METATHERIA.

Metatherians or Marsupiale are primitive mammals which possess a characteristic brood pouch or marsupium. The mammary glands are open by teats into marsupium. They represent a lowest grade of organization than that of Eutherian but are basically similar to them.

Distribution: Almost entirely confined to the Australian region with the exception of the American opposums.

Diagnostic feature of Metatherian.

1) Terrestrial, arboreal, burrowing or aquatic
2) warm blooded
3) Herbivorous or Carnivorous in feeding habit
4) Body covers by hairs
5) Penna is well developed
6) The mammary gland has teats.
7) The tail is well developed and are used for balancing.
8) They have marsupium or brood pouch on the ventral side of the body.
9) The forelimbs is shorter the hind limbs is larger
10) All the digits are present.
11) The zygomatic arch is complete.
12) The zygomatic skull is dicondylic and the suture is present.
13) The alisphenoid is absent.
14) An ectopterygoid is present in addition to the pterygoid bone.

(15) The orbital and temporal fossae are confluent.
(16) The plate is fenestrated.
(17) The teeth are heterodont, thecodont and monophyodont.
(18) The dental formula is 5134/4134
(19) The number of teeth is always more than 44. The number of incisor is always variable.
(20) The vertebral column is divisible into five region namely cervical, thorasic, lumber, sacral and caudal region. The cervical vertebrae is seven in number.
(21) The atlas is incomplete.
(22) In the hind limb a narrow rod-like parafibula is present on the outer side of the fibula.
(23) The fourth toe in the hind limb is the largest and it serves as the axis of the foot.
(24) The coracoid is well developed in the embryo. It become rod-like structure in the adult.
(25) Acronian, metacronian and scapular spine are present.
(26) The clavicle is well developed. But the inter-clavicle is absent.
(27) The pelvic girdle has epipubic bone or marsupial bone to support the marsupium.
(28) The corpus callosum absent from brain.
(29) The olfactory lobes are larger.
(30) The anterior commissure is very prominent
(31) ~~The ventricular auricular septum is without fossa ovalis~~
(32) The brain is small having little convolution.
(33) The heart is 4 chambered

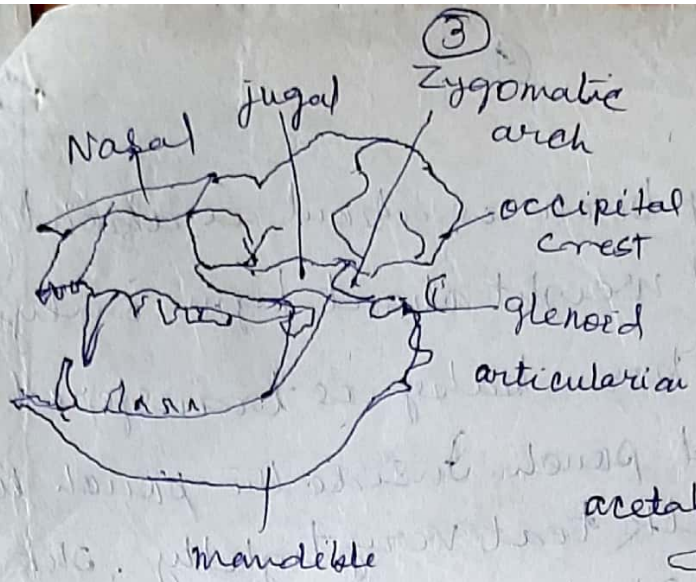

Fig- Skull and mandible of oppasum (lateral view)

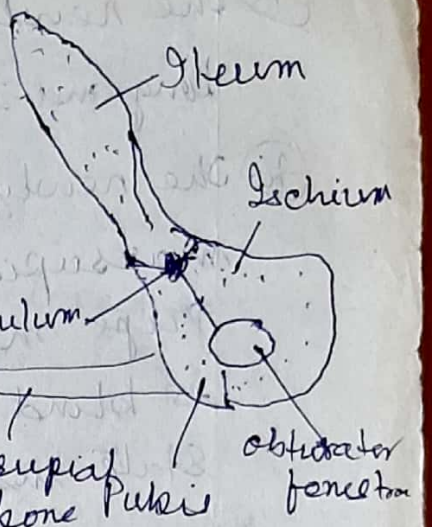

Fig- pelvic girdle showing marsupial bone of oppasum

(33) The inter auricular septum is without fossa ovalis.
(34) The urinogenital and anal aperture is separate.
(35) A common sphincter muscle surround the anus and urinogenital aperture, so that a shallow cloaca is present.
(36) Single penis present.
(37) The testes lies in the Scrotum.
(38) Two or three vagina, when these vagina are present, the central vagina is used for birth of young ones and lateral vagina are used for copulation.
(39) Fertilization is internal
(40) The cleavage is holoblastic
(41) The development is ~~external~~ internal
(42) Placent first time appear in metatheria in its evolutionary history.
(43) Gestation period is short.
(44) Young ones are born in immature state.

(45) The newly born is about is about 2 cm long and it weight about 1 gm. only.

(46) The newly born baby is transfered to the marsupial pouch. Inside the pouch the baby gripe milk teat very tightly. The baby is blind. It feeds and remain in sleeping state inside the pouch for about 190 days.

Affinities:

Metatherian includes mammal which possess both primitive and advanced characters They share certain characters with prototherians and in several characters they resemble the higher placental mammals or eutherian.

Affinities with prototheria

Similarities: They have certain primitive characters also found in prototheria such as —

1) Presence of cloaca
2) Presence of clavicles, epiclavicle bone and
3) ring like tympanic
3) absence of tympanic bulla
4) Brain relatively simple with large olfactory lobes and anterior commissue but without corpus callatosum.
5) Absence of true allantoic placenta. ~~however metatherian~~

Dissimilarities.
Differences:

However, metatherians differ from Prototherians mainly in being viviparous, having permanent marsupial pouch, teats in mammary glands, well developed external ears, Vertebrae with epiphyses, ribs bicephalous, no interclavicle and separate coracoids, teeth in the adults, cochlea spirally coiled, penis bifed, testes in scrotal sac, litterine gestation and viviparidy.

Affinities with Eutherian:

Similarities:

Metatherian posses many advanced characters similar to eutherian

① Presence of hairs and external ear
② Brain with 4 optic lobes. Cochlea spirally coiled.
③ Coracoid reduced, interclavicle absent. Ribs bicephalous.
④ Teeth heterodont
⑤ Male with penis. Testes in scrotal sac
⑥ ~~Testes~~ Presence of uterus and vagina
⑦ Female viviparous. Ova small, yolkless, uterine gestation and placenta.

Dissimarities:—
Differences:

However, metatherians differ from eutherians mainly in restricted distribution, having ~~hair~~ shallow cloaca, marsupial pouch, flat small cranium, no tympanic but alisphenoid bulla, epipubic bones, inflected

mandibular angle, jugal extending back, plate perforated, more increase incisor in both jaw, Corpus Callosum in brain absent, ~~three~~ two vagina and two uteri, bifid penis, Scrotal Sac infront of penis, Gestation period small, no true allantoic placenta etc.

Conclusion:-

It is obvious that the metatherians are more advanced than the primitive reptile like oviparous prototherians. They are more closely related with the eutherians but do not belong the same grade of evolution. Therefore, they are put under a separate infra-class metatheria, while the rest of the higher and truely placenta mammals are placed in the infra class eutheria, and both combine in the class ~~theria~~.

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