

Mammals I

“And God said, 'Let the earth bring forth the living creature after his kind, cattle, and creeping things, and beast of the earth after his kind; and it was so.’ Genesis 1:24

- God created “the moving creature that has life” (Gen 1:20)
- animals: living organisms that move from place to place in their environment, mainly for the purpose of obtaining food
- >1 million classified species of animals
- bilateral symmetry: can be cut in half in only one plane to make each half like the other
radial symmetry: can be cut in half several ways through the center and both halves will be the same
asymmetry: without symmetry

Vertebrates

- **phylum: vertebrata/chordata**
- spinal cord and brain at its anterior end; brain protected by a skull and body supported by backbone or notochord
- endoskeleton made of bone and/or cartilage (parts of human: axial and appendicular)
- tetrapods: four appendages or limbs; same 11 body systems as humans; bilateral symmetry
- chordates: animals possessing notochord, pharyngeal slits, endostyle and post-anal tail for at least some period of life cycle; classification made based on embryonic similarities

Mammals

- **class: Mammalia**
- most dominant group of vertebrates on earth today
- same # separate neck vertebrae (dog, bat, man, horse, giraffe) although neck region not same length; vertebrae differ greatly in size but not in #
- most mammals have two pairs of limbs – forelimbs and hind limbs
- hair on all mammals produced the same way: epithelial cells of epidermis reach down into dermis and form follicle; cells multiplying at the root of the follicle fill with keratin and force hair shaft up; horns, claws, nails, hoofs are special hair structures
- milk production from mammary glands; specialized epithelial cells that multiply when female is pregnant; glands manufacture milk to provide nourishment for newborn; milk released in response to release of hormones by mother; mammary gland shuts down production when young no longer require nourishment from mother
- warm-blooded: regulates temperature by internal mechanisms (altering blood flow, shivering, sweating, panting)

- homeothermic: maintaining same temperature --> significant % of food eaten is used to produce heat to keep body warm; hibernation: state of extremely low body temp, respiration rate and heartbeat to conserve energy through winter
- lungs of mammals larger than reptiles, amphibians bc mammals need more O₂ to maintain high body temp; only mammals have muscular diaphragm
- four-chambered heart design ensures that heart will always be full of blood
- Creation clearly distinguishes man from animals: "And God said, 'Let us make man in our image, after our likeness'" (Gen. 1:26)
- man created to rule over animals; mammals created to be helper to man; man has used mammals for companionship, protection, and service; also used for food and clothing, medicine
- mammals help nature by fertilizing ground with waste; also food web

Reproduction

- reproduce by sexual reproduction
- placental mammals: region of implantation of blastula; blood capillaries of young lie against blood capillaries of mother for exchange of gases, nutrients and waste (but not blood); blastula attaches to uterine wall and considered an embryo, surrounded by amniotic fluid; becomes fetus when recognized as a young individual; gestation period from fertilization to birth (hamster 16 days - elephant 2 years)
- umbilical cord connects fetus to placenta
- viviparous mammals bear young alive
- non-placental mammals: egg covered with a leathery shell after fertilization; oviparous
- pouched mammals spend majority of gestation outside the womb

Order Tubulidentata

- tubulidentata: "tube teeth"; possess little tubes that radiate from central pulp cavity
- smallest order
- armadillo (Afrikaans: "earth pig")
- designed for digging holes and eating termites
- found in savannas of Africa (name type of biome)

Order Proboscidea

- proboscidea: "elephant trunk"
- elephant - largest living land mammal; uses trunk to smell, drink, and feed
- Herbivorous
- tusks made of ivory and are enlarged incisor teeth; molars weigh 8lbs and replaced 5x in elephant's lifetime (40yrs), after which elephants may die from starvation because they can no longer chew
 - 1) African elephant larger and has bigger ears
 - 2) Asian (Indian) elephant

Order Sirenia

- sea cows – graze like cows; [Greek] “sea nymph”
- no hind limbs
- live entirely in water because they require support of water to help move and breathe (if on land, rib cage would collapse under body mass and sun would burn skin)
- come to surface every minute or two for air;
 - 1) dugong – forked tails
 - 2) manatee – flipper not forked, upper lip divided into two halves

Order Monotremata

- oviparous mammals; [Greek]: “single hole”
 - 1) echidna – spiny anteater; coarse hair interspersed among spines; long snout and sticky tongue
 - 2) duckbill platypus – designed to live both on land and in water; uses its bill on land for digging and in water as primary sensory organ bc eyes and ears close underwater

Order Edentata

- “without teeth”
 - 1) armadillo – “little armored one”; covered in rows of tough plates jointed across the back; uses claws to scrape ground in search of insects for food; always bears identical twins or quadruplets resulting in offspring of same gender
 - 2) sloths – arboreal; trees provide home, food, protection; two-toed and three-toed; slow moving due to low body temp (95–91°F); slowest land mammal = ai, clocked at 6–8ft./min
 - 3) anteaters – tongue almost 2ft. long; diurnal in uninhabited regions and nocturnal in densely populated areas; sense of smell 40x keener than human

Order Pholidota

- “horny scale”; describes overlapping plates of pangolin body

Order Marsupialia

- pouched mammals; young kept within protection of marsupium and nourished by mother's milk until large enough
 - 1) kangaroo – largest living marsupial; strong legs, built to carry large body long distances in a hurry; can go 2–3mos with no water
 - 2) opossum – only marsupial outside of Australia and NZ; ability to play dead by going limp, rolling over and sticking tongue out
 - 3) wombat – best digger, toes have stout claws; tailless, legs are short and strong
 - 4) koalas – only eats buds and leaves of eucalyptus
 - 5) numbat – banded anteater; diurnal; pointed snout and small mouths; 52 teeth --> most of any land mammal

DISSECTION

Kingdom: [Animalia](#)

Phylum: [Chordata](#)

Class: [Mammalia](#)

Order: [Artiodactyla](#)

Family: [Suidae](#)

Genus: [Sus](#)

Species: [S. scrofa](#)

Subspecies: ***S. s. domesticus***