NZO/HILtJ
Stock No: 002105 | New Zealand Obese
Inbred Strain

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

Also Known As: New Zealand Obese
NZO inbred mice and strains derived from them develop severe obesity, and are thus useful for studying obesity and Type 2 diabetes.

GENETIC OVERVIEW

<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>?+F69</td>
</tr>
<tr>
<td></td>
<td>(2020-01-20 00:00:00)</td>
</tr>
</tbody>
</table>

V I E W  G E N E T I C S
NZO mice of both sexes exhibit high birth weights and are significantly heavier at weaning age. Severe obesity (including both visceral and subcutaneous fat depots) develops even when mice are maintained on a standard diet containing 4.5% fat. Both males and females of the NZO/Hl substrain exhibit impaired glucose tolerance (IGT), but subsequent type 2 maturity onset (NIDDM) diabetes development is limited to males, with a phenotype penetrance of 50% or less. NZO/Hl mice also show anti-insulin receptor antibodies, a defect in leptin transport, and hypertension. The genetic lesion appears to be within the islets of Langerhans as transfer of pancreatic islets from normal mice returns body weights and blood glucose levels to within normal range. Ovarian granulosa cell tumors, lymphomas, duodenal, and lung tumors have also been noted to occur in NZO mice at an elevated frequency. F1 hybrids of NON/ShiLt and NZO/Hl provide a new model of obesity-induced diabetes. Male (NON/ShiLt x NZO/Hl)F1 hybrids are obese (BW = 53.5 g by 16 weeks) and almost all develop maturity onset NIDDM. F1 males on a 4% diet will develop hyperglycemia around 20 to 24 weeks of age; increasing the fat content of the diet accelerates diabetes onset to 16 to 20 weeks of age. (NZO/Hl x NON/ShiLt)F1 hybrids will develop diabetes slightly faster than their reciprocal cross due to the NZO maternal environment; however this cross is difficult to produce due to the inherently poor breeding performance of NZO/HlJ female mice. F1 females exhibit a weight gain similar to the NZO parent, and have impaired glucose tolerance but are resistant to diabetes development. Diabetes development can be accelerated to eight to 12 weeks by fostering onto an F1 dam. Reciprocal backcrosses to the parental strains and analysis of (NON/ShiLt x NZO/Hl)F2 mice has led to the identification of a number of complex diabetes-predisposing (“diabesity”) QTLs. Dr. Leiter’s research group at The Jackson Laboratory is currently developing a series of nine recombinant congenic strains (RCS) made by backcrossing the (NZO/Hl x NON/ShiLt)F1 for two generations onto the NON/ShiLt background before inbreeding (~12% NZO/Hl, 88% NON/ShiLt genomes). Preliminary analysis indicates that body weight gains of all RCS are higher than NON/ShiLt, but none are as obese as NZO/Hl; some of these RCS develop NIDDM while others are resistant. These new strains will be useful to further analyze diabesity QTLs and as new models for type 2 (NIDDM) diabetes. An additional benefit of the RCS is better breeding performance than NZO/Hl.
Genotyping Protocols
Genotyping resources and troubleshooting

Dietary Information
LabDiet® 5K54 formulation (4% fat)

Breeding Considerations
This inbred strain is a challenging breeder (can have a high rate of non-productive matings).

Additional Breeding and Husbandry Support
Mating System
Sibling x Sibling
Appearance
agouti
Related Genotype: A/A

Citation
When using the New Zealand Obese mouse strain in a publication, please include JAX stock #002105 in your Materials and Methods section.

Animal Health Reports
Facility Barrier Level Descriptions

 AX12 (Maximum)
Pricing & Availability

Available Now

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

Domestic

Pricing effective for USA, Canada and Mexico shipping destinations

<table>
<thead>
<tr>
<th>AGE</th>
<th>SEX</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 weeks</td>
<td>Female</td>
<td>$230.00</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>$230.00</td>
</tr>
<tr>
<td>5 weeks</td>
<td>Female</td>
<td>$230.00</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>$230.00</td>
</tr>
<tr>
<td>6 weeks</td>
<td>Female</td>
<td>$230.00</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>$230.00</td>
</tr>
<tr>
<td>7 weeks</td>
<td>Female</td>
<td>$230.00</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>$230.00</td>
</tr>
<tr>
<td>8 weeks</td>
<td>Female</td>
<td>$230.00</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>$230.00</td>
</tr>
<tr>
<td>9 weeks</td>
<td>Female</td>
<td>$230.00</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>$230.00</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.

Terms Of Use
Terms Of Use

General Terms and Conditions

Licensing Information

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

JAX® Mice, Products & Services Conditions of Use

"MICE" means mouse strains, their progeny derived by inbreeding or crossbreeding, unmodified derivatives from mouse strains or their progeny supplied by The Jackson Laboratory ("JACKSON"). "PRODUCT(S)" means biological materials supplied by JACKSON, and their derivatives. "SERVICES" means projects conducted by JACKSON for other parties that may include but are not limited to the use of MICE or PRODUCTS. "RECIPIENT" means each recipient of MICE, PRODUCTS, or SERVICES provided by JACKSON including each institution, its employees and other researchers under its control. MICE or PRODUCTS shall not be: (i) used for any purpose other than internal research, (ii) sold or otherwise provided to any third party for any use, or (iii) provided to any agent or other third party to provide breeding or other services. Acceptance of MICE, PRODUCTS or SERVICES from JACKSON shall be deemed as agreement by RECIPIENT to these conditions, and departure from these conditions requires JACKSON’s prior written authorization.

No Warranty

MICE, PRODUCTS AND SERVICES ARE PROVIDED "AS IS". JACKSON EXTENDS NO WARRANTIES OF ANY KIND, EITHER EXPRESS, IMPLIED, OR STATUTORY, WITH RESPECT TO MICE, PRODUCTS OR SERVICES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY OF NON-INFRINGEMENT OF ANY PATENT, TRADEMARK, OR OTHER INTELLECTUAL PROPERTY RIGHTS.

Credit for PRODUCTS or SERVICES

In case of dissatisfaction for a valid reason and claimed in writing by a purchaser within ninety (90) days of receipt of, PRODUCTS or SERVICES, JACKSON will, at its option, provide credit or replacement for the PRODUCT received or the SERVICES provided; JACKSON makes no other representations and this shall be the exclusive remedy of the purchaser. Please note specific policy for live mice.

Animal Care and Use for SERVICES

Consistent with the requirement for a written understanding regarding animal care and use, the JACKSON Animal Care and Use Committee will review the animal care and use protocol(s) associated with any SERVICES to be performed at JACKSON, and JACKSON shall have ultimate responsibility and authority for the care of animals while on site or in JACKSON custody.

No Liability

In no event shall JACKSON, its trustees, directors, officers, employees, and affiliates be liable for any causes of action or damages, including any direct, indirect, special, or consequential damages, arising out of the provision of MICE, PRODUCTS, or SERVICES, including economic damage or injury to property and lost profits, and including any damage arising from acts or negligence on the part of JACKSON, its agents or employees. Unless prohibited by law, in purchasing or receiving MICE, PRODUCTS, or SERVICES from JACKSON, purchaser or recipient, or any party claiming by or through them, expressly releases and discharges JACKSON from any such causes of action or damages, and further agrees to defend and indemnify JACKSON from any costs or damages arising out of any third party claims.

MICE, PRODUCTS or SERVICES are to be used in a safe manner and in accordance with all applicable governmental rules and regulations.

The foregoing represents the General Terms and Conditions applicable to JACKSON’s MICE, PRODUCTS or SERVICES. In addition, special terms and conditions of sale of certain MICE, PRODUCTS, or SERVICES may be set forth separately in JACKSON web pages, catalogs, price lists, contracts, and/or other documents, and these special terms and conditions shall also govern the sale of these MICE, PRODUCTS and SERVICES by JACKSON, and by its licensees and distributors.

Acceptance of delivery of MICE, PRODUCTS or SERVICES shall be deemed agreement to these terms and conditions. No purchase order or other document transmitted by purchaser or recipient that may modify the terms and conditions hereof, shall be in any way binding on JACKSON, and instead the terms and conditions set forth herein, including any special terms and conditions set forth separately, shall govern the sale of MICE, PRODUCTS or SERVICES by JACKSON.
Related Strains

All

By Allele

By Gene

By Collection

All Related Strains