B6;129S6-Gt(ROSA)26Sor

Stock No: 029040 | RC::FPDi dual-recombinase responsive fluorescent/DREADD

Targeted Mutation

AVAILABLE

PLACE ORDER

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

Also Known As: RC::FPDi dual-recombinase responsive fluorescent/DREADD

The RC::FPDi dual-recombinase responsive allele has a fRT-flanked STOP and loxP-flanked mCherry::STOP all preventing transcription of an HA-tagged hM4Di - a mutant G protein-coupled DREADD receptor that induces the canonical G\text{\textsubscript{16}} pathway specifically following administration of its pharmacologically inert ligand (CNO). FLP recombinase results in mCherry fluorescence, and further exposure to Cre recombinase results in hM4Di expression in the overlapping populations. The RC::FPDi allele and its derivatives allow conditional intersectional genetics for chemogenetic studies to express an inhibitory DREADD that effectively induces membrane hyperpolarization and neuronal silencing.

Donating Investigator
Susan M Dymecki, Harvard Medical School

GENETIC OVERVIEW

<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
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<tbody>
<tr>
<td>?pN1F4</td>
<td>(2019-03-05 00:00:00)</td>
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<thead>
<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
<th>Gene Name</th>
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<tbody>
<tr>
<td>Targeted (Conditional ready (e.g. floxed), Reporter)</td>
<td>Gt(Rosa)26Sor</td>
<td>gene trap ROSA 26, Philippe Soriano</td>
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RESEARCH APPLICATIONS
Research Tools
Neurobiology Research
Cancer Research

VIEW ALL RESEARCH APPLICATIONS
The RC::FPDi dual-recombinase responsive indicator allele is a Gt(ROSA)26Sor knock-in with the CAG hybrid promoter followed by a flrt-flanked STOP and loxP-flanked mCherry::STOP that prevent transcription of a hemagglutinin epitope-tagged hM4Di sequence. FLP recombinase-mediated removal of the flrt-flanked STOP cassette results in expression of mCherry. Further exposure to Cre recombinase removes the floxed-mCherry::STOP, resulting in expression of the HA-tagged hM4Di - a mutant C16o-coupled human M4 muscarinic receptor DREADD modified to lack affinity for its native ligand acetylcholine (ACh), but allow receptor binding and subsequent activation by the small drug-like molecule clozapine-N-oxide (CNO). hM4Di activation via CNO binding induces the canonical G_{i} pathway; leading to membrane hyperpolarization and neuronal silencing.

Specifically, the donating investigator reports that RC::FPDi mice have no mCherry expression prior to introduction of FLP recombinase, and no detectable hM4Di expression prior to introduction of both FLP and Cre recombinases. Following FLP recombinase, mCherry expression is observable by immunofluorescence and by direct fluorescence (if expression level is great enough). Subsequent Cre recombinase exposure results in expression of the HA-tagged hM4Di (far-red indirect HA immunofluorescence) which is capable of CNO ligand-inducible and reversible suppression of action potential firing. Mice homozygous for the RC::FPDi allele are viable and fertile with no reported gross physical or behavioral abnormalities.

FLP- and/or cre-mediated removal of specific STOP cassettes within the RC::FPDi allele results in the following derivative alleles:

i. FLP-mediated recombination results in the single-recombinase responsive indicator allele RC::PDI, which has constitutive mCherry fluorescence and allows cre-inducible expression of the CNO-dependent hM4Di.

ii. cre-mediated recombination results in the single-recombinase responsive indicator allele RC::FDi, which has no fluorescence (mCherry::STOP sequences removed) and allows FRT-inducible expression of the CNO-dependent hM4Di.

iii. Combination of FLP- and cre-mediated recombination results in deletion of both STOPs; allowing CNO-inducible hM4Di expression in the cells/tissues where FLP and cre expression overlap.

**Development**

**Expression Data**

**Control Suggestions**

**Selected References**

**Genetics**

**Gt(ROSA)26Sor^{m9}CAG-mCherry::CIRMA10ym**
Genotyping Protocols
MELT: Gt(ROSA)26Sor^{tmRCAG-mCherry,+CHR1M64+}Dym Alternate1
Genotyping resources and troubleshooting

Breeding Considerations
Mice homozygous for the RC::FPD1 allele are viable and fertile with no reported gross physical or behavioral abnormalities. When maintaining a live colony, heterozygous mice may be bred together, to wildtype mice from the colony or to C57BL/6J inbred animals (Stock No. 000664). Alternatively, homozygous mice may be bred together.

Additional Breeding and Husbandry Support

Mating System
Homozygote x Homozygote

Citation
When using the RC::FPD1 dual recombinase responsive fluorescent/DREADD mouse strain in a publication, please cite the originating article(s) and include JAX stock #029040 in your Materials and Methods section.

Facility Barrier Level Descriptions

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

Domestic | International
Pricing effective for USA, Canada and Mexico shipping destinations

<table>
<thead>
<tr>
<th>AGE</th>
<th>SEX</th>
<th>GENOTYPE</th>
<th>PRICE</th>
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<tbody>
<tr>
<td>Approx 4-8 weeks</td>
<td>Female</td>
<td>Homozygous for Gt(ROSA)26Sor^{tmRCAG-mCherry,+CHR1M64+}Dym</td>
<td>$278.00</td>
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