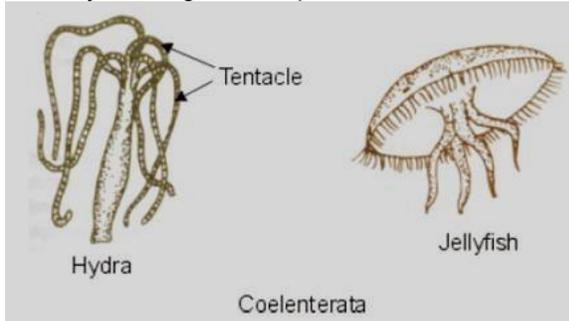


THE ANIMAL KINGDOM

- All organisms that belong to the Animal Kingdom is classified into different phylums.
- There are 21 phylum in this kingdom, but five phylum represents most animals seen today.

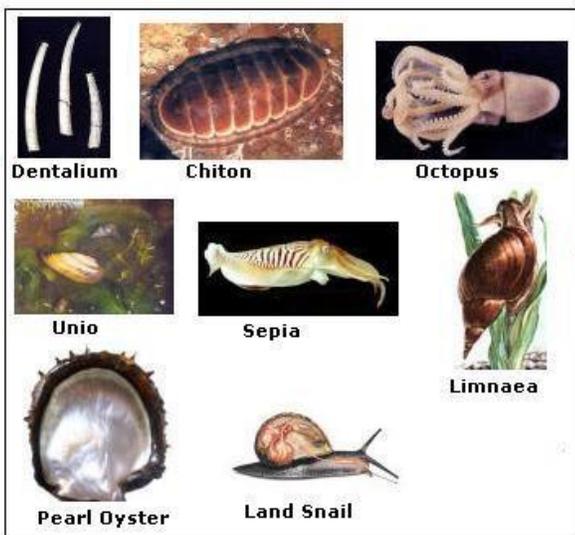
1. Phylum Coelenterata

- These are organisms with simple circular body shape of only two cellular layers.
- This includes jellyfish, sea anemones and corals.
- They have body like a sac, with only one opening which has to act as a mouth and an anus.
- The body is **radially symmetrical**: this means it is arranged in the shape of a wheel or circle – so if you take a cross-section at any places down the animal you will get two equal sides.



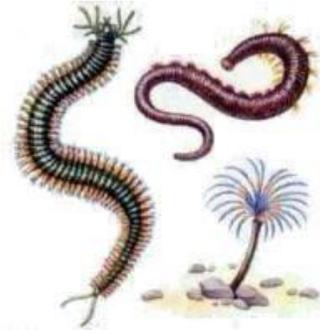
2. Phylum Mollusca (means “soft-bodied”)

- This group of animals has a mantle and shell, and a muscular foot.
- They are soft-bodied organism and unsegmented as well.
- Such organisms includes oysters, snails, octopus, squid, shellfish, squids, land snails and slugs.



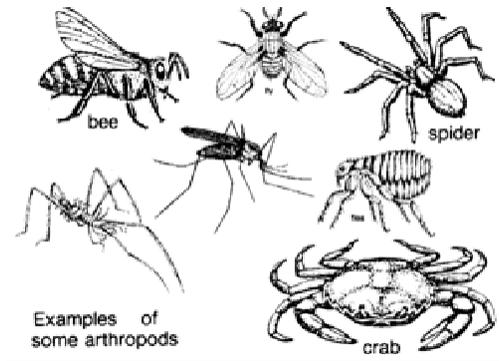
3. Phylum Annelida (means “segmented body”)

- These are segmented worms and the roundworms.
- This includes earthworms, centipedes, threadworms, roundworm..etc.



4. Phylum Arthropoda (means “jointed feet”)

- This is the largest animal phylum, Arthropods are the greatest in number with more than 750,000 known species.
- All arthropods have bodies that have been divided into distinct head and body regions, paired jointed limbs and a cuticle (skin) made of **chitin**.



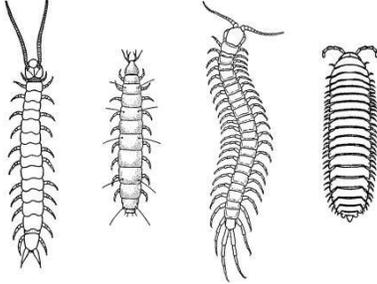
- There are four different **classes** of arthropods:

i) Class Crustaceans

- These animals have gills which restrict them to an aquatic damp habitat.
- This ranges from many forms of zooplankton in the sea, to krill, shrimps, prawns, crayfish, lobsters, crabs, barnacles and slaters.

ii) **Class Myriapods (many legs)**

- This includes the centipedes and millipedes.
- The difference is not in the number legs but how many legs per segment.
- The millipedes have two pairs of legs per segment, the centipedes have one pair per segment.



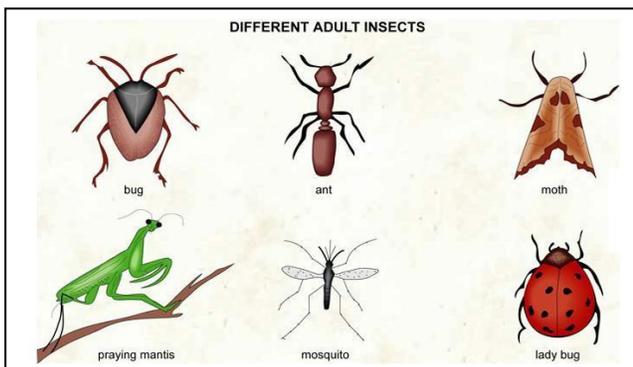
iii) **Class arachnids**

- These animals have head and thorax joined.
- They have four pairs of legs.
- This includes spiders, scorpion, mites and ticks.
- They don't win much affection with their habit of liquefying the tissues of their prey and sucking up the contents, and most of them sting, some with lethal venom.



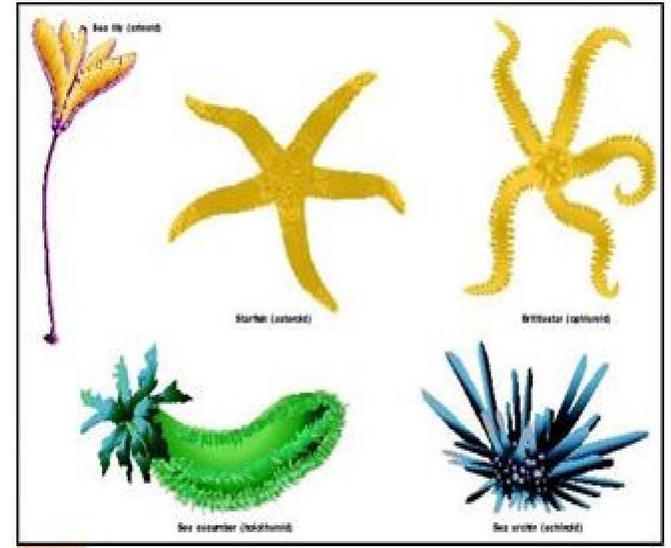
iv) **Class insects**

- Insects have body in three parts (head, thorax and abdomen) and three pairs of legs.
- Some species have wings
- This include flies, cockroaches, ants, beetles, butterflies, fleas, bees, lice and ant.



5. **Phylum Echinoderms (echin = spiny, derma = skin)**

- These animals have spiny skins and are radially symmetrical (although their larvae are bilaterally symmetrical).
- Their bodies are often organized in a five-part arrangement in a circle around the mouth.
- All the members of this phylum inhabit the sea e.g starfish, sea urchins, sea cucumbers.

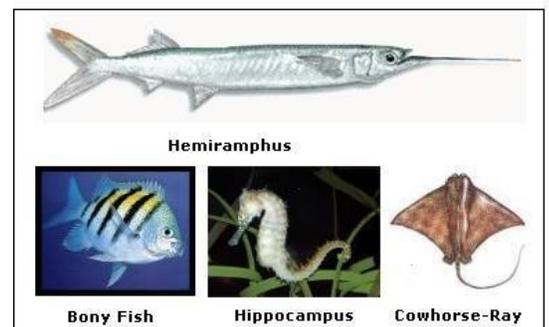


6. **Phylum chordate**

- These are animals that have a backbone made of cartilage or bone.
- This phylum is further divided into sub-phyla, in which one of the sub-phylum in which human belongs is the **vertebrate**.
- Phylum chordate, sub-phylum vertebrates can be split into many classes, of which we will only look at the more important ones (some have extinct).

i) **Class Pisces**

- These animals are restricted to aquatic environment only.
- They either have bones or cartilage (such as that in sharks)



ii) Class Amphibians

- These animals have moist skin which is used for respiration.
- Amphibian, one of a large class of cold-blooded vertebrates (animals with backbones).
- The name comes from Greek words meaning dual life, because most amphibians spend the early part of their life cycle in water and the later part on land.
- Amphibians include frogs, toads, and salamanders.



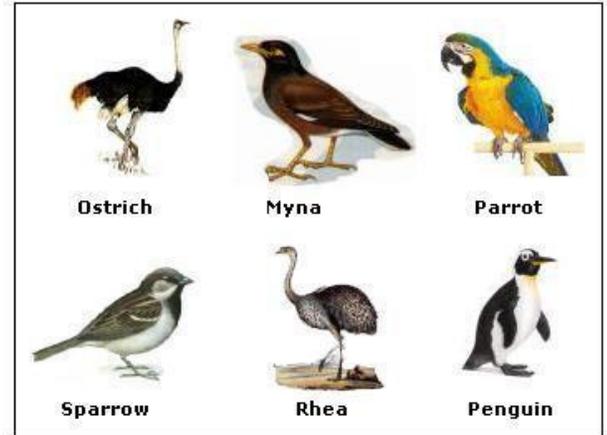
iii) Class Reptiles

- These are cold-blooded animals with scaly skin.
- This was the first group of animals to be completely independent of water and able to live their whole lives on land.
- All reptiles include turtles, snakes, lizards, crocodiles, tuatara..etc



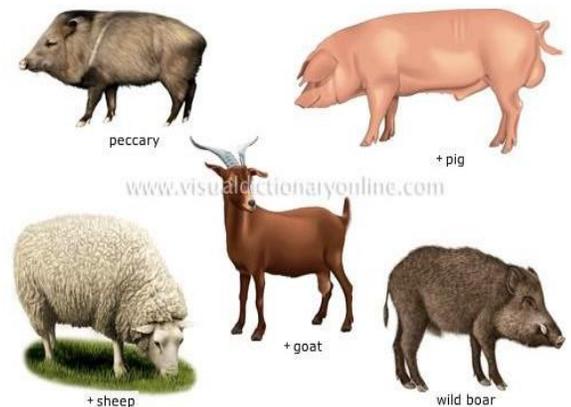
iv) Class Aves (Birds)

- The birds are warm-blooded animals with feathers and no teeth.
- They lay eggs, but most of their adaptations are for flight - for example, they have light, hollow bones.
- **Examples:** sparrows, penguins, ostrich, chicken..etc



v) Class Mammals

- These are warm-blooded animals characterized by their female feeding their young on milk produced by the mammary glands.
- Most mammals grow their embryos in an uterus, supplying nutrition and oxygen to the offspring through a placenta.
- Most have specialized teeth.
- This group has many and varied forms, from bats that fly, kangaroos that jump, running deer, cattle, cats and dogs, swimming whales and dolphins, and of course - us **humans** - *Homo sapiens sapiens* - meaning wise wise man!!



THE PLANT KINGDOM

- Plants are multicellular organisms that carry out photosynthesis i.e they are **autotrophs**.
- There are five divisions of plants:
 - Phaeophyta**
 - Brown algae, eg kelp, neptune's necklace
 - Rhodophyta**
 - Red algae, eg comb weed
 - Chlorophyta**
 - Green algae, eg sea lettuce
 - Bryophyta**
 - Mosses and liverworts.
 - These plants lack vascular tissues (xylem & phloem) that transport food and water and are restricted to damp habitats because they dry out easily.
 - The earliest land plants probably resembled modern-day bryophytes.
 - Tracheophyta**
 - These are plants that contain conducting tissues, true roots, stems and leaves.

[Again in Form 6 Level, we will only focus on the last two divisions – Bryophyta and Tracheophyta]

PHYLUM BRYOPHYTA

- The only members of this group that you are likely to come across are the mosses and the liverworts.
- These plants lack vascular tissue (xylem & phloem) to transport materials around and for support.
- Thus, these plants are quite weak and are restricted to damp habitats only.
- Liverworts are simpler than the mosses. They are flat, sometimes branched, green structures that lie on the ground.



Note:

- Let's make sure we understand this term vascular.
- It means having the transport tissues xylem and phloem to carry or transport food and water around and up and down a plant and give support to the plant.
- If a plant grows in water there is little need for such tissue, as the water buoys up the plant and it can absorb necessary gases and nutrients through the cell walls.
- The bryophytes are very low-growing plants, flat on the ground with no need for such tissue, so they are called non-vascular.
- Tracheophytes on the other hand are tall, so they need transport and support tissues and so are vascular plants.

PHYLUM TRACHEOPHYTA

- The most important of this group (which you remember have vascular or transported tissue of xylem and phloem) are the three listed below:

(i) Class Filicopsida (the ferns and horse-tails)

- These plants live in damp places because they still need water for the sperm to swim to the egg.
- The main fern that you will see is the saprophyte.
- They have conducting tissue and roots and are well-suited to land, but the alternate generation (the gametophyte) is a small, flat, short-lived, green, leaf-like that still remains dependent on water for the transfer of sperms.

(ii) Class Gymnosperm – „naked seeds“ (the cone bearers)

- These plants have cones for reproduction, and produce pollen and seeds but have no flowers.
- Many (like the pines) have small needle-like leaves.



(iii) Class Angiosperms – „enclosed seeds“

- This refers to flowering plants.
- They can be divided into two broad groups; the monocotyledons and the dicotyledons.

BINOMIAL SYSTEM OF NAMING ORGANISMS

- Carol Linnaeus used the binomial system of nomenclature to name organisms.
- This means each organism is given a scientific name.
- This name consists of two separate name. (*Binomial* = means "two")
- The two separate names is:
 - i) **Genus** or generic name
 - ii) **Species** or specific name

Example: Human beings are given the scientific name ***Homo sapiens***.

This means that human being belongs to the genus ***Homo*** and the species ***sapiens***.

Why is it necessary to give all organism a scientific name?

- To avoid confusion over diversity in languages between different nation, a scientific name is given to avoid misunderstandings when referring to a particular organism.

Example: In Samoa, coral might be called a different name. In Tonga we give a different name for corals. Although we call corals "feol" but there are different types of corals eg. Staghorn coral, mushroom coral, fire coral.....etc

- To avoid confusion, a scientific name points out the exact, correct coral referred to by stating specifically the genus and species name of the coral of interest.

Rules for Writing Scientific Name

1. Write the genus name with capital letters and species name in lower case letters.
2. Write the names in *Italics* - or underline them.
e.g *Homo sapiens* (*Italics*) or Homo sapiens
3. Use 'sp' if you do not know the species ('spp' if plural)
e.g Scientific names for chimpanzees are *Homo sp.*

NOTE:

By the end of this week you MUST finish reading all handouts. Please stick all handouts to your Biology Book and answer all questions provided on self-check #2. If you have any questions, feel free to contact me;

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Phone Number: 7710288

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Self-check #2: Plant and Animal Kingdom

1. Which of the following characteristics would distinguish an annelid from a mollusc?
 - A. Its adaptation to aquatic life
 - B. Its segmentation
 - C. The presence of muscular foot
 - D. The absence of a shell.

2. An animal group in which the body organization is limited to two cellular layers is the:
 - A. Coelenterates
 - B. Chordates
 - C. Annelids
 - D. Arthropods

3. Which of the following characteristics are true of fungi, they have:
 - A. No chlorophyll, consist of filaments and are all either saprophytic or parasitic.
 - B. Chlorophyll, consist of flat plate-like bodies and are all autotrophic.
 - C. No chlorophyll, consist of filaments and are all parasitic
 - D. No chlorophyll, consist of filaments and are all saprophytic.

Question 4 – 6 refers to the following table:

Animal 1	Animal 2	Animal 3	Animal 4	Animal 5
Hair	Feathers	Hair	Scales	Shell
Backbone	Backbone	Backbone	Backbones	Muscular
Claws	Claws	No claws	Claws	foot

4. Which groups do animals 1 and 3 belong?
 - A. Annelids
 - B. Vertebrates
 - C. Invertebrates
 - D. Coelenterates

5. What phylum does animal 4 belong to?
 - A. Mollusca
 - B. Annelida
 - C. Coelenterates
 - D. Chordata

6. To what phylum do animal 5 belong?
 - A. Mollusca
 - B. Chordata
 - C. Annelida
 - D. Coelenterata

7. The scientific names of three organisms are:
 - *Hedera helix*
 - *Hedera canariensis*
 - *Helix pomatia*
 - a) Use your knowledge of the binomial system of naming organisms to describe the relationship between the organisms named below:
 - (i) *Hedera helix* and *Hedera canariensis*

 - (ii) *Hedera helix* and *Helix pomatia*

 - b) On what features of the organisms is the binomial system of classification based on?

