C57BL/6-Tg(CAG-fat-1)1Jxk/J

Stock No: 020097 | fat-1 mice

Coisogenic, Transgenic

Also Known As: fat-1 mice

fat-1 transgenic mice are able to produce omega-3 fatty acid from omega-6 fatty acids, reducing the n-6:n-3 ratio in tissues without special dietary adjustment, and may be useful in studies related to inflammation, tumorigenesis, tumor progression, oxidative stress, and the role of polyunsaturated fatty acids in pathophysiology.

Donating Investigator

Jing Kang, Harvard Medical School

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GENETIC OVERVIEW

Genetic Background
N10pN1
(2017-12-27 00:00:00)

Tg(CAG-fat-1)1Jxk

Allele Type
Transgenic (Inserted expressed sequence)

RESEARCH APPLICATIONS

Research Tools
Diabetes and Obesity Research
Cancer Research
Immunology, Inflammation and Autoimmunity Research
Neurobiology Research
Metabolism Research
BASE PRICE
Starting at:

$76.22 Domestic price for female
331.22 Domestic price for breeder pair

VIEW PRICE LIST

Details

Detailed Description
The Caenorhabditis elegans fat-1 gene encodes an omega-3 fatty acid desaturase enzyme that catalyzes conversion of omega-6 (n-6) fatty acids to omega-3 (n-3) fatty acids.

These mice express a humanized (codon modified) Caenorhabditis elegans fat-1 gene, under the control of the CAG, CMV-IE enhancer/chicken beta-actin/rabbit beta-globin hybrid promoter. Transgene expression is widespread throughout all tissues examined (muscle, milk, erythrocyte, heart, brain, liver, kidney, lung, spleen, liver mitochondria, colon). fat-1 transgenic mice are able to produce n-3 fatty acid from n-6 fatty acids, reducing the n-6:n-3 ratio in tissues without special dietary adjustment, compared to wildtype controls. Transgenic mice exhibit elevated levels of n-3 polyunsaturated fatty acids in tissues when fed a diet that is high in n-6 and low in n-3 fatty acids. Mitochondrial reactive oxygen species production is lower in transgenic mice compared to controls, and fatty acid composition is altered in some mitochondrial phospholipids (phosphatidylcholine and phosphatidylethanolamine). Latency of experimentally induced seizures with pentylenetetrazol is increased, the number of induced colonic tumors is reduced, and inflammatory response is reduced in induced allergic airway in transgenic mice, compared to wildtype controls. Transgenic mice have an attenuated response and faster recovery to endotoxin induced acute lung injury relative to wildtype.

Transgenic mice exhibit enhanced spatial learning performance when compared to control littermates. fat-1 transgenic mice are less susceptible to streptozotocin (STZ)-induced diabetes and exhibit reduced pancreatic beta-cell damage and do not develop hyperglycemia. These mice have less severe neuronal loss and cognitive impairment due to induced global ischemia injury when compared to wildtype controls.

Homozygotes and hemizygotes have a similar phenotype. Homozygotes are viable and fertile.

Development

Expression Data

Control Suggestions

Selected References

Genetics

Tg(CAG-fat-1)1Jxk

Disease/Phenotype
## Genotyping Protocols
MELT: Tg(CAG-fat-1)Jxk
Genotyping resources and troubleshooting

## Breeding Considerations
When maintaining a live colony, these mice can be bred as homozygotes.
Additional Breeding and Husbandry Support

## Citation
When using the fat-1 mouse strain in a publication, please cite the originating article(s) and include JAX stock #020097 in your Materials and Methods section.

## Animal Health Reports
Facility Barrier Level Descriptions
- AX18 (Maximum)

## Pricing & Availability
3–6 week average lead time depending on quantity and age requests are not accepted

### Domestic
Pricing effective for USA, Canada and Mexico shipping destinations

<table>
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<tr>
<th>Live Mouse</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>Hemizygous for Tg(CAG-fat-1)Jxk</td>
<td>$255.00</td>
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<tr>
<td>Male</td>
<td>Hemizygous for Tg(CAG-fat-1)Jxk</td>
<td>$255.00</td>
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</table>

| Approx 4-8 weeks | Female | Noncarrier | $76.22 |
| Male | Noncarrier | $76.22 |
Breeder Pair

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Related Products and Services

<table>
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<tr>
<th>Product</th>
<th>Price</th>
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<tbody>
<tr>
<td>Frozen Mouse Embryo</td>
<td>$2,595.00 per straw or vial</td>
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Terms of Use

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Related Strains

- All
- By Allele
- By Gene
- By Collection

All Related Strains