B6 (A U J/J)

Stock No: 000562 | tubby

- Spontaneous Mutation

**GENETIC OVERVIEW**

**Genetic Background**

- Stock No: 000562
- tubby

**Generation**

- Tub

**CRYO RECOVERY**

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

**Overview**

Also Known As: tubby

These mice carry a spontaneous mutation at the Tub locus characterized by maturity-onset obesity.
Important Note
This strain may be segregating for the Oca2\(^p\) and s alleles of Hbb.

**Detailed Description**

Mice homozygous for the tubby spontaneous mutation experience maturity-onset obesity. Homozygous mutant mice are recognizable by increased body weight at 3 to 4 months in males and at 4 to 6 months in females. Both sexes are fertile. The increased weight is composed of excess adipose tissue. Blood glucose is normal, but plasma insulin is increased prior to obvious signs of obesity and may rise to 20 times normal by 6 months. Despite elevated plasma total cholesterol, triglycerides, and high-density lipoprotein cholesterol, homozygous mutant mice do not exhibit atherosclerotic fatty streak blood vessel lesions. Tubby mutant mice also exhibit retinal degeneration, initially believed due to the presence of another mutation which was called rd5, but since demonstrated to be a pleiotropic effect of the Tub\(^tub\) mutation (Ohlemiller et al., 1997); the retinal phenotype is moderated by a QTL on Chromosome 11 (Ikeda et al., 2002). Tubby homozygotes additionally exhibit progressive hearing loss. The hearing loss is due to apoptotic degeneration of the organ of Corti and loss of afferent neurons. Quantitative trait locus (QTL) analysis identified a region on Chromosome 2 (designated modifier of tubby hearing 1, moth1) whose wild-type allele protects tubby mice from hearing loss (Ikeda et al., 1999); the gene has been identified as Mtap1a, encoding a microtubule-associated protein (Ikeda et al., 2002). A locus suggestively associated with protection from retinal degeneration maps to the same region of Chromosome 2 (Ikeda et al., 2002). Mice homozygous for a targeted null mutation in the tubby gene (not currently available from The Jackson Laboratory) exhibit a phenotype identical to that conferred by the spontaneous tubby mutation (Stubdal et al., 2000).
Genotyping Protocols
Pyrosequencing: \( \text{Tub}^{\text{ Tub}} \)
Sanger sequencing: \( \text{Tub}^{\text{ Tub}} \text{-SEQ} \)
Genotyping resources and troubleshooting

Breeding Considerations
This strain was maintained for many years by breeding \( \text{Hbb}^{\text{ P}} +/\text{Hbb}^{\text{ S}} \text{ Tub}^{\text{ Tub}} + \times \text{Hbb}^{\text{ S}} \text{ Tub}^{\text{ Tub}} /\text{Hbb}^{\text{ S}} \text{ Tub}^{\text{ Tub}} \) or vice versa. \( \text{Hbb} \) and \( \text{Tub} \) are approximately 1.5 cM apart on Chromosome 7. Tubby heterozygotes were distinguished from homozygotes by typing for the \( \text{Hbb} \) allele. This was done by cellulose acetate gel analysis of cystamine treated red blood cell lysates as described by Whitney, 1978. The \( \text{Hbb}^{\text{ S}} \) allele yields a single fast migrating band of hemoglobin while the \( \text{Hbb}^{\text{ P}} \) allele yields a slow migrating band and a second smaller, trailing band that may actually have cathodal migration on cellulose acetate (but not in starch or acrylamide gels). The mice carrying only the \( \text{Hbb}^{\text{ S}} \) allele were presumed homozygous for the \( \text{Tub}^{\text{ bb}} \) mutation by linkage; those with both the \( \text{Hbb}^{\text{ S}} \) and \( \text{Hbb}^{\text{ P}} \) alleles were presumed heterozygous for \( \text{Tub}^{\text{ bb}} \) by linkage. In 2004 genotyping of the \( \text{Tub}^{\text{ Tub}} \) allele by PCR became the standard method for colony maintenance. Recombination can be expected to eventually remove the \( \text{Hbb}^{\text{ P}} \) allele from this strain. Heterozygous females are better mothers than homozygous females.

Additional Breeding and Husbandry Support

Appearance
black, lean, normal vision
Related Genotype: \( a/a \text{ Tub}^{\text{ Tub}} /+ \)

black, fat, retinal degeneration
Related Genotype: \( a/a \text{ Tub}^{\text{ Tub}} /\text{Tub}^{\text{ Tub}} \)
Pricing & Availability

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

Domestic Pricing

Cryo Recovery

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<tr>
<th>SERVICE</th>
<th>GENOTYPE</th>
<th>PRICE</th>
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<tbody>
<tr>
<td>Heterozygous or Wild-type for Tub^tub&gt;</td>
<td>$2,854.50</td>
<td></td>
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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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