FLAG-Ube3a BAC transgenic on FVB/NJ

Also Known As: FLAG-Ube3a BAC transgenic on FVB/NJ

Coisogenic, Transgenic

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

Donating Investigator

Matthew P Anderson, Beth Israel Deaconess Medical Center / Harvard Medical School

Genetic Overview

<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
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<tbody>
<tr>
<td>Tg(Ube3a)1Mpan</td>
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</table>

**Allele Type**

Transgenic (Inserted expressed sequence)

Research Applications

Neurobiology Research
Research Tools
Developmental Biology Research
The FLAG-Ube3a BAC transgene (also called "Ube3a-isoform2,3-3XFlag: Strain L" transgene) has a 3xFLAG tag inserted in-frame into exon 12 of \textit{Ube3a} on the BAC; this generates full-length, C-terminal FLAG-tagged Ube3a mRNA long isoforms (isoforms 2 and 3, L) that are subsequently translated into functional, FLAG-tagged Ube3a protein. Transgenic mice from founder line Fd1 (FLAG-Ube3a BAC Fd1 or FLAG-Ube3a BAC X0) are described here. The FLAG-Ube3a expression pattern matched that of endogenous Ube3a across multiple brain areas (including cortex, hippocampus and thalamus). Importantly, the endogenous \textit{Ube3a} gene is expressed only from the maternal chromosome in neurons; a result of paternal imprinting (the antisense transcript functions to silence paternal expression in brain). Because the FLAG-Ube3a BAC transgene lacks the transcription initiation site of the antisense transcript, expression of FLAG-Ube3a is independent of parent-of-origin or sex of the animal. Compared to wildtype animals, expression levels of Ube3a protein in whole-brain lysates are two-fold greater in \textit{Ube3a} 1xTg (i.e., hemizygous) mice and three-fold greater in \textit{Ube3a} 2xTg (i.e., homozygous) mice.

This increased Ube3a gene dosage models maternal 15q11-13 duplication (dup15) and triplication (isodicentric extranumerary chromosome, idic15) that is associated with 1-3\% of human autism spectrum disorder. By 16 weeks of age, homozygous mice display strong penetrance of three core autism-related behavior traits; defective social interaction, impaired communication and increased repetitive stereotypies (defective three chamber social interaction task, impaired social paired vocalizations in adults and increased repetitive self-grooming, respectively). Homozygous animals exhibit reduced glutamatergic (excitatory) synaptic transmission, but no defects in GABAergic (inhibitory) synaptic transmission. To date, homozygous mice have not displayed other major confounding traits or co-morbidities (no evidence of anxiety, motor behavior deficits, memory deficits or sensory behavior deficits). Hemizygous animals are viable and fertile, with a milder phenotype compared to homozygotes. The donating investigator does not recommend breeding homozygous animals as it could result in some heretofore unknown changes in phenotype.
Genotyping Protocols
QPCR: Tg(Ube3a)1Mpan-qPCR
Standard PCR: Tg(Ube3a)1Mpan
Genotyping resources and troubleshooting

Breeding Considerations
When maintaining our live colony, hemizygous mice may be bred to wildtype (noncarrier) mice from the colony or to FVB/NJ inbred mice (Stock No. 001800). The donating investigator reports that hemizygous (Ube3a 1xTg) mice of both sexes are viable and breed perfectly well. The donating investigator does not recommend breeding homozygous (Ube3a 2xTg) animals as it could result in some heretofore unknown changes in phenotype.

Additional Breeding and Husbandry Support

Citation
When using the FLAG-Ube3a BAC transgenic on FVB/NJ mouse strain in a publication, please cite the originating article(s) and include JAX stock #019730 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

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

**Domestic Pricing**

<table>
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<tr>
<th>SERVICE/PRODUCT</th>
<th>DESCRIPTION</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryo Recovery</td>
<td>Hemizygous or non carrier for Tg(Ube3a)1Mpan</td>
<td>$2,854.50</td>
</tr>
</tbody>
</table>

*Pricing effective for USA, Canada and Mexico shipping destinations*

Related Products and Services

| Frozen Mouse Embryo | FVB/NJ-Tg(Ube3a)1Mpan/J Frozen Embryo | $2,595.00 |

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Terms Of Use

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Email: TechTran@jax.org

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