

## Nine Major Phyla of the Kingdom Animalia

### **Porifera:** the sponges

name means pore bearing

were once thought to be plants because of sessile lifestyle

most species live in clear, shallow, marine waters

sponges feed by acting as living filters

many have sac-like bodies with many tiny holes called pores and one large opening called the osculum

they have flagellated collar cells, amoeba like cells, supported by spongin and spicules of calcium carbonate and sometimes silica

no tissues, organs or systems

**Cnidaria:** in some classifications they are referred to as coelenterates (translated from Greek means Hollow gut) Cnidaria refers to the stinging cells on the tentacles

the group includes jellyfish, hydra, coral, Sea anemone, comb jellies, and Portuguese man-of-war

all are radially symmetrical

they have sac-like bodies with myo-epithelial cells and gastro-epithelial cells

between cell layers is a jelly layer called the mesoglea

the body has a single opening, the mouth, through which food enters and waste exit

most have cnidoblasts on tentacles, the stinging cells contain barbs called nematocysts

the body has two forms, a polyp and the medusa

a polyp this sessile form like corals or hydra

the medusa is free-floating like a jellyfish

### **Platyhelminthes:** the flatworms

includes the planaria, tapeworms and flukes

these flat body animals have three cell layers with some organs and systems

they have only one opening to the digestive system when it's present

they do not have circulatory or respiratory systems

these animals may be free living like planaria or parasitic like the tapeworm

they are the most primitive bilaterally symmetrical animals

### **Nematoda:** the roundworms

includes hookworms, filaria worms, ascarus worms and many soil and water dwelling species

most of these animals are very small

about 50 kinds of human parasites, filaria worms cause elephantiasis

they contain most of the organs and systems found in complex animals

they have a digestive system with a mouth and anus

they lack a circulatory system

### **Annelida:** the segmented worm

includes the earthworm, Neries worms and leeches

they have a well-developed coelom or body cavity, body divided into segments

they contain complex organs and systems

the circulatory system is closed with pseudohearts and dorsal and ventral vessels

gas exchange through the skin, no respiratory system

**Mollusca:** soft-bodied animals with mantles

Because their bodies are soft and lack skeletal support, many have protective shells, all have a muscular foot, a mantle and visceral mass. Though forms vary greatly, three major classes in this phylum are:

**Gastropods** -- move on their bellies, have a single shell, usually with spiral orientation which includes the snails, conchs, whelks, periwinkles and slugs

**Bivalves** -- have two hinged shells, including oysters, clams, scallops and mussels

**Cephalopods** -- with shell reduced or absent, most are complex with a well-developed nervous system, intricate behavior and highly efficient motility. This includes octopus, squid, cuttlefish and the Nautilus

**Arthropods:** the largest phylum made up of 75 to 80% of the animals, translated it means jointed foot. These creatures have jointed appendages and a protective exoskeleton composed largely of chitin. Because the exoskeleton is on the outside, they must molt, that is shed their skin in order to grow. They have well-developed organ systems and complex behaviors. Five major classes in this phylum are:

**Chilopoda:** head and 15 to 177 trunk segments, a pair of legs per most segments

**Diplopoda:** head and 20 to 200 trunk segments, with two pairs of legs per most segments

**Arachnida:** the body is in one or two parts with eight walking legs, air breathing, fangs or chelicerae

**Crustacea:** the body is cephalothorax and abdomen, two pairs of antennae, these include shrimp, crabs and lobsters

**Insecta:** the largest class, bodies have three parts, head, thorax, and abdomen, and they have three pairs of legs, include butterflies, termites, mosquitoes and dragonflies

**Echinodermata:** translated this means spiny skinned (echino – spiny, dermatata -- skin)

They are all marine, include the starfish, sand dollars, sea lily, sea cucumber, sea urchins and brittle stars. They have penta-radial symmetry and internal calcium carbonate skeleton, and a water vascular system. These are most closely related to chordates

**Chordata:** all organisms in this phylum have the four basic features--

1) a notochord, 2) a dorsal, hollow nerve cord, 3) gill arches at some point in their life, and 4) a tail posterior to the anus.

Vertebrates are in this group. Vertebrates have an endoskeleton of the bone or cartilage, have a closed circulatory system with a heart containing three or more chambers, blood contains hemoglobin, and their eyes develop as lateral outgrowths of the brain. The major classes of vertebrates are:

**Agnatha** -- jawless fish, i.e., lampreys

**Chondrichthyes** -- cartilage fish, such as sharks and rays

**Osteichthyes** -- bony fish

**Amphibia** -- moist skin, lay eggs in water, such as frogs, toads, salamanders

**Reptilia** -- scaly skin, lay eggs on land (amniotic egg), such as lizards, snakes and turtles

**Aves** -- have feathers, i.e., birds

**Mammalia** -- have mammary glands and nurse young.