

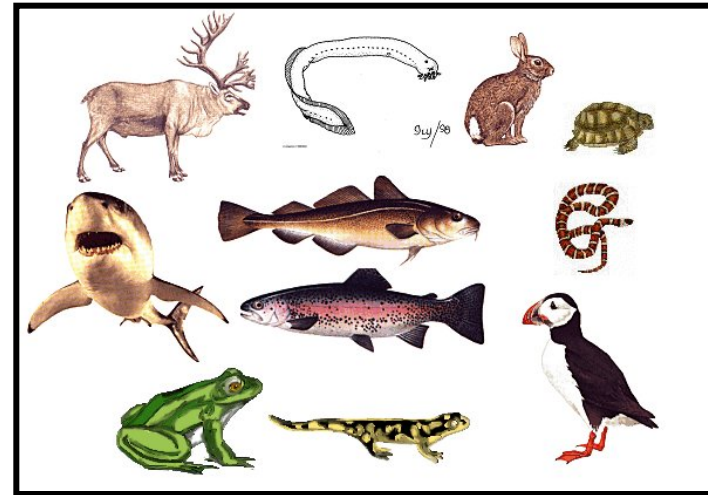
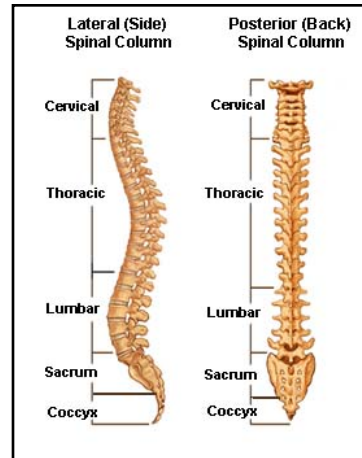
# Simple Invertebrates: Chapters 26 and 27

[Ted-Ed: Tardigrades](#)

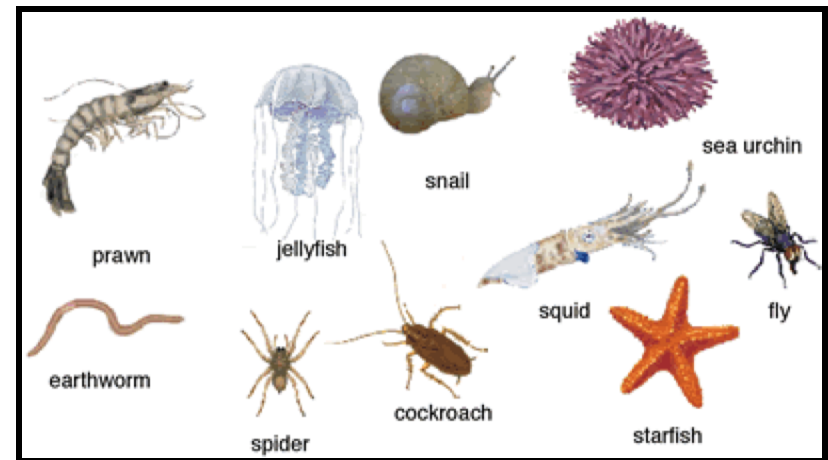
# 26-1 Introduction to the Animal kingdom

A. Divided into:

**1. Vertebrates: have a backbone**



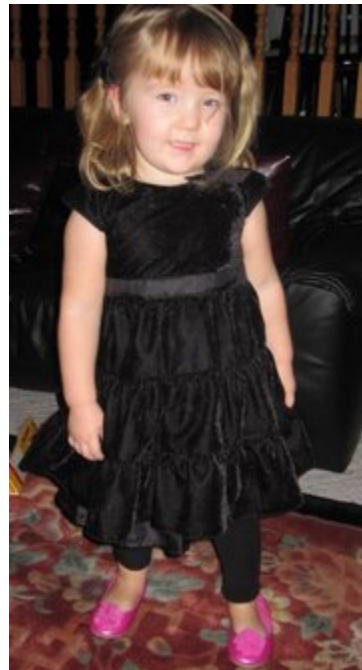
**2. Invertebrates: have no backbone**





## II. What is an Animal?

A. Animal: A *multicellular eukaryotic heterotroph whose cells lack cell walls*

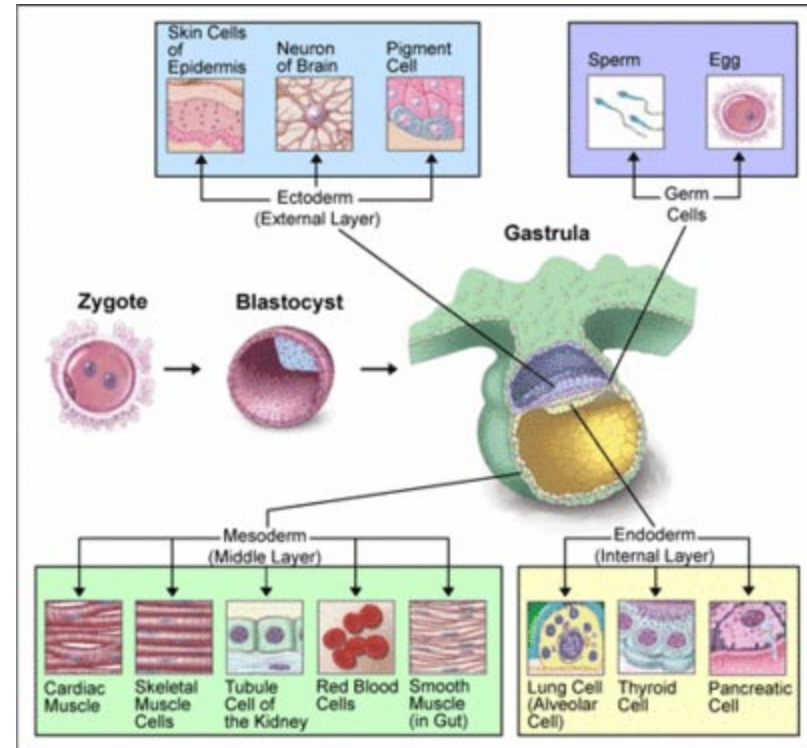




# III. Cell Specialization and Division of Labor

A. What is the advantage of dividing up different tasks among specialized cells?

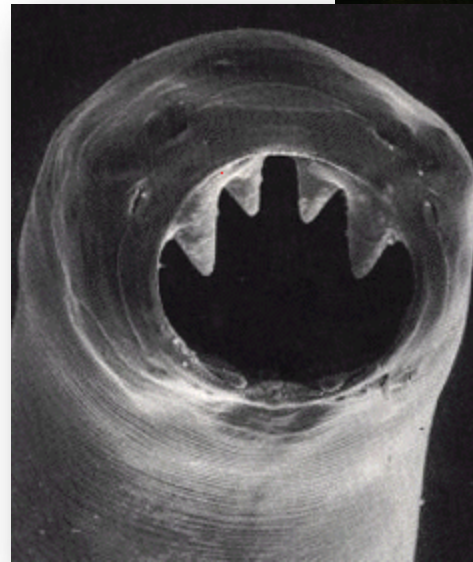
*To increase the efficiency*



## IV. What Animals Must Do to Survive

### A. Feeding

1. Herbivores: *organism that eats plants*
2. Carnivores: *organism that eats meat*
3. Parasites: *organism that survives by living and feeding either inside or attached to outer surfaces of another organism, thus doing harm to the host*



**4. Filter feeders:**  
*aquatic organism that feeds by straining tiny floating plants and animals from the water around it*



**5. Detritus Feeders:**  
*animal that feeds on tiny bits of decaying plants & animals*



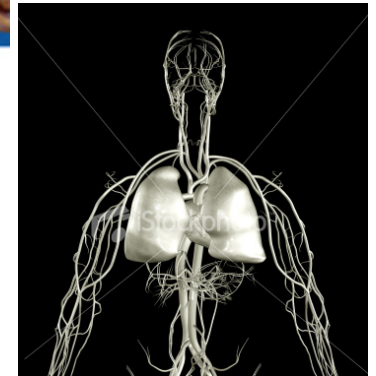
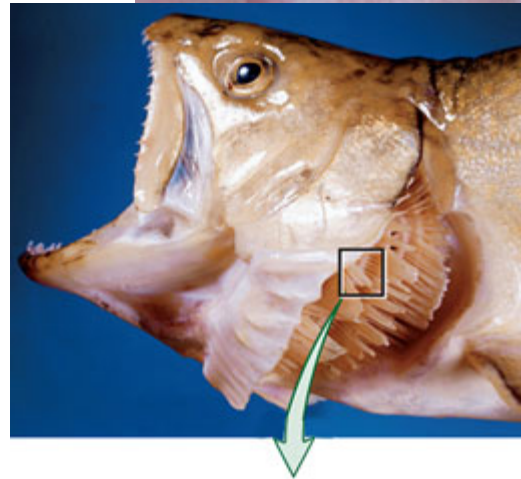


## B. Respiration

1. Respiration is necessary because: *in order to take in oxygen and give off CO<sub>2</sub> which is part of cellular respiration*



2. Larger active animals have a better-developed respiratory system because: *respiration through the skin is not efficient enough*

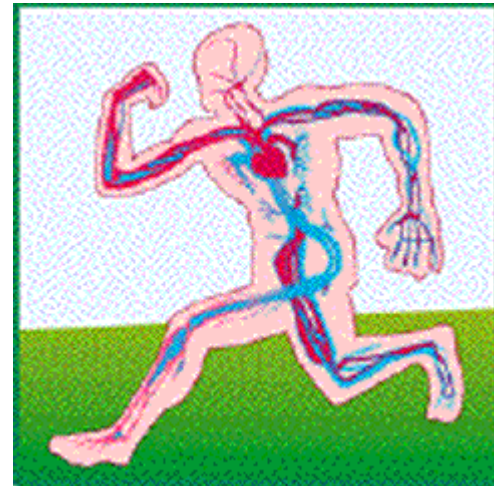


## C. Internal Transport

1. Why is internal transport necessary for some animals and not others?

*Because once an animal reaches a certain size, it must somehow carry oxygen, nutrients, and waste products to and from cells deep within its body*

2. A complex animal may have a pumping organ called a heart which forces a fluid called blood through a series of blood vessels





## D. Excretion

1. Excretion is necessary because: *cellular metabolism produces chemical wastes such as ammonia that are harmful and must be eliminated*



## E. Response

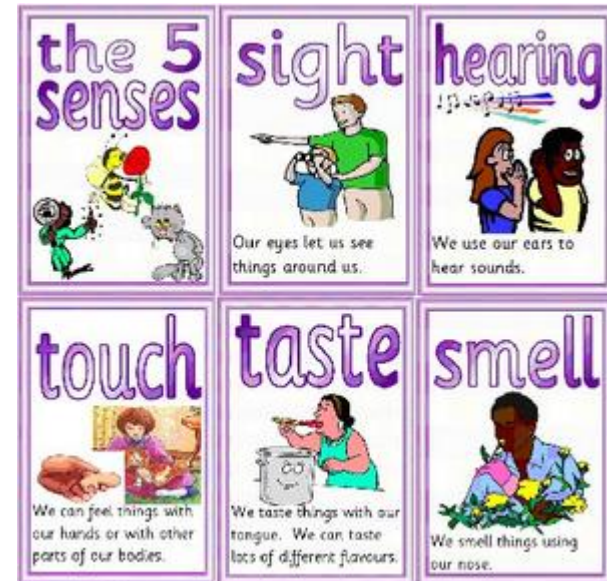
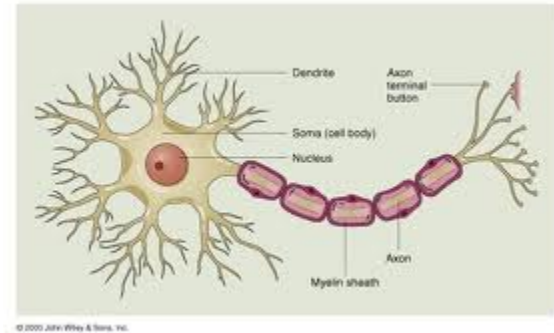
1. Reasons why animals need to watch their surroundings:

- a. Find food
- b. Spot predators
- c. Identify others of their own kind

2. Nerve cells hook up to form a nervous system

3. Sensory organs gather: *information* from the environment

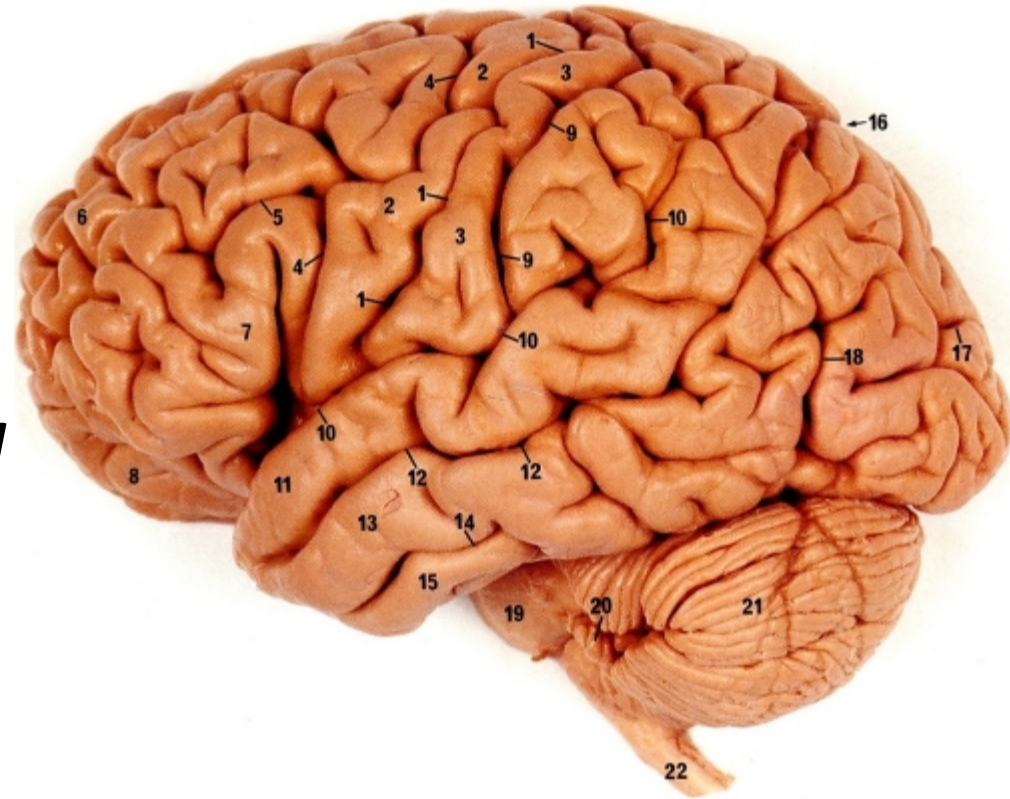
4. Some sense organs are:
- a. Eyes
  - b. Ears
  - c. Nose
  - d. Skin
  - e. Tongue



## 5. Brain:

a. *Nervous system's control center*

b. *Function: processes the information and regulates how the animal responds*



[Ted-Ed: Animal Pain](#)



# F. Movement

1. **Sessile:** *organism that lives their entire adult lives attached to one spot*

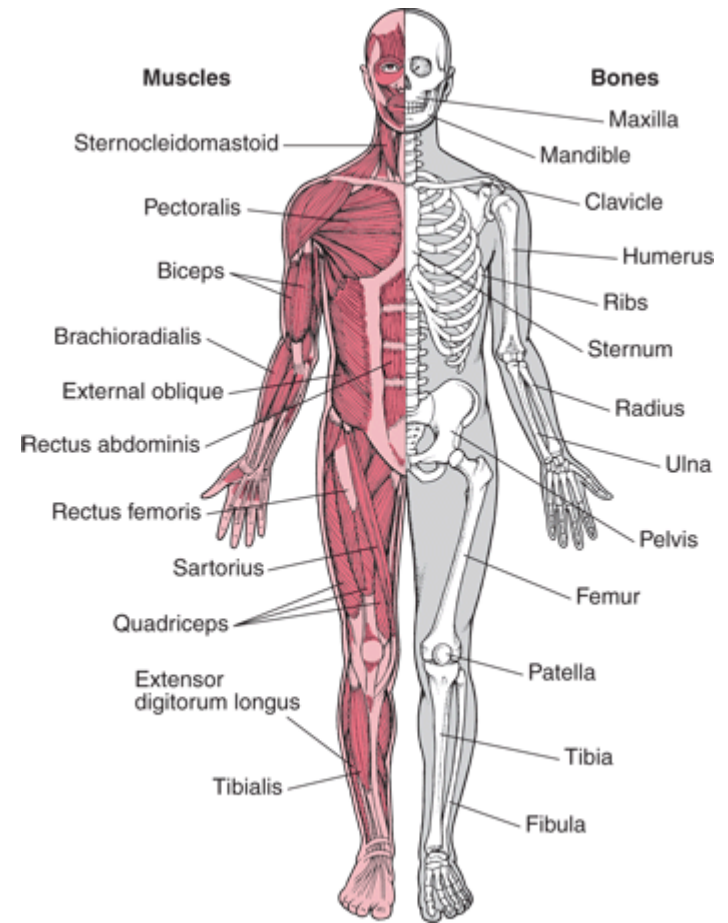


2. **Motile:** *organism that move around*

3. Muscle tissues generate force by contracting to allow animals to move



4. Muscles work together with a skeleton or system of solid support in the body. This is called a musculo - skeletal system.



- **5. Exoskeleton:**  
*system of supporting structures covering the outside of the body*



- **6. Endoskeleton:**  
*skeletal system in which a rigid framework is located inside the body of an animal*

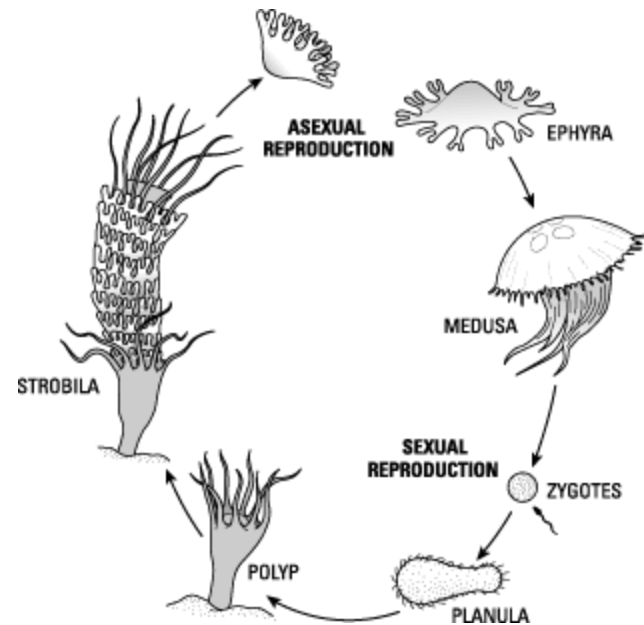




# G. Reproduction

1. Some animals switch back and forth between sexual and asexual reproduction

[Ted-Ed: Insect Abundance](#)



2. Some animals reproduce sexually by bearing live young



3. Some animals reproduce sexually by producing eggs which will hatch into a young



**4. Direct development: *baby animals increase in size but do not change in overall form***





**5. Indirect development: *eggs hatch into larvae which are immature stages that look and act nothing like the adults***

**a. Metamorphosis = *series of dramatic changes in body form in the life cycle of some animals***

**b. An example of an organism that does this: *butterflies, starfish***

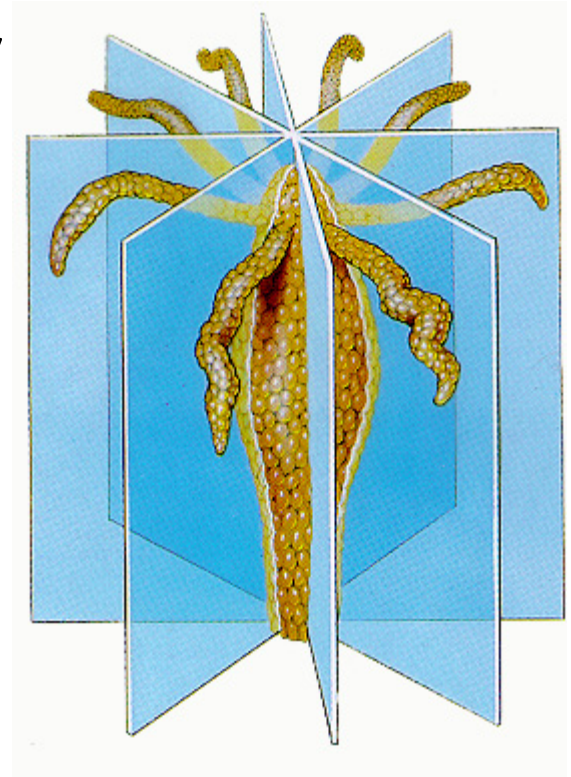


# V. Trends in Animal Evolution

A. There are 3 main trends in animal evolution:

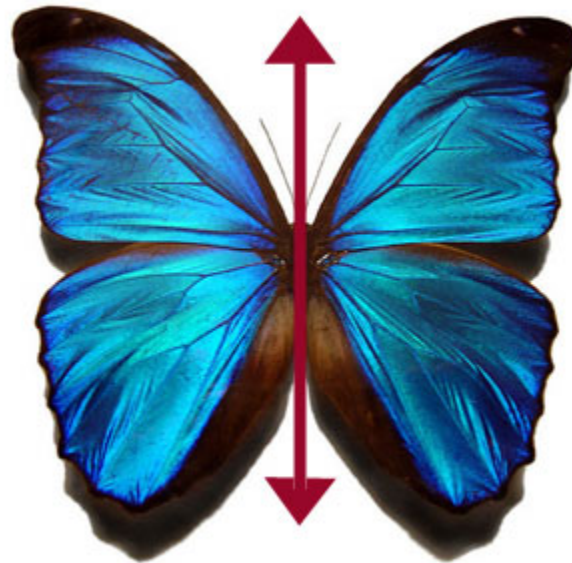
1. *The levels of organization become higher as animals become more complex in form*
2. *Some of the simplest animals have radial symmetry; most complex animals have bilateral symmetry*
3. *More complex animals tend to have a concentration of sense organs and nerve cells in their anterior end*

**B. Radial symmetry:** *arrangement of the body parts of an organism in such a way that they repeat around an imaginary line drawn through the center of the organism's body*



**C. Bilateral symmetry:** *arrangement of an organisms' body parts so that if an imaginary line were drawn down the longitudinal middle of the body, the body's parts would repeat on either side of the line*

[TED-Ed Symmetry](#)



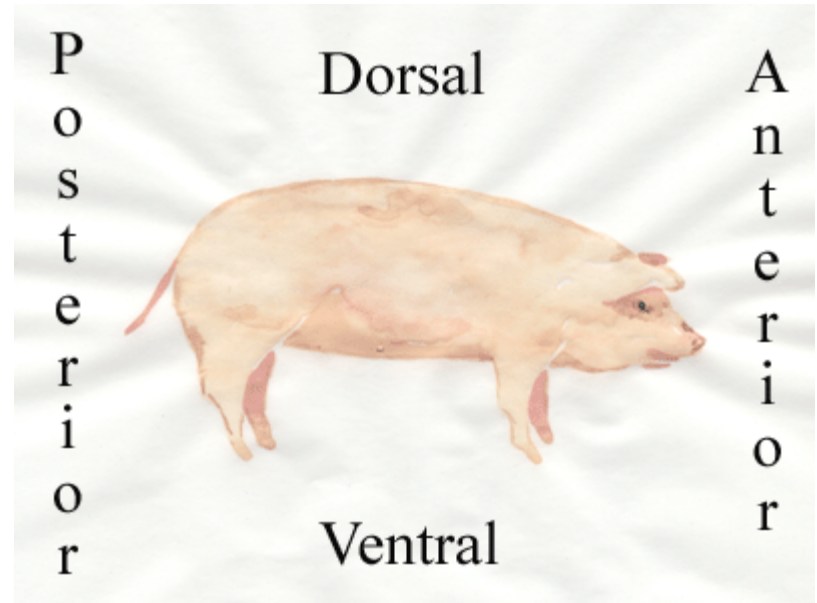


**D. Anterior:** *front end of a bilaterally symmetrical organism*

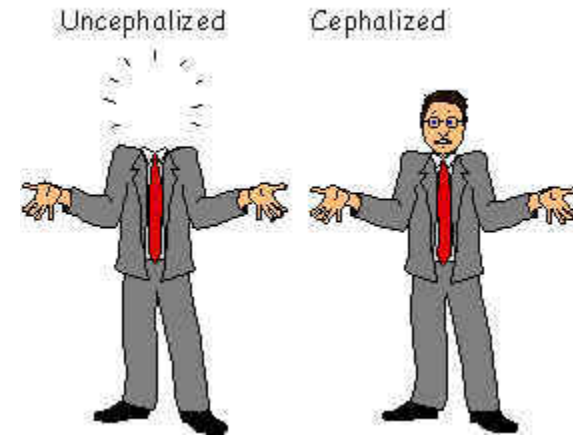
**E. Posterior:** *back end of a bilaterally symmetrical organism*

**F. Dorsal:** *upper side of an organism that has bilateral symmetry*

**G. Ventral:** *lower side of an organism with bilateral symmetry*



**H. Cephalization:**  
*gathering of sense  
organs and nerve cells  
into the head region*



**I. Ganglia:** *small cluster  
of nerve cells*