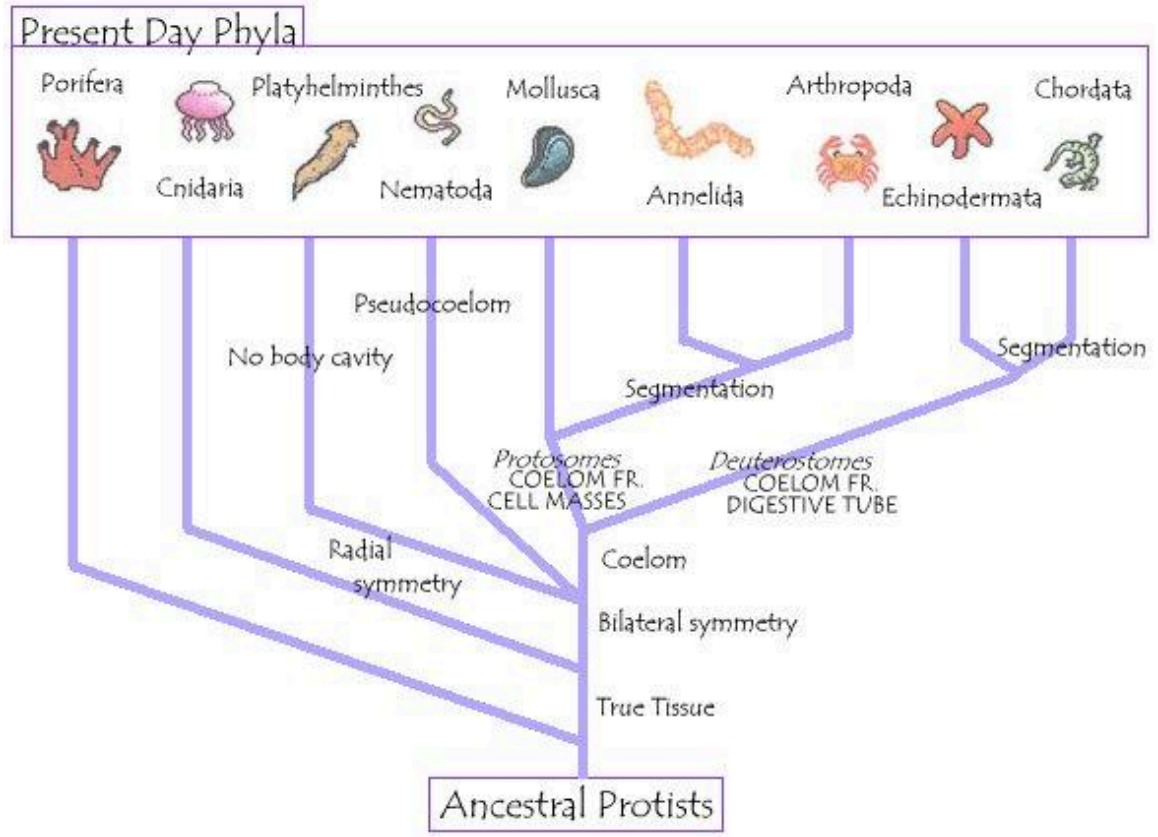
The Animal Kingdom

The animal kingdom is extremely diverse. However, there are certain basic characteristics that all animals share. That is, an animal can be defined as an organism which is **multicellular, eukaryotic, heterotrophic and whose cells lack cell walls.**
The animal kingdom has a number of divisions according to certain characteristics.



Phylogenetic Tree of *KINGDOM ANIMALIA*

Because animals are multicellular, there needs to be a **DIVISION OF LABOR** among cells. That is, different cells must perform different tasks for the organism. If there weren't cells specialized for feeding, respiration, the elimination of wastes and so on, all cells would have to be exposed to the environment to obtain food and oxygen and remove wastes. Obviously this is not the case.

Essential Functions

There are a number of essential functions animals must carry out in order to survive. For each group of animals studied, we will look at how they carry out these essential functions.

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Feeding:
Animals have evolved many methods of obtaining the food they require. These include herbivores, carnivores, omnivores, parasites, filter feeders and detritus (decaying plants and animals) feeders.

Respiration:
Living cells produce energy through the process of cellular respiration which involves the consumption of oxygen and production of carbon dioxide. Some animals absorb and remove gases directly through their skin. Others have developed specialized respiratory systems. These systems take different forms in different animals.

Internal Transport:
Once an animal reaches a certain size, it requires a transport system to take oxygen, nutrients and waste products to and from all the cells of the animal's body. Some organisms have developed circulatory systems which involve the pumping of a fluid (blood) by a pumping organ (heart).

Excretion:
Cellular metabolism (chemical reactions) produces some harmful chemical wastes. Animals need to get rid of these wastes. Some aquatic organisms rely on diffusion of the toxic substances out of their bodies, but larger, land dwelling animals have developed excretory systems to remove poisonous wastes.

Response:
Animals must be aware of their surroundings in order to get food, avoid predators and find mates. Nervous systems of varying complexity have evolved in animals. Sense organs, nerves and a brain are the basic parts of an animal's nervous system.

Movement:
Some animals are sessile (not moving), but many are motile (move around). Movement requires muscles and a skeleton (endo or exo). These structures make up the musculo-skeletal system in animals.

Reproduction:
All animals must reproduce in order to ensure survival of their species. Animals use many different methods of reproduction. Some use both sexual and asexual methods. Some bear live young while others lay eggs. Some reproductive cycles involve DIRECT DEVELOPMENT where the baby animals increase in size, but do not change form. Others animals show INDIRECT DEVELOPMENT the animals emerge from the egg in LARVAL form (immature stages that look and act nothing like the adult) and undergo a METAMORPHOSIS into the adult form.