

The strange ways of the tammar wallaby

SCIENTIFIC NAME

Macropus eugenii

TAXONOMY

PHYLUM: Chordata

CLASS: Mammalia

INFRACLASS: Marsupialia

ORDER: Diprodontia

FAMILY: Macropodidae

Physical description

The tammar wallaby is a small marsupial mammal weighing up to 9 kg and standing 59–68 cm tall. Tammar wallabies have narrow, elongated heads with large pointed ears. Their tapered tails measure 33–45 cm in length. The tammar's coat is dark gray to brown dorsally, reddish on the sides of the body and limbs and pale gray or tan ventrally.

Tammar wallabies have strong hind legs and feet that are specialized for hopping, their primary means of locomotion. They can hop at a frequency of 3.5 strides per second and cover 0.8–2.4 m in a single hop¹. For many mammals, the rate of oxygen use increases linearly with the rate of speed, but this does not hold for wallabies, whose oxygen use levels off as their speed increases². As they hop, tammar wallabies store elastic strain energy in the tendons of their hindlimbs when their feet contact the ground, which is then recovered through recoil action when they leave the ground³. The amount of energy stored increases with the tammar's speed and weight², allowing a mother to carry a joey while hopping without expending extra energy⁴.

Reproduction

Wallabies gather in large groups called mobs and have a seasonal, promiscuous mating pattern. Like most marsupials, the female tammar wallaby has a pouch in which she nurses her offspring.

If she becomes pregnant while carrying a joey in her pouch, development of the embryo is arrested until the joey leaves, a phenomenon called embryonic diapause⁵. Tammar wallabies have been used in studies of mammalian reproduction, androgen transport and sperm production^{5,6}.

Research résumé

Marsupials are of great interest in comparative genomics. The tammar wallaby is the second marsupial (following the short-tailed opossum *Monodelphis domestica*) and first macropod to have its genome sequenced⁷. Sequence analysis identified new types of small RNAs, reorganization of immune genes, innovation in reproduction and lactation genes, and expansion of olfaction genes in tammar wallabies compared with other mammals⁷.

Lactation is far more sophisticated in wallabies than in placental mammals and is the subject of frequent study. A recent report identified 14 genes expressed in the mammary gland during early lactation encoding peptides called cathelicidins that kill a broad range of bacterial pathogens. One cathelicidin was effective against multidrug-resistant strains of the bacteria *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* and *Acinetobacter baumannii*⁸.

But pathogens aren't the only bacteria of interest in wallaby research. A new bacterium in the Succinivibrionaceae family of the Proteobacteria phylum has been identified in the foregut of the tammar wallaby. Because this species produces very little methane during rumination, scientists suggest that further investigation could lead to the development of new strategies to redirect fermentation in domestic livestock in order to reduce their methane emissions⁹.

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