B6.Cg-Tg(CAG-OTC/CAT)4033Prab/J

Stock No: 016197 | mCAT

📅 Congenic, Transgenic

PLACE ORDER

Live mice available in varying quantities. Ask Customer Service for details.

Overview

Also Known As: mCAT

C57BL/6 mCAT mice (MCAT transgenic mice) have a CMV enhancer/chicken beta-actin promoter driving the expression of human Catalase gene in mitochondria. These mice may be useful for studying the role of reactive oxygen species in mammalian longevity, as well as protection from lung adenocarcinoma.

Donating Investigator

Peter S Rabinovitch, University of Washington
## GENETIC OVERVIEW

<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>?+N2F6</td>
<td>(2018-01-09 00:00:00)</td>
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</table>

**Tg(CAG-OTC/CAT)4033Prab**

**Allele Type**

Transgenic (Inserted expressed sequence, Humanized sequence)

## RESEARCH APPLICATIONS

- Metabolism Research
- Research Tools
- Neurobiology Research
- Diabetes and Obesity Research
- Cardiovascular Research
- Sensorineural Research

## BASE PRICE

Starting at:

- **$255.00** Domestic price for female
- **$333.51** Domestic price for breeder pair

## Details

**Detailed Description**

C57BL/6.mCAT mice (MCAT transgenic mice) have a CMV enhancer/chicken beta-actin promoter (CAG; from the pCAGGS vector) driving the expression of a human Catalase (CAT) gene in mitochondria. Hemizygous MCAT mice are viable and fertile. Catalase is an enzyme, normally expressed in peroxisomes, that reduces hydrogen peroxide ($H_2O_2$) to water and molecular oxygen, mitigating the potential for $H_2O_2$ to cause damage to molecules. Mitochondrial catalase expression in MCAT mice results in a 5.5-month increase in median life span for both males and females. Catalase activity is elevated in heart, skeletal muscle, and brain. Cardiac mitochondria have 50 times higher catalase activity than in wild-type littermates leading to a delay in cardiac pathology. They also display improved cardiac performance with age, reducing their susceptibility to cardiac hypertrophy and failure. The severity of cataracts is reduced at
17 months of age, but rebounds to the level found in wildtype mice by 30 months of age. These MCAT mice also exhibit enhanced exercise performance, reduced age-dependent hearing loss, and reserved insulin sensitivity when fed a high-fat diet. When treated with the antiviral drug azidothymidine (AZT) they have a reduction in cardiomyopathy, and they show a reduction in MPTP (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine)-induced Parkinson’s disease. $H_2O_2$ production and $H_2O_2$-induced aconitase inactivation are attenuated, and the development of mitochondrial deletions is reduced. These mice may be useful for studying the role of reactive oxygen species in mammalian longevity, as well as protection from lung adenocarcinoma.

### Development

### Expression Data

### Control Suggestions

### Selected References

### Genetics

* Tg(CAG-OTC/CAT)4033Prab

### Disease/Phenotype

### Disease Terms

### Research Areas By Genotype

### Mammalian Phenotype Terms by Genotype

### References

### Technical Support

**Genotyping Protocols**
MELT: Tg(CAG-OTC/CAT)4033Prab-alternate1
Genotyping resources and troubleshooting

**Breeding Considerations**
When maintaining a live colony, hemizygous mice may be bred to wildtype (non-carrier) mice from the colony or to C57BL/6NJ inbred mice (Stock No. 005304).

**Additional Breeding and Husbandry Support**

**Mating System**
Noncarrier x Hemizygote
Hemizygote x Noncarrier
Pricing & Availability

Live mice available in varying quantities. Ask Customer Service for details.

<table>
<thead>
<tr>
<th>Pricing</th>
<th>International</th>
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**Domestic**

<table>
<thead>
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<th>AGE</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-OTC/CAT)I4033Prab</td>
<td>$255.00</td>
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<tr>
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<td>Hemizygous for Tg(CAG-OTC/CAT)I4033Prab</td>
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<tr>
<td>Approx 4-8 weeks</td>
<td>Female</td>
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<td>$78.51</td>
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<td>Noncarrier</td>
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<table>
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<tr>
<th>BREEDER PAIR</th>
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<th>PRICE</th>
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<tr>
<td></td>
<td>Male</td>
<td>Noncarrier</td>
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**Related Products and Services**

| Frozen Mouse Embryo | $2,595.00 per straw or vial |

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