

Marsupials that model melanoma

by Monica Harrington

SCIENTIFIC NAME

Monodelphis domestica

TAXONOMY

PHYLUM: Chordata

CLASS: Mammalia

ORDER: Didelphimorphia

FAMILY: Didelphidae

Physical description

The gray short-tailed opossum (*Monodelphis domestica*) is a small marsupial native to South America. It inhabits forests, dry scrubland and agricultural environments in the eastern central part of the continent, south of the Amazon River. In the wild, individuals typically grow to 12–18 cm in length and weigh 80–100 g, but those kept in captivity may become much larger. As suggested by the common name, their tails are proportionately shorter than in some opossums, measuring about half the length of the body, and most of their fur is grayish brown.

Opossums have well-developed, curved claws and sharp teeth. They are omnivorous, hunting invertebrates, amphibians and reptiles as well as eating fruit and scavenging dead animals. A nocturnal species, opossums are most active during the first few hours after dusk. Opossums are typically solitary.

Reproduction

Opossums can breed throughout the year and produce as many as six litters, each consisting of 6–13 pups. The gestation period is about 14 days, and the pups are not fully developed when born, as with other marsupials. Unlike other marsupials, however, *M. domestica* females do not have pouches. Instead, the offspring, which are only about 1 cm in length and 0.1 g in weight, attach themselves directly to the female's teats for several weeks.

Research résumé

Several characteristics of the gray short-tailed opossum make it an amenable research model. It is small and docile; can be maintained and bred relatively easily in laboratory settings^{1,2}, and produces large litters of neonates that are readily accessible, owing to the absence of a pouch in the female. *M. domestica* can be considered a 'prototype'



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Clarifying the role of this gene may lead to a better understanding of dietary lipoprotein physiology in humans. Furthermore, the opossum's omnivorous diet more closely resembles a typical human diet and may therefore make *M. domestica* a better model than conventional laboratory animals for research on physiological effects of dietary fat and cholesterol³.

Finally, newborn opossum pups have a unusual ability to recover from severe spinal cord injuries and have been used to study regeneration of the nervous system^{8,9}.

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