Transgenic (Reporter)

VIEW GENETICS

RESEARCH APPLICATIONS

Research Tools

Neurobiology Research

Sensorineural 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

Mice hemizygous for the TpH2-ChR2-YFP BAC transgene are viable and fertile, with expression of the mhChR2::YFP fusion protein directed to serotonergic neuronal populations by the mouse tryptophan hydroxylase 2 (*Tph2* or TpH2) promoter/enhancer regions on the BAC transgene. The mhChR2::YFP fusion protein is composed of a mammalian codon-optimized *Chlamydomonas reinhardtii*-derived channelrhodopsin-2 that was modified to harbor a gain-of-function H134R substitution (mhChR2; also called hChR2-H134R) fused in-frame with an enhanced yellow fluorescent protein (EYFP). The mhChR2 is designed to cause larger stationary photocurrents compared to ChR2. The bacterial opsins are retinal-binding proteins that provide light-dependent ion transport and sensory functions to a family of halophilic bacteria; and this mhChR2 functions as a blue light-driven cation channel that depolarizes the cell and causes action potentials. As such, illuminating mhChR2-expressing neurons with blue light (450-490 nm) leads to rapid and reversible photostimulation of action potential firing/neural activity in these cells.

The donating investigator reports that EYFP expression is visible by direct fluorescence (epifluorescence microscope). TpH2-ChR2-YFP mice derived from founder line 5 exhibit medium EYFP expression in dorsal raphe nucleus, gigantocellular reticular nucleus, paramedian reticular nucleus, and other serotonergic nuclei. Anti-TpH2 immunofluorescent signal co-localizes specifically with anti-YFP antibody-labeled neurons in the cell types listed above; suggesting mhChR2-EYFP labels all the serotonergic neurons with no ectopic expression. No tissues other than brain were tested for EYFP expression.

These TpH2-ChR2-YFP BAC transgenic mice may be useful for rapid control of motor behavior by addition or removal of light, for *ex vivo* and *in vivo* studies of neural circuitry/connectivity following illumination, or for fluorescent labeling of serotonergic neuronal populations.

This optogenetic strain is one of many from the same transgene creator/donating investigator with light-inducible neurobiology applications; including

Thy1-ChR2-YFP line 18 (Stock No. [007612](#)),
Thy1-ChR2-YFP line 9 (Stock No. [007615](#)),
Thy1-eNpHR-YFP line 2 (Stock No. [012332](#)),
Thy1-eNpHR-YFP line 4 (Stock No. [012334](#)),
Thy1-vChR1-YFP line 1 (Stock No. [012341](#)),
Thy1-vChR1-YFP line 4 (Stock No. [012344](#)),
Thy1-vChR1-YFP line 8 (Stock No. [012348](#)),
Thy1-mhChR2-YFP Line 20 (Stock No. [012350](#)),
Prv-mhChR2-YFP Line 15 (Stock No. [012355](#)),
ChAT-ChR2-YFP line 5 (Stock No. [014545](#)),
ChAT-ChR2-YFP line 6 (Stock No. [014546](#)),
and VGAT-ChR2-YFP line 8 (Stock No. [014548](#)).

Development

Expression Data

Control Suggestions

[+ Selected References](#)

[- Genetics](#)

[+ Tg\(Tph2-COP4*H134R/EYFP\)5Gfng](#)

[- Disease/Phenotype](#)

[+ Disease Terms](#)

[+ Research Areas By Phenotype](#)

[+ Mammalian Phenotype Terms by Genotype](#)

[+ 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

Standard PCR:[Tg\(Tph2-COP4*H134R/EYFP\)](#)

Standard PCR:[Tg\(Tph2-COP4*H134R/EYFP\)](#)

[Genotyping resources and troubleshooting](#)

Breeding Considerations

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

[Additional Breeding and Husbandry Support](#)

Citation

When using the Tph2-ChR2(H134R)-EYFP line 5 mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #014555 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

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Domestic International

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CRYORECOVERY - DOMESTIC PRICING

SERVICE/PRODUCT	DESCRIPTION	PRICE
Cryo Recovery	Hemizygous or Non carrier for Tg(Tph2-COP4*H134R/EYFP)5Gfng	\$2,854.50

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