

B6.Cg-Tg(Slc32a1-COP4*H134R/EYFP)8Gfng/J

Stock No: 014548 | VGAT-ChR2-EYFP line 8

 Congenic, Transgenic

Live mice available in varying quantities. Ask Customer Service for details.

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illumination, and for fluorescent labeling of GABAergic interneuronal populations.

Donating Investigator

Guoping Feng, Massachusetts Institute of Technology

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GENETIC OVERVIEW

Genetic Background

Generation

?+N4F2
(2019-03-01 00:00:00)

Tg(Slc32a1-COP4*H134R/EYFP)8Gfng

Alele Type

Transgenic (Reporter)

VIEW GENETICS

RESEARCH APPLICATIONS

Research Tools

Neurobiology Research

Sensorineural Research

VIEW ALL RESEARCH APPLICATIONS

BASE PRICE

Starting at:

\$255.00 Domestic price for female 4-week

333.51 Domestic price for breeder pair

V I E W P R I C E L I S T

Details

Detailed Description

Mice hemizygous for this transgene (also known as VGAT-ChR2-YFP BAC transgene) are viable and fertile, with expression of the mhChR2::YFP fusion protein directed to GABAergic interneuronal populations by the mouse vesicular GABA transporter (VGAT or *Slc32a1*) 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). VGAT-ChR2-YFP mice derived from founder line 8 exhibit strong EYFP expression in olfactory bulb (glomerular and mitral cell layers), thalamic reticular nucleus, superior colliculus, inferior colliculus, brainstem, and molecular layer of cerebellum. Moderate EYFP expression is found in cortex, hippocampus, thalamus, and granule cell layer of olfactory bulb. GAD67 co-staining shows the mhChR2-EYFP expressing neurons are GABAergic interneurons. High EYFP fluorescence is also observed for gray matter in transverse section of the spinal cord.

These VGAT-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 GABAergic interneuronal 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 TpH2-ChR2-YFP line 5 (Stock No. [014555](#)).

Development

Expression Data

[+ Control Suggestions](#)

[- Genetics](#)

[+ Tg\(Slc32a1-COP4*H134R/EYFP\)8Gfng](#)

[- 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\(Slc32a1-COP4*H134R/EYFP\)](#)

[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

Noncarrier x Hemizygote

Citation

When using the VGAT-ChR2-EYFP line 8 mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #014548 in your Materials and Methods section.

Animal Health Reports

Facility Barrier Level Descriptions

 AX18 (Maximum)

➔ Pricing & Availability



Live mice available in varying quantities. Ask Customer Service for details.

Available

Domestic **International**

Pricing effective for USA, Canada and Mexico shipping destinations

LIVE MOUSE			
AGE	SEX	GENOTYPE	PRICE
4 weeks	Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
	Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
4 weeks	Female	Noncarrier	\$78.51
	Male	Noncarrier	\$78.51
5 weeks	Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
	Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
5 weeks	Female	Noncarrier	\$78.51
	Male	Noncarrier	\$78.51
6 weeks	Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
	Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
6 weeks	Female	Noncarrier	\$78.51
	Male	Noncarrier	\$78.51
7 weeks	Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
	Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
7 weeks	Female	Noncarrier	\$78.51
	Male	Noncarrier	\$78.51
8 weeks	Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
	Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
8 weeks	Female	Noncarrier	\$78.51
	Male	Noncarrier	\$78.51
9 weeks	Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
	Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
9 weeks	Female	Noncarrier	\$78.51

	Carrier	Noncarrier	\$78.51
	SEX		
10 weeks	Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
	Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
10 weeks	Female	Noncarrier	\$78.51
	Male	Noncarrier	\$78.51
11 weeks	Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
	Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
11 weeks	Female	Noncarrier	\$78.51
	Male	Noncarrier	\$78.51
12 weeks	Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
	Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$255.00
12 weeks	Female	Noncarrier	\$78.51
	Male	Noncarrier	\$78.51

BREEDER PAIR		
SEX	GENOTYPE	PRICE
Female	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	\$333.51
Male	Noncarrier	
Female	Noncarrier	\$333.51
Male	Hemizygous for Tg(Slc32a1-COP4*H134R/EYFP)8Gfng	

RELATED PRODUCTS AND SERVICES		
Frozen Mouse Embryo	B6.Cg-Tg(Slc32a1-COP4*H134R/EYFP)8Gfng/J	\$2595.00

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