

## Organization of Living Organisms

**cell:** basic unit of life

all living things are made up of cells

unicellular organism: life at this level

For **multicellular organisms**, life is further organized

**tissue:** groups of *similar* cells working together to do a job

muscle tissue, nervous tissue

**organ:** groups of *different* tissues working together to do a job

stomach made of lining tissue, muscle tissue, nervous tissue, and outside connective tissue

**organ system:** groups of organs working together to do a job

digestive system: mouth, esophagus, stomach, small intestine, large intestine, anus

**multicellular organism:** groups of organ systems working together to make a complete living thing

## **Animal Organ Systems**

### **1-integumentary system**

outer body covering, protects animals from H<sub>2</sub>O loss, excess sunlight, bacterial invasion

integument: outer body covering

skin, nails, hair, scaly skin, fur, feathers

what does planaria have?

### **2-skeletal system**

gives body a shape, protects internal organ

**exoskeleton:** outside body

movement is limited, must molt to grow

**endoskeleton:** inside body

muscles on top of skeleton, can protect bones

Which is more advanced? efficient?

does planaria have this?

### **3-muscular system**

allows movement, works w/skeleton

longitudinal muscles: allow expansion & contraction

circular muscles: enlarge or decrease the diameter

diagonal muscles: allow twisting

what kind of movements can planaria make?

#### **4-nervous system**

allows organism to respond to environment  
controls & coordinates all other body systems  
brain, spinal cord, nerves, sense organs,  
antennae, whiskers  
what does planaria have?

#### **5-endocrine system**

works with nervous system to control and coordinate  
other body systems by making and secreting  
hormones

**hormones** are chemical messengers that are made in one  
place, taken by blood to target organ where they  
have effect

**pituitary gland:** master endocrine gland in brain, controls  
all other endocrine glands

thyroid, thymus, ovaries, testes

all vertebrates have system, many lower animals, insects  
planaria?

#### **6-respiratory system**

brings in O<sub>2</sub>, gets rid of CO<sub>2</sub>  
lungs, gills, skin, nose, mouth  
does planaria have this?

## **7-circulatory or cardiovascular system**

takes O<sub>2</sub> & nutrients to every cell in body, removes CO<sub>2</sub> & wastes

heart, blood vessels

**open circulatory system:** blood is not contained in blood vessels

heart (pump)----->blood vessels----->open body->  
oozes back to heart

**closed circulatory sys:** blood is contained w/in vessels

which is most advanced? more efficient?

what does planaria have? why do they not need this nor respiratory system?

## **8-immune system**

fights disease, keeps you healthy

WBC, lymph nodes, lymph fluid

planaria?

## 9-digestive system

brings in food, breaks down into form body can use, gets rid of solid wastes

**incomplete digestive system:** only one body opening  
2-way tract, mouth but no anus

**complete digestive system:** one way tract  
mouth--->organs---->anus

which is more efficient? advanced?

what does planaria have?

## 10-excretory system

gets rid of metabolic, nitrogenous wastes, regulates water balance in body

liquid wastes

kidneys, sweat glands, urinary bladder

does planaria have this system?

## 11-reproductive system

produces new individuals

**asexual:** cloning, one parent, cell division

**sexual:** 2 parents, make special cells,  
recombination of genes, gives variety in population

**hermaphroditic:** 2 sexes in one body  
ovaries, testes, penis, vagina, uterus

for organisms that can do both, when is it best  
to do one over the other?  
planaria?

**external fertilization:** sperm fertilizes eggs outside the  
body

where does this need to occur?

**internal fertilization:** sperm are released inside the  
body

**external development:** the fertilized egg, embryo,  
fetus develops outside the body

**internal development:** the fertilized egg, embryo, fetus  
develops inside the body

which of these are more efficient? advanced?

Which organ system can you live without?

### **Final terms to know**

**cephalization:** a concentration of nervous tissue at the anterior end of an organism resulting in a definite head  
this nervous tissue functions as a brain and usually other senses are found there

the most complex organisms show this

**regeneration:** the ability to regrow body parts  
this is different than healing, characteristic of lower animals

**segmentation:** a repetition of body parts  
a characteristic of more complex organisms  
do we have this? where?

**ectotherm:** organism that cannot regulate its internal body temperature

**endotherm:** organism that regulates a steady internal body temperature regardless of the external temperature