C57BL/6J is the most widely used inbred strain and the first to have its genome sequenced. Although this strain is refractory to many tumors, it is a permissive background for maximal expression of most mutations. C57BL/6J mice are resistant to audiogenic seizures, have a relatively low bone density, and develop age-related hearing loss. They are also susceptible to diet-induced obesity, type 2 diabetes, and atherosclerosis. Macrophages from this strain are resistant to the effects of anthrax lethal toxin.

Study-ready aged C57BL/6J males and females between 25 - 90 weeks of age available for order.
RESEARCH APPLICATIONS

Developmental Biology Research
Hematological Research
Neurobiology Research
Sensorineural Research
Cardiovascular Research
Diabetes and Obesity Research
Research Tools
Metabolism Research

BASE PRICE
Starting at:
$21.41 Domestic price for male 3-week

Volume Pricing Available!
for select shipping destinations
Click for Details

Details

Important Note
This strain is homozygous for Cdh23<sup>ahl</sup>, the age related hearing loss 1 mutation, which on this background results in progressive hearing loss with onset after 10 months of age.

Detailed Description
C57BL/6J is the most widely used inbred strain. It is commonly used as a general purpose strain and background strain for the generation of congenics carrying both spontaneous and induced mutations. Although this strain is refractory to many tumors, it is a permissive background for maximal expression of most mutations. C57BL/6J mice are used in a wide variety of research areas including cardiovascular biology, developmental biology, diabetes and obesity, genetics, immunology, neurobiology, and sensorineural research. C57BL/6J mice are also commonly used in the production of transgenic mice. Overall, C57BL/6J mice breed well, are long-lived, and have a low susceptibility to tumors. Primitive hematopoietic stem cells from C57BL/6J mice show greatly delayed senescence relative to BALB/c and DBA/2J. This is a dominant trait. Other characteristics include: 1) a high susceptibility to diet-induced obesity, type 2 diabetes, and atherosclerosis; 2) a high incidence of microphthalmia and other associated eye abnormalities; 3) resistance to audiogenic seizures; 4) low bone density; 5) hereditary hydrocephalus (early reports indicate 1 - 4 %); 6) portosystemic shunts (~5%); 7) hairloss associated
with overgrooming; 8) a preference for alcohol and morphine; 9) late-onset hearing loss; and 10) increased incidence of hydrocephalus and malocclusion.

C57BL/6J mice fed a high-fat diet develop obesity, mild to moderate hyperglycemia, and hyperinsulinemia (see JAX® Diet-induced Obesity (DIO) Models). C57BL/6J mice fed an atherogenic diet (1.25% cholesterol, 0.5% cholic acid and 15% fat) for 14 weeks develop lesions in the range of 4500 to 8000 um² atherosclerotic aortic lesions/aortic cross-section. The variation in aortic lesions found among various inbred strains has led to the identification of the existence of eight genes affecting atherosclerosis, Ath1 to Ath8. C57BL/6J mice also develop severe and progressive hearing loss later in life, with the disruption of both outer and inner hair cells, due to the Cdh23ahl allele. Cheers and McKenzie found C57BL/6J resistant to listeriosis. A naturally occurring deletion in nicotinamide nucleotide transhydrogenase (Nnt) exons 7-11 occurred in C57BL/6J sometime prior to 1984. This deletion results in the absence of the NNT protein, and is associated with impaired glucose homeostasis control and reduced insulin secretion. This mutation is not found in C57BL/6JEi, C57BL/6N, C57BL/6NJ, C57BL/6ByJ, C57BL/10J, C57L/J, or C58/J (Toye AA, et al, Diabetologia, 2005). Since C57BL/6JEi separated from C57BL/6J in 1976, the Nnt deletion arose sometime between 1976 and 1984. Because of the n-Tr20mJ point mutation, which is also present in C57BL/6JEi but not C57BL/6NJ or C57BL/6ByJ, extracts from the cerebellum of C57BL/6J mice have increased ribosomal pausing at AGA codons compared with that of other inbred strains (Ishimura et al., 2014). Additionally, an intronic point deletion in Gabra2, which arose sometime between the early 1970's and 1990's, results in decreased transcript and protein expression of this chloride channel component in the brain.

C57BL/6J was the DNA source for the international collaboration that generated the first high quality draft sequence of the mouse genome. 5 SNP differences have been identified that distinguish C57BL/6J from C57BL/6ByJ and C57BL/6NJ. Both C57BL/6ByJ and C57BL/6NJ type as follows: 08-015199792-M (rs3709624) is C; 11-004367508-M (rs3659787) is A; 13-041017317-M (rs3722313) is C; 15-057561875-M (rs3702158) is G; 19-049914266-M (rs3724876) is T. C57BL/6J types as follows: 08-015199792-M (rs3709624) is T; 11-004367508-M (rs3659787) is G; 13-041017317-M (rs3722313) is T; 15-057561875-M (rs3702158) is A; 19-049914266-M (rs3724876) is G (Petkov and Wiles, 2004.) Others have subsequently identified further SNP differences between sublines of C57BL/6 (Mekada et al., 2009, Zuniga et al., 2010).

Selected References

- Development
- Genetics
  - Gluchos1<sub>C57BL/6J</sub>
  - Gabra2<sub>C57BL/6J</sub>
  - Gluchos3<sub>C57BL/6J</sub>
  - P2rx7<sub>P451L</sub>
  - Fbrwt2<sub>C57BL/6J</sub>
  - Fbrwt1<sub>C57BL/6J</sub>
  - Apobec3<sup>RV3-r</sup>
  - Cdh23<sup>ahl</sup>
  - Gluchos2<sub>C57BL/6J</sub>
- **Mx1**
- **Ahb-1**
- **Nnt**
- **Cd5**
- **Mirc**
- **Nlrp12**
- **n-TRtct5**
- **Cox7a2**
- **Aanat**

**Disease/Phenotype**

- **Disease Terms**
- **Research Areas By Phenotype**
- **Mammalian Phenotype Terms by Genotype**
- **Phenotype Information**
- **References**

**Technical Support**
Genotyping Protocols
End Point Analysis: H2rs253049200-Alt-EP
Separated MCA: Nnt
Separated MCA: Nnt
Standard PCR: Nnt
Sanger sequencing: H2rs253049200
Sanger sequencing: Gabra2-SEQ
Separated PCR: A A A Alternate2

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 an exceptional breeder.

Additional Breeding and Husbandry Support
Mating System
Sibling x Sibling

Appearance
black
Related Genotype: a/a

Citation
When using the C57BL/6J mouse strain in a publication, please include JAX stock #000664 in your Materials and Methods section.

Animal Health Reports
Facility Barrier Level Descriptions

- AX4 (Standard)
- MP14 (Maximum)
- RB09 (Maximum)
- EM03 (Maximum)
- EM04 (Maximum)
- AX28 (Maximum)
- AX5 (Standard)
- RB17 (High)
- RB11 (Maximum)
- RB10 (Maximum)
- RB05 (Maximum)
- RB04 (Maximum)
- AX29 (Maximum)
- AX8 (Standard)
- MP15 (Standard)
- MP23 (Standard)
- EM02 (Maximum)
- EM01 (Maximum)
- RB16 (Maximum)
- RB13 (Maximum)
### Pricing & Availability

*Readily available in any quantity needed.*

**Domestic**

Pricing effective for USA, Canada and Mexico shipping destinations

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**Volume Pricing Program**

Quantities: Volume pricing is automatically applied when a minimum quantity per strain for a shipment is reached

Sexes: Sexes of the same strain may be combined to reach minimum quantity levels to receive the volume pricing

Shipment: All shipping destinations qualify

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Email: TechTran@jax.org
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