Head tilt (Nox3\textsuperscript{het}) is an autosomal recessive mutation that can cause abnormal circling behavior and hyperactivity in affected mice. Homozygotes also exhibit a subtle head tilt. Together, the abnormal behavioral phenotype is consistent with that of a vestibular disorder. Evoked auditory brainstem response profiles are normal indicating that the mutants are not deaf. Nox3\textsuperscript{het}/Nox3\textsuperscript{het} mutants are unable to sense orientation under water and therefore, cannot swim properly. If held by the tail, Nox3\textsuperscript{het}/Nox3\textsuperscript{het} mice retract, rather than extend, their limbs; they also flex ventrally, instead of dorsally as wild type mice do. When lowered quickly by the tail, Nox3\textsuperscript{het}/Nox3\textsuperscript{het} mice fail to extend their forelimbs in a normal manner and have difficulty righting themselves if dropped vertically from a short distance. Morphological assessment of the inner ear of homozygotes r...
**GENETIC OVERVIEW**

<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
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**Nox3<sup>het</sup>**

<table>
<thead>
<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
<th>Gene Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous</td>
<td>Nox3</td>
<td>NADPH oxidase 3</td>
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</tbody>
</table>

**RESEARCH APPLICATIONS**

Sensorineural Research  
Neurobiology Research  
Internal/Organ Research

**BASE PRICE**

Starting at:

$2,854.50 Domestic price  
Cryo Recovery

**Details**

Head tilt (Nox3<sup>het</sup>) is an autosomal recessive mutation that can cause abnormal circling behavior and hyperactivity in affected mice. Homozygotes also exhibit a subtle head tilt. Together, the abnormal behavioral phenotype is consistent with that of a vestibular disorder. Evoked auditory brainstem response profiles are normal indicating that the mutants are not deaf. Nox3<sup>het</sup>/Nox3<sup>het</sup> mutants are unable to sense orientation under water and therefore, cannot swim properly. If held by the tail, Nox3<sup>het</sup>/Nox3<sup>het</sup> mice retract, rather than extend, their limbs; they also flex ventrally, instead of dorsally as wild type mice do. When lowered quickly by the tail, Nox3<sup>het</sup>/Nox3<sup>het</sup> mice fail to extend their forelimbs in a normal manner and have difficulty righting themselves if dropped vertically from a short distance. Morphological assessment of the inner ear of homozygotes reveals an abnormal appearance of the saccule and utricle owing to a complete absence of otoliths. Otoliths are tiny calciferous granules within the statoconic membrane that covers the sensory epithelia of the acoustic maculae. These ear crystals function as mass particles that stimulate gravity receptors in the maculae of the utricle and saccule in response to head tilting and gravitational forces. Electrophysiological assessment of the vestibular neurons in Nox3<sup>het</sup> mutants demonstrates these cells totally lack vestibular evoked potentials in response to pulsed linear acceleration. Thus, the mutants are unable to process otolite-mediated sensory stimuli throughout their entire lifespan. The Nox3<sup>het</sup> gene product is likely involved in the formation of the otolithic ear crystals (prior to embryonic day 14), perhaps through the regulation of calcium secretion by neuroepithelial cells. Structures of the cochlea and middle ear appear normal and melanocyte function is not compromised. (Sweet, 1980; Bergstrom et al., 1998; Jones et al., 1999)

**Development**
**Genotyping Protocols**

**Genotyping resources and troubleshooting**

**Appearance**
- agouti, unaffected
  - Related Genotype: \( A/A \) \( Nox3^{het}/+ \) or \( A/A +/+ \)
- white-bellied agouti, unaffected
  - Related Genotype: \( A/w-J Nox3^{het}/+ \) or \( A/w-J +/+ \) or \( A/w-J/A^{w-J} Nox3^{het}/+ \) or \( A/w-J/A^{w-J} +/+ \)
- agouti, circling
  - Related Genotype: \( A/A Nox3^{het}/Nox3^{het} \)
- white-bellied agouti, circling
  - Related Genotype: \( A/w-J Nox3^{het}/Nox3^{het} \) or \( A/w-J/A^{w-J} het/Nox3^{het} \)

**Citation**

When using the B6 x STOCK \( Nox3^{het} \) J mouse strain in a publication, please cite the originating article(s) and include JAX stock #000061 in your Materials and Methods section.

**Animal Health Reports**

Production of mice from cryopreserved embryos or sperm occurs in a maximum barrier room, G200
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

Cryorecovery - Domestic Pricing

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<tr>
<th>SERVICE/PRODUCT</th>
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<tr>
<td>Cryo Recovery</td>
<td>Please inquire</td>
<td>$2,854.50</td>
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</table>

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Email: TechTran@jax.org

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