

B6;SJL-Tg(Pvalb-COP4*H134R/EYFP)15Gfng/J

Stock No: 012355 | Prv-mhChR2-EYFP Line 15

 Transgenic

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directed to neuronal populations by the mouse parvalbumin promoter/enhancer on the BAC transgene. 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. These transgenic mice can be used in optogenetic studies for *in vivo* control of motor behavior by addition or removal of blue light.

Donating Investigator

Guoping Feng, Massachusetts Institute of Technology

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GENETIC OVERVIEW

Genetic Background

Generation

Tg(Pvalb-COP4*H134R/EYFP)15Gfng

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 Prv-mhChR2-YFP BAC transgene are viable and fertile with expression of the mhChR2::YFP fusion protein directed to neuronal populations by the mouse parvalbumin (*Pvalb* or Prv) 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 Prv-mhChR2-YFP mice derived from founder line 15 exhibit high EGFP expression in cerebellum, medium EGFP expression in reticular thalamic nuclei, and low EGFP expression in brainstem. These Prv-mhChR2-YFP BAC transgenic mice may be useful for rapid control of behavior by addition or removal of light, for *ex vivo* and *in vivo* studies of neural circuitry/connectivity following illumination of parvalbumin positive neurons in the cerebellum, thalamic reticular nucleus, brainstem, thalamus and inferior colliculus.

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](#)),
ChAT-ChR2-YFP line 5 (Stock No. [014545](#)),
ChAT-ChR2-YFP line 6 (Stock No. [014546](#)),
VGAT-ChR2-YFP line 8 (Stock No. [014548](#)),
and TpH2-ChR2-YFP line 5 (Stock No. [014555](#)).

Development

Expression Data

Control Suggestions

Selected References

– Genetics

+ [Tg\(Pvalb-COP4*H134R/EYFP\)15Gfng](#)

– 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\(Pvalb-COP4*H134R/EYFP\)](#)

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

[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](#)

Mating System

Hemizygote x Noncarrier

Citation

When using the Prv-mhChr2-EYFP Line 15 mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #012355 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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RELATED PRODUCTS AND SERVICES

Frozen Mouse Embryo	B6;SJL-Tg(Pvalb-COP4*H134R/EYFP)15Gfng/J	\$2595.00
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