C57BL/6J

Stock No: 000664 | Black 6

Also Known As: Black 6, B6, B6J, C57 Black

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 - 78 weeks of age available for order.
Important Note
This strain is homozygous for Cdh23<sup>shl</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/6 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/6 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, Atrans8 to Ath8. C57BL/6J mice also develop severe and progressive hearing loss later in life. Histopathological changes associated with age-related hearing loss include the disruption of both outer and inner hair cells. C57BL/6 mice are also more susceptible to noise-induced hearing loss. Age-related hearing loss 1 (Ahr), a major gene responsible for this hearing loss, was mapped in an intersubspecific backcross by measuring elevated auditory-evoked brainstem response (ABR) thresholds. Ahr is located on Chromosome 10 near marker D10Mit6. 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-Tr20 m1J 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).

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 (rs3720158) 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, Zurita et al., 2010).

- **Development**

- **Selected References**

- **Genetics**

- **Glucos1**^{C57BL/6J}

- **Glucos2**^{C57BL/6J}

- **P2rx7**^{PASTL}

- **Fbrwt2**^{C57BL/6J}

- **Fbrwt1**^{C57BL/6J}

- **Apopbec3**^{YJ-r}

- **Cdh23**^{Ba}

- **Glucos2**^{C57BL/6J}

- **Ahr**^{b-1}

- **Nnt**^{C57BL/6J}
Genotyping Protocols
End Point Analysis: $H^2_2$ rs253049200-Alt 1-EP
Separated MCA: $N_{nt}^{C57BL/6J}$
Standard PCR: $N_{nt}^{C57BL/6J}$
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
Animal Health Reports
When using the Black 6 mouse strain in a publication, please include JAX stock #000664 in your Materials and Methods section.
Facility Barrier Level Descriptions

- AX4 (Standard)
- AX8 (Standard)
- MP15 (Standard)
- RB13 (Maximum)
- MP24 (High)
- RB15 (Maximum)
- RB12 (Maximum)
- AX5 (Standard)
- AX29 (Maximum)
- RB08 (Maximum)
- AX3 (High)
- RB03 (Maximum)
- MP23 (Standard)
- AX1 (Standard)
- MP14 (Maximum)
- RB09 (Maximum)
- AX18 (Maximum)
- RB17 (High)
- RB10 (Maximum)
- RB16 (Maximum)
- RB06 (Maximum)
- RB07 (Maximum)
- RB11 (Maximum)
- RB05 (Maximum)
- RB04 (Maximum)

Pricing & Availability

Readily available in any quantity needed.

Domestic | International
Pricing effective for USA, Canada and Mexico shipping destinations

Live Mouse

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23 weeks | SEX | Not Applicable | Not Applicable | $62.70

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| Male | Not Applicable | $86.80

Volume Pricing Details

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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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General Terms and Conditions

QUESTIONS ABOUT TERMS OF USE

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Email: TechTran@jax.org

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Related Strains

All

By Allele

By Gene

By Collection

All Related Strains
Aged C57BL6/J males and females between 25 – 78 weeks of age are available for order.