Animal Body Systems-NOTES

Skeletal/Muscle System-5 Functions

1. Framework-supports the body
   1. Fixed joint (head)
   2. Pivot joint (neck)
   3. Ball & socket joint (shoulder & hip)
   4. Hinge joint (elbow, knee, fingers, & toes)
   5. Gliding joint (wrist & ankle)
   6. Saddle joint (thumb)
2. Movement-works with muscle systems
   1. Skeletal muscles (voluntary)
   2. Cardiac muscles (heart-involuntary)
   3. Smooth muscles (lines organs-involuntary)
3. Protection (of organs)
4. Storage of substances for nerve functioning & blood clotting.
5. Manufacturing of new blood cells

Nervous System

Controls and monitors all of our body functions

* Brain is the most important part of the NS
* NS is made up of two parts:

Central Nervous System & Peripheral Nervous System

* CNS includes the brain and spinal cord
* Neurons send impulses (messages) at speeds up to 120 m/s
* Neurons don’t touch, the gap is called the synapse-signals are

sent across the space by a chemical signal

* Reflex action bypasses the brain to gain speed
* Sense of sight is responsible for greatest amount of information
* Brain ignores 95-99% of all incoming information from the five

senses

* Cerebrum-largest part of the brain, controls voluntary actions,

intelligence, learning, judgment, attitudes, emotion, & personality

* Cerebellum-controls balance & muscle coordination
* Medulla-connects brain to spinal cord, controls involuntary

actions, ex. Heartbeat, breathing, & blood pressure

* Brain weighs only 2% of body weight but uses 20% of

energy. The body will go hungry to give the brain energy.

Circulatory System

Transports food and oxygen to the living cells and collects

waste products to be eliminated from the body.

* Circulatory System is made up of three parts:

Heart, blood, and blood vessels

* The heart is the size of an adult fist.
* It beats about 70 beats per minute while at rest more if you are young.
* The heart pumps about 70ml of blood each beat.
* There are about 5 liters of blood in an adult human.
* Blood has four parts: plasma, red blood cells, white cells, platelets .
* There are 25,000,000,000,000 red blood cells in the body

at any given time.

* RBC live about 3-4 months and then die.
* 2,000,000 RBC are made every second!
* If all of an adult human’s blood vessels were stretched out

they would reach ½ way to the moon!

* Arteries take blood away from the heart-carry oxygen
* Veins take blood to the heart and carry wastes & carbon dioxide.
* Capillaries are the smallest vessels-every living cell in your

body is located close to a capillary.

* Blood clots turn into scabs which is the body’s way of stopping blood loss.
* RBC carries oxygen, WBC fights disease, & platelets clot blood.

Respiratory System

Provides oxygen to cells to use for food and release energy. This

is called respiration.

* A mammal uses lungs, fish use gills, and insects use spiracles to

breathe.

* Air is made up of 21% oxygen, 78% nitrogen, & 1% other.
* Humans usually breathe through the nose.
* The nose produces mucus which is replaced every 20 min.
* Breathing through the nose does three things:
  + Warms the air
  + Adds moisture to the air
  + Mucus catches bacteria in the nose, then the mucus

moves to the stomach where hydrochloric acid

destroys the germs.

* The epiglottis is a flap which covers the trachea and keeps

out water/food. It opens when we breathe.

* The esophagus is the tube to the stomach while the

trachea is the tube to the lungs. The trachea is the front tube.

* The larynx is the part of the windpipe where the vocal cords are located.
* Arteries carry the oxygen to the cells and the blood is red.
* Veins carry carbon dioxide back to the lungs and the blood is blue.
* An adult human can go days without food or water but only

minutes without oxygen.

* A baby breathes 40 times/min, a child 24 times/min, an adult

14 times/min but during exercise can be over 100 times/min!

* We breathe in 7-10 liters of air each minute.
* The diaphragm and muscles of the rib cage are the muscles

which let’s air pressure move air in & out of the lungs.

* Respiratory system works with the circulatory system to transport

oxygen to cells and return carbon dioxide to the lungs for elimination

from the body.

* To keep a healthy respiratory system a person should: exercise

(helps to keep the diaphragm strong), don’t breathe in polluted air,

and don’t smoke.

Digestive System

The process of breaking down food to be used by

the body is called digestion.

* Our bodies are in constant need of energy & nutrients
* Cells need food and nourishment to stay alive
* Food provides the nutrients for growth, repair, & replacement
* Food is made up of:
  + Proteins-body building-meat, fish, eggs, cheese, beans
  + Carbohydrates-main energy source-bread, rice, cereal
  + Fats-Saturated fat-(solid)animal fat & dairy products

Unsaturated fat-(liquid) oils

* + Vitamins-chemicals used for growth, repair, & other

body functions-fresh fruit & veggies—

cooking destroys vitamins

* + Minerals-substances which help with body functions

Ex. Calcium builds strong bones/teeth

* + Fiber-helps to keep the digestive tract functioning properly
* Calorie is the amount of heat energy required to make 1g of water raise 10 C
* Digestion has two parts-mechanical & chemical
* Mechanical digestion is the chewing & crushing of food
* Chemical digestion is where enzymes break down food
* Small Intestine:
  + 3 cm wide, 7 m long!
  + Food is liquid, called chyme
  + Food takes 3-5 hours to digest in Small Intestine
  + Villi absorb the nutrients to be transported
* Large Intestine:
  + 6.5 cm wide, 1.5 m long!
  + Takes 18-24 hours for water to be absorbed
  + Solid waste is eliminated
* Circulatory System transports the nutrients from digestive system to cells
* Nutrient is a substance that your body needs in order to live and grow.
* The human body produces 1.5 liters of saliva per day!
* Enzyme is a protein that speeds up chemical reactions in your body.

\*\* Peristalsis is the movement of the bolus (food) through the

esophagus to the stomach by smooth muscle movement.