

Subject: Zoology

Characters, classification, Distribution  
& Affinities of Metatheria  
(Part one)

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Introduction :- The subclasses metatheria are, the most highly organised and advanced mammals. They have presumed to be arisen from some untraced branch of Jurassic pantotheres and both diverged along their separate lines of evolution during Early Cretaceous period. In the Upper Cretaceous period, the marsupials were more numerous than Eutherians. It was probably during Cretaceous period that Marsupials entered New Guinea, Australia and adjacent islands, which were isolated from Asia in late Cretaceous. Metatheria were widely distributed over many parts of the world so recently as the Miocene period. But, they were now confined to

Australian Region (except New Zealand) to South America and a few species to North America. Geological History of this group is interesting. In Australia, which is now its chief home, no fossil history are found before Pleistocene period. In America, remains of both polyprotodonts and diprotodonts are found as far as back to Eocene. By the time, Placental appeared. Australia and South America were no longer connected with the other continents and the marsupials became extinct in Europe and North America which were still connected. When opossums appeared, probably from South America; Australian marsupials (most Kangaroos) only became threatened by the advent of Man from Europe. But, large Macropus here thrived with the spread of agriculture. Marsupial diversified in Australia due to Isolation, differentiates structurally in to diff. types, arboreal, fruit-eating, grazing, gnawing, digging, burrowing, ant-eater, Insectivorous or Carnivorous.

Distinctive characters

Habit & Habitat :- Marsupials or Metatherians are

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terrestrial and Carnivorous (e.g. Native Cat, Tasmanian Devil, Macquarie wolf) and herbivorous Kangaroos; arboreal and Insectivorous Didelphys, Marsupial, Chiroptera, etc., arboreal phalangers or opossums and Semi-arboreal Phascogale and pouched rats and mice.

Thus, They may be herbivorous, Insectivorous, Carnivorous and Omnivorous, diurnal or nocturnal, warm-blooded, air-breathing, viviparous pouched animals.

External Features :- (i) Body is covered over with hairs.

(ii) Pinnae (External Ear) is well developed.

(iii) Tail is generally long and prehensile and act as an important organ to balance in Kangaroo, Rats and jumping mice.

(iv) Mammary glands are modified sebaceous glands and have elevated nipples.

(v) Females usually have a marsupial pouch or Marsupium, but it is absent in Didelphys & Dasyuridae.

(vi) Marsupium encloses the nipples. The no. of teats are related to no. of young ones produced at birth.

(vii) Typical Muscular diaphragm divides the body cavity into thoracic and abdominal cavity. only one set, functional throughout life.

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## Res. Cir., Ex. and other body Systems.

- (i) Res. Cir and Excretory Systems are typical mammalian type.
- (ii) Heart is without fossa ovalis. Atri-ventricular valves are membranous and attached to the papillary muscles by chordae tendinae.
- (iii) Brain is smaller, olfactory bulbs large. Corpus callosum absent. Cerebral hemisphere surface is convoluted. Cerebellum small and simple. Cochlea of Internal Ear is spirally coiled.
- (iv) In male, there is no seminal vesicle. Testes descend in scrotal sac placed in front of penis. In females, Mullerian ducts are separate and opens into low urogenital sinus. clitoris is also double.
- (v) Rectum and urogenital sinus open together in a common cloaca. cloaca is larger in female than the male.
- (vi) Regarding Development, females are viviparous, Eggs are yolk and cleavage is unequal. Placenta is of yolk-sac type. Embryos are born very young and are developed in the marsupial pouch attached to the teats. The young stays in the pouch for 8 to 9 months and the mother remains in lactationally induced anoestrus. In opposum, young are born just 8 days after Conception.