A copy number variation on human chromosome 16p11.2 is among the most common genetic variations found in autism spectrum disorders. 16p11.2 mice are a Cre or FLP recombinase-inducible mouse model of 16p11.2 deletion that has several loxP and frt sites flanking the corresponding 440 kbp region on mouse chromosome 7F3. These mice may be useful in studying basal ganglia circuitry and the pathophysiology of autism.

Donating Investigator
Ricardo E Dolmetsch, Stanford University

<table>
<thead>
<tr>
<th>GENETIC OVERVIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Genetic Background</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>lgs13&lt;sup&gt;tm1Dolm&lt;/sup&gt;</strong></td>
</tr>
<tr>
<td><strong>Allele Type</strong></td>
</tr>
<tr>
<td>Targeted (Conditional ready (e.g. floxed), No functional change)</td>
</tr>
</tbody>
</table>

| **lgs14<sup>tm1Dolm</sup>** | | |
| **Allele Type** | Gene Symbol | Gene Name |
| Targeted (Conditional ready (e.g. floxed), Reporter, No functional change) | lgs14 | intergenic site 14 |
A copy number variation (CNV) on human chromosome 16p11.2 is among the most common genetic variations found in autism spectrum disorders (ASD). Patients with this deletion display motor deficits, speech/language delay, and cognitive impairments, accompanied by ASD, attention deficit hyperactivity disorder (ADHD), seizures, and hearing disorders. Conversely, a duplication of 16p11.2 is associated with schizophrenia. The chromosome 16p11.2 CNV encompasses 26 genes that are highly conserved on mouse chromosome 7F3.

16p11\textsuperscript{8x} is a Cre or FLP recombinase-inducible mouse model of 16p11.2 deletion that has several \textit{loxP} and \textit{frt} sites flanking the 440 kbp region on mouse chromosome 7F3. Homozygous mice (16p11\textsuperscript{8x}) are viable and fertile with no reported gross physical or behavioral abnormalities.

Following Cre or FLP-mediated deletion of the entire region, a membrane-targeted fluorescent reporter gene (mCherry) is expressed. The donating investigator reports that for imaging large-scale anatomical structures, such as white matter tracts, mCherry fluorescence is very strong. For identification of single neuronal cell-bodies, however, immunohistochemical fluorescence might improve the outcome.

Mice with deletion of the genomic segment (16p11\textsuperscript{+}) are available at The Jackson Laboratory as Stock No. 025100.

The 16p11\textsuperscript{8x} model was created using two independent targeting events. Although the \textit{loxP/ft} region near \textit{Coro1a} is in relatively close proximity (440 kbp) to the \textit{loxP/ft} region near \textit{Spn}, the two loci have a small chance of segregating independently of one another. The donating investigator reports they never observed any crossing over between the two loci and they always segregated together.

Additionally, breeding heterozygous mice together at The Jackson Laboratory results in mice that are black, light chinchilla or albino. This suggests the 16p11\textsuperscript{8x} mice we received retained mESC-derived allele(s) at the tyrosinase locus (\textit{e.g., Tyr}\textsuperscript{c}} and/or \textit{Tyr}\textsuperscript{och}) that, because it is only ~40 kbp proximal on chromosome 7, appears to be segregating along with the
16p11.2 region. Depending upon future segregation patterns, available mice may be black, light chinchilla or albino.
Genotyping Protocols
QPCR: Generic Neo Quantitative PCR-QPCR- 1.2
Standard PCR: Igs13
Standard PCR: Igs14-Alternate 2
Standard PCR: Igs13-Alternate 1
Standard PCR: Del(7Coro1a-Spn)Dolm-alternate 1
Probe: Generic Neo
Genotyping resources and troubleshooting

Breeding Considerations

When maintaining a live colony, mice homozygous for each targeted allele may be bred together.

Additionally, breeding heterozygous mice together at The Jackson Laboratory results in mice that are black, light chinchilla or albino. While the Portmann et al. 2014 Cell Rep 7(4):1077-92 publication describes the mESC used were 129/OLA, the donating laboratory indicates it may have been a different 129 origin. Taken together, these data suggest the 16p11^{flx} mice we received retained mESC-derived allele(s) at the tyrosinase locus (e.g., Tyr^{flx} and/or Tyr^{cn}) that, because it is only ~40 kbp proximal on chromosome 7, appears to be segregating along with the 16p11^{flx} region. Depending upon future segregation patterns, available mice may be black, light chinchilla or albino.

Additional Breeding and Husbandry Support

Citation
When using the 16p11.2^{flx} mouse strain in a publication, please cite the originating article(s) and include JAX stock #025330 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.

<table>
<thead>
<tr>
<th>SERVICE/PRODUCT</th>
<th>DESCRIPTION</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryo Recovery</td>
<td>Heterozygous or Wildtype for Igs13&lt;tm1Dolm&gt; and for Igs14&lt;tm1Dolm&gt;</td>
<td>$2,854.50</td>
</tr>
</tbody>
</table>

The following table lists cryopreserved murine embryos:

<table>
<thead>
<tr>
<th>SERVICE/PRODUCT</th>
<th>DESCRIPTION</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Mouse Embryo</td>
<td>B6N.129P2(Cg)-Igs13&lt;tm1Dolm&gt; Igs14&lt;tm1Dolm&gt;/J</td>
<td>$2595.00</td>
</tr>
</tbody>
</table>
PAYMENT TERMS AND CONDITIONS

Terms are granted by individual review and stated on the customer invoice(s) and account statement. These transactions are payable in U.S. currency within the granted terms. Payment for services, products, shipping containers, and shipping costs that are rendered are expected within the payment terms indicated on the invoice or stated by contract. Invoices and account balances in arrears of stated terms may result in The Jackson Laboratory pursuing collection activities including but not limited to outside agencies and court filings.

THE JACKSON LABORATORY'S GENOTYPE PROMISE

The Jackson Laboratory has rigorous genetic quality control and mutant gene genotyping programs to ensure the genetic background of JAX® Mice strains as well as the genotypes of strains with identified molecular mutations. JAX® Mice strains are only made available to researchers after meeting our standards. However, the phenotype of each strain may not be fully characterized and/or captured in the strain data sheets. Therefore, we cannot guarantee a strain's phenotype will meet all expectations. To ensure that JAX® Mice will meet the needs of individual research projects or when requesting a strain that is new to your research, we suggest ordering and performing tests on a small number of mice to determine suitability for your particular project. We do not guarantee breeding performance and therefore suggest that investigators order more than one breeding pair to avoid delays in their research.

Terms Of Use

TERMS OF USE

General Terms and Conditions

ADDITIONAL USE RESTRICTIONS APPLY

Use of MICE by companies or for-profit entities requires a license prior to shipping.

LICENSING INFORMATION

Phone: 207-288-6470
Email: TechTran@jax.org

Related Strains

All

By Allele

By Gene