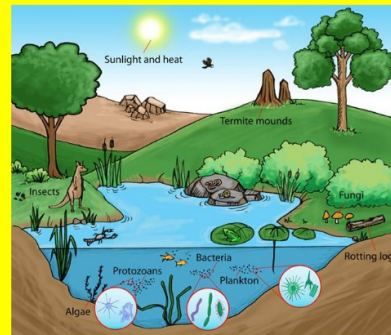
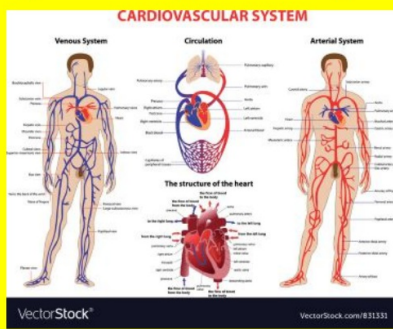


Chapter 1.2 Unifying Themes of Biology

I. All Levels of Life Have Systems of Related Parts

A. System: an organized group of related parts that interact to form a whole

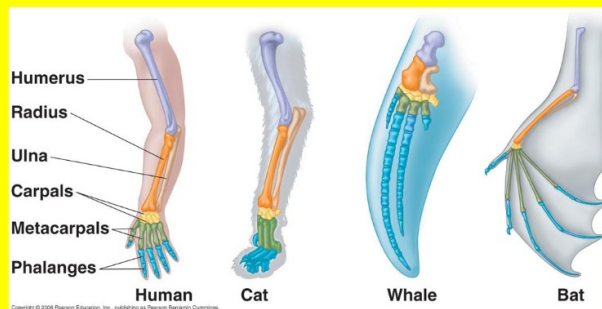
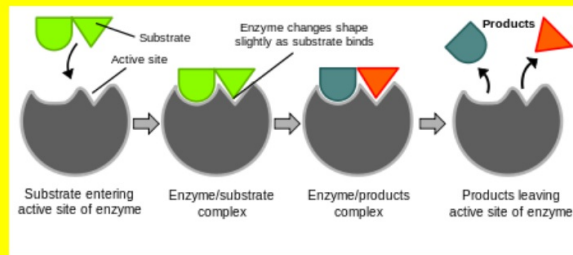
1. systems can be large or small
2. systems function best when all parts are working properly
3. an Ecosystem is a physical environment with different species that interact with one another and with non-living things
ex. temperate forest, fallen tree
4. Biologists study whole systems or the parts of the system



B. Structure and Function

1. Structure: how something is built (anatomy)
2. Function: the job that can be performed
ex. teeth, enzymes, limbs

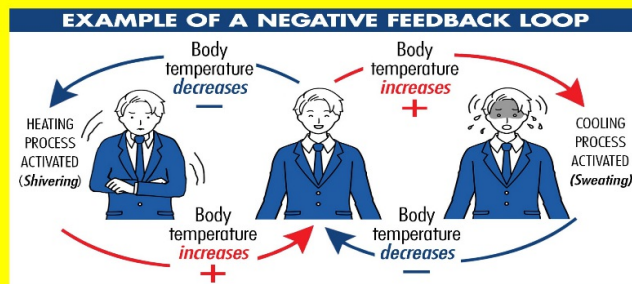
CARNIVORE	OMNIVORE	HERBIVORE	FRUGIVOROUS	HUMAN
Biological food: meat	PF: meat and vegetables	Physiological food: herbs	PF: fruits, vegetables & nuts	PF: fruits, vegetables & nuts
Walk on 4 paws with claws	4 paws with claws / hooves	3 paws with hooves	Prehensile hands and feet	Prehensile hands
Walk on 4 paws	Walk on 4 paws	Walk on 4 paws	Walks on 4 paws upright	Walks upright
Mouth opening: Large	Mouth opening: Large	Mouth opening: Small	Mouth opening: Small/M	Mouth opening: Small
Great sharp fangs	Great sharp fangs	Rudimentary, blunt canines	Canines for defense	Rudimentary, blunt canines
Short and pointed incisors	Blade shaped/crushing molars	Flattened & strong molars	Big and flattened incisors	Big and flattened incisors
e shaped molars	Lower jaw embedded inside	Upper jaw sits on the bottom; great lateral and forward mobility	Upper jaw sits on the bottom; great lateral and forward mobility	Upper jaw sits on the bottom; great lateral and forward mobility
er jaw embedded	Lower jaw embedded inside	Upper jaw sits on the bottom; great lateral and forward mobility	Upper jaw sits on the bottom; great lateral and forward mobility	Upper jaw sits on the bottom; great lateral and forward mobility
er; swallow w/o chewing	Shear & swallow / crushing	No shear; chew much	No shear; chew their food	No shear; chew their food
il salivary glands	Small salivary glands	Big salivary glands	Big salivary glands	Big salivary glands
saliva without ptyalin	Acid saliva without ptyalin	Alkaline saliva with ptyalin	Alkaline saliva with ptyalin	Alkaline saliva with ptyalin
urine	Acid urine	Alkaline urine	Alkaline urine	Alkaline urine
il secretion of uricase	Renal secretion of uricase	Not secrete uricase	Not secrete uricase	Not secrete uricase
g Hydrochloric acid	Strong Hydrochloric acid	Weak Hydrochloric acid	Weak Hydrochloric acid	Weak Hydrochloric acid
s not require fiber to stimulate peristalsis	Does not require fiber to stimulate peristalsis	Require fiber to stimulate peristalsis	Require fiber to stimulate peristalsis	Require fiber to stimulate peristalsis
Metabolize large amount of cholesterol and vitamin A	Metabolize large amount of cholesterol and vitamin A	Metabolize small amount of cholesterol and vitamin A	Metabolize small amount of cholesterol and vitamin A	Metabolize small amount of cholesterol and vitamin A
Sweat glands in whole body to cool the blood	Sweat glands in whole body	Sweat glands in whole body	Sweat glands in whole body	Sweat glands in whole body
Intestine 3 times body length	Intestine 3 times body length	Intestine 20 times body length	Intestine 9 times body length	Intestine 9 times body length
Colon short smooth muscle	Colon short smooth muscle	Colon long complex acid	Colon long sacculated acid	Colon long sacculated acid
Not metabolize cellulose	Not metabolize cellulose	Metabolize cellulose	Not metabolize cellulose	Not metabolize cellulose
Complete digestion 2 to 4 hrs	Complete digestion 6 to 10 hrs	Complete digestion 24 to 48 hrs	Complete digestion 12 to 18 hrs	Complete digestion 12 to 18 hrs



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C. Organisms must maintain Homeostasis

1. Homeostasis: maintaining a constant internal environment in an organism
 - a. lack of homeostasis leads to disease and death
 - b. body temperature
 - c. blood sugar
2. Negative Feedback systems help control homeostasis
 - a. stimulus: a change or condition that causes a response
 - b. set point: the normal range or setting
 - c. negative feedback systems work to bring conditions back to the set point.



D. Evolution explains the Unity and Diversity of Life

1. Evolution: the change of living things over time
 - a. populations of organisms evolve
 - b. Natural Selection: one process that drives evolution
 1. favorable traits (adaptations) are selected for and build up in a population over time.
 - a. organisms are "born" with adaptations
 - b. Adaptations: genetic traits that give organisms an advantage in survival and reproduction

