C3H/HeJ mice, commonly called C3H, are used as a general purpose strain in a wide variety of research areas including cancer, infectious disease, sensorineural, and cardiovascular biology research. A spontaneous mutation in Tlr4 occurred in C3H/HeJ at the lipopolysaccharide response locus (mutation in toll-like receptor 4 gene, Tlr4<sup>Lps-d</sup>) making C3H/HeJ mice more resistant to endotoxin. C3H/HeJ mice are highly susceptible to infection by Gram-negative bacteria such as Salmonella enterica. The C3H substrains at The Jackson Laboratory are homozygous for the retinal degeneration 1 mutation (Pde6b<sup>rd1</sup>), causing blindness by weaning age.
RESEARCH APPLICATIONS
Cardiovascular Research
Cancer Research
Research Tools
Sensorineural Research
Immunology, Inflammation and Autoimmunity Research
Mouse/Human Gene Homologs
Neurobiology Research
Hematological Research

BASE PRICE
Starting at:
$26.09 Domestic price for male 3-week

Details

Important Note
This strain does not carry mouse mammary tumor virus (MMTV). This strain is homozygous for retinal degeneration allele
Pde6b<sup>rd1</sup>, the defective lipopolysaccharide response allele Tlr4<sup>Lps-d</sup>, and for a chromosomal inversion on Chromosome 6.
A sighted alternative is Stock No. 003648, C3Sn.BLiA-Pde6b<sup>rd1</sup>/DnJ.

Detailed Description
C3H/HeJ mice are used as a general purpose strain in a wide variety of research areas including cancer, immunology and
inflammation, sensorineural, and cardiovascular biology. C3H/HeJ mice and all other Jackson substrains are homozygous
for the retinal degeneration 1 mutation (Pde6b<sup>rd1</sup>), which causes blindness by weaning age, but lack the nob5 allele of
Gpr179 (Chang, 2015). White belly spots, ranging in phenotype from a few white hairs to a defined spot are common in
C3H/HeJ mice. There is also a high incidence of hepatomas in C3H mice (reportedly 72-91% in males at 14 months, 59% in
virgin females, 30-38% in breeding females). Despite the lack of exogenous mouse mammary tumor virus (MMTV), virgin
and breeding females may still develop some mammary tumors later in life. C3H/HeJ mice, fed an atherogenic diet (1.25%
cholesterol, 0.5% cholic acid and 15% fat), fail to develop atherosclerotic aortic lesions in contrast to several highly
susceptible strains of mice (e.g. C57BL/6J, Stock No. 000664; C57L/J, Stock No. 000668, C57BR/cdJ, Stock No. 000667,
and SM/J, Stock No. 000687). C3H/HeJ mice spontaneously develop alopecia areata (AA) at a reported incidence of
approximately 0.25% by 5 months of age. In older mice (12-18 months old), incidences as high as approximately 20% are
reported. Females as young as 3-5 months can develop AA, but onset typically is delayed until after 6 months in males.
Alopecia areata can be surgically-induced by grafting a small piece of skin from an older, donor animal with AA onto a
younger, isogenic C3H/HeJ recipient.
A spontaneous mutation occurred in C3H/HeJ at the lipopolysaccharide response locus (later identified as a mutation in the toll-like receptor 4 gene, \(Tlr4^{Lps-d}\)) making C3H/HeJ mice endotoxin resistant. C3H/HeJ (\(Tlr4^{Lps-d}\)) mice are highly susceptible to infection by Gram-negative bacteria such as Salmonella enterica. Mice infected with Salmonella exhibit delayed chemokine production, impaired nitric oxide generation and attenuated cellular immune responses. Mortality in infected mice appears to result from enhanced bacterial growth within the liver Kupffer cell network (Vázquez-Torres et al., 2004).

The C3H/HeJ substrain is homozygous for an inversion on Chromosome 6 (symbol: In(6)1J). The inversion covers 20% of Chromosome 6 between \(D6Mit124\) (~30.3 cM) and \(D6Mit150\) (~51.0 cM), but results in no reported phenotype. Results from screening other C3H substrains and cryopreserved stock from C3H/HeJ suggest that the mutation arose after 1952. The spontaneous mutation, spike wave discharge 1 (Gria4\(^{spkw1}\)), is present in C3H/HeJ, but not C3HeB/FeJ. Mice homozygous for this mutation exhibit a modest incidence of absence seizures. This strain is also homozygous for a hypomorphic allele in Pcnx2, which is caused by an IAP insertion and which dampens the severity of the absence seizure phenotype caused by Gria4\(^{spkw1}\) (Frankel et al., 2014).
Genotyping Protocols
Sanger sequencing: Tlr4 SEQ
Genotyping resources and troubleshooting

Inbred mouse strains are maintained through sibling (sister x brother) matings; no genotyping required.

Dietary Information
LabDiet® 5K52 formulation (6% fat)

Breeding Considerations
This strain is a good breeder.

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

Citation
When using the C3H mouse strain in a publication, please include JAX stock #000659 in your Materials and Methods section.

Animal Health Reports
Facility Barrier Level Descriptions

- RB09 (Maximum)
- AX29 (Maximum)
- EM02 (Maximum)
### Pricing & Availability

Sized to accommodate orders of up to 100 or more. Ask Customer Service for details.

**Domestic**

Pricing effective for USA, Canada and Mexico shipping destinations.

#### LIVE MOUSE

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**International**

### RELATED PRODUCTS AND SERVICES

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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.

Related Strains