**Overview**

**Also Known As: ACHE KO**

These Ache knock-out mice exhibit retarded growth, fine motor tremors, unusual posture and gait, no righting reflex, malformed pinna, and sealed eyelids. They are suitable for studies of toxicology, neuromuscular junctions, nervous system function, neuropsychiatric diseases (Alzheimer's and Parkinson's), and blinding diseases (Retinitis pigmentosa and age-related macular degeneration).

**Donating Investigator**

Dr. Oksana Lockridge, Epilep Inst. (Univ of Nebraska Med Cntr)
**GENETIC OVERVIEW**

**Ache\textsuperscript{tm1Loc}**

<table>
<thead>
<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
<th>Gene Name</th>
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<tr>
<td>Targeted (Null/Knockout)</td>
<td>Ache</td>
<td>acetylcholinesterase</td>
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</table>

**RESEARCH APPLICATIONS**

Research Tools
Developmental Biology Research
Neurobiology Research
Sensorineural Research

**BASE PRICE**

Starting at:

$2,595.00 Domestic price Cryo Recovery

**Details**

Homozygous mice have 25% fetal mortality. Those born have retarded growth, fine motor tremors, unusual posture and gait, no righting reflex, malformed pinna, and sealed eyelids. These mice die emaciated and dehydrated by 3 weeks of age. Enriched diets for the nursing female and pups allow homozygous mice to survive to adulthood. Males exhibit no breeding behavior. Homozygous females can become pregnant when bred to heterozygous or wildtype males, but both female and pups do not survive. Acetylcholinesterase (AChE) activity is completely abrogated in serum and tissue from homozygous mice, and approximately half in heterozygotes. Many symptoms of organophosphate poisoning are observed in homozygous mice, including pulsating paws, body tremor, abnormal gait, pinpoint pupils, muscle weakness, and early death following seizure. When restrained, a white mucus forms on the eyes and seizures may occur. Mice also have several developmental delays, low body mass, decreased pain response, sexual dysfunction, an inability to chew solid food, and a lack of aggression. Homozygous mice are hypersensitive to organophosphates and bumbuterol. Respiratory motoneurons are protected from the tonic activity induced by cholinergic agonists. Similarly, homozygous mice have drastic reduction of the M1, M2, and M4 muscarinic acetylcholine receptors in the cortex and hippocampus with decreased cell surface localization and increased intracellular localization of these receptors. Homozygous mice have defective formation of the inner retina associated with apoptotic photoreceptor degeneration with age. Heterozygous mice are viable and fertile with normal maturation and development. They exhibit intermediate sensitivity to organophosphates and are unaffected by bumbuterol. This
mouse may be useful in studies of toxicology, neuromuscular junctions, nervous system function, neuropsychiatric diseases (Alzheimer’s and Parkinson’s), and blinding diseases (Retinitis pigmentosa and age-related macular degeneration).

The donating investigator has multiple strains available that may be useful for testing toxic compounds, including the AChE-deficient (Stock No. 005987), G117H BChE transgenic (Stock No. 007577), and BChE-deficient (see Stock No. 008077 and Stock No. 008087) mice.

**Development**

**Control Suggestions**

**Selected References**

**Genetics**

**Ache<sup>tm1loc</sup>**

**Disease/Phenotype**

**Disease Terms**

**Research Areas By Genotype**

**Mammalian Phenotype Terms by Genotype**

**References**

**Technical Support**

CONTACT TECHNICAL SUPPORT

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**Genotyping Protocols**

Standard PCR: Ache<sup>tm1loc</sup>

Genotyping resources and troubleshooting

**Breeding Considerations**

When maintaining a live colony, heterozygous mice are bred with wild type siblings. Homozygous mice do not produce litters. If adult homozygous mice are to be generated, the donating investigator recommends that heterozygous dams are given a high fat diet while gestating and nursing. Homozygous mice should be weaned at day 15 and given a nutrient rich liquid diet. Incisor trimming may be needed for liquid fed mice (Ensure from Abbott Labs). Homozygous mice have improper urination and defecation habits in the nest.

Additional Breeding and Husbandry Support

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**Citation**

When using the AChE-KO mouse strain in a publication, please cite the originating article(s) and include JAX stock #005987 in your Materials and Methods section.

**Animal Health Reports**

Facility Barrier Level Descriptions
Pricing & Availability

Cryo Recovery

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

Domestic | International

Pricing effective for USA, Canada and Mexico shipping destinations

<table>
<thead>
<tr>
<th>SERVICE</th>
<th>GENOTYPE</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryo Recovery</td>
<td>Heterozygous or Wild-type for Ache&lt;tm1Loc&gt;</td>
<td>$2,595.00</td>
</tr>
</tbody>
</table>

We will fulfill your order by providing at least two carriers for each strain ordered. The total number, sex, and genotypes provided will vary, although typically 8 or more animals are provided. Please check genotypes which will be recovered. While the genotypes of all animals produced will be communicated to you prior to scheduling shipment, the genotypes of animals provided may not reflect the mating scheme and genotypes described in the strain description. Animals are typically ready to ship in 11-14 weeks. If a second recovery is required to produce the minimum number of animals, then delivery time would increase to approximately 25 weeks. If we fail to produce animals of the correct genotype, you will not be charged. We cannot guarantee the reproductive success of mice shipped to your facility. If the mice are lost after the first three days (post-arrival) or do not produce progeny at your facility, a new order and fee will be necessary.

Cryorecovery to establish a Dedicated Supply for greater quantities of mice. Mice recovered can be used to establish a dedicated colony to contractually supply you mice according to your requirements. Price by quotation.

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.

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General Terms and Conditions

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Related Strains

All

By Allele