**Human Systems Overview**

Instructor will:

1. Give each student the handout on the 11 human systems

and the accompanying worksheet.

- Go over the digestive system with them by pointing out organs and

describing functions. Have students use the torso to identify the digestive organs.

- Students are to complete the study in the next lab session.

2. Review the introduction to the human body.

3. Explain levels of organization.

4. Briefly go over the 11 body systems and the major functions of each system.

Use the handout as a guide.

5. Assist the students as they work on structures, locations, systems, functions.

7. Assignment for next lab is on the circulatory system (Ex 15).

Students will:

1. Complete items 1 of the lab report (pg 155))

2. Study the torso model

Items needed for this lab:

handout

Torso models

Student assignment for next lab:

1. Read Exercises 15 in lab manual.

2. Complete as much of the lab report as possible (pg 187).

**HUMAN SYSTEMS**

Numbers listed indicate the number that identifies the structure on the torso model in lab.

**Integumentary System**

Components: skin (epidermis and dermis) and its derivatives (hair, nails, skin glands)

Functions: protection from solar radiation, regulation of temperature and water loss, acts as a

barrier against infectious agents, secretion, generally acting as a protective barrier limiting the movement of material into and out of the body.

Epidermis - outer protective layer of the skin

Dermis - inner layer containing structures associated with skin (glands, nerve endings, etc)

**Skeletal System**

Components: bones, cartilage, ligaments

Functions: protection and support, provides a frame for the attachment and action of skeletal

muscles

Axial Division - head (mandible (#82), vertebral column (#571) , ribs (#254) ,and

sternum (#619)

Appendicular Division - appendages (arms & legs) and supporting girdles for each.

clavicle (#227), scapula (#585), humerus (#602)

**Muscular System**

Components: includes all voluntary skeletal muscles and tendons

Function: movement controlled by nervous system, contributes to body heat

Diaphragm (#625) - contracts for inhalation

Deltoid (#536)- moves arm outward away from torso (muscle injections are frequently given in)

Pectoralis major (#262) - flexes arm at shoulder in throwing or pushing

**Digestive System**

Components: esophagus, stomach, small intestine, large intestine (colon)

rectum and anus. Associated structures: liver, gall bladder

Function: digestion and absorption

Esophagus (#245)- passageway for the food from the mouth to the stomach.

Stomach (#396-404) - digestion of proteins.

Small Intestines (#433, 434)- digestion of all foods, absorption of nutrients.

Large Intestines (#442) - absorption of water, formation of feces.

Liver (#410) - produces bile to aid in fat digestion(no digestive enzymes).

Gallbladder (#429)- stores and concentrates the bile

**Cardiovascular System**

Components: heart, blood vessels, and blood

Function: transport, regulation, defense

Heart (#267)- pumps blood to all parts of the body.

Aorta (#288) - carries blood from the left heart to all arteries of systemic circulation.

Spleen (#388) - blood reservoir

**Respiratory System**

Components: lungs, bronchi, trachea, larynx

Function: gas exchange

Lungs (#299-313) - receives air brought into the body by ventilation (breathing) to allow exchange of gases between the blood and the lung.

Larynx (#196)- contains the vocal cords for sound production

Trachea (230,231) - transports air between the atmosphere and bronchi

Bronchi (232,234) - transports air into each lung

**Endocrine System**

Components: endocrine glands and other hormone secreting organs.

Functions: secretion of hormones (chemical messengers) which regulate body functions

Adrenal gland (#341,342) - secretes hormones controlling mineral balance, mimics autonomic nervous system

Thyroid gland (#198)- secretes hormones controlling metabolism

Pancreas (#329-331) - secretes hormone insulin to help control blood sugar levels and secretes some chemicals used in digestion

**Urinary System**

Components: kidneys, ureters, urinary bladder, urethra

Functions: remove metabolic wastes and maintain water and electrolyte balance in the body

Kidney (#340,343) - produces urine

Ureters (#363) - transport urine from kidney to the urinary bladder

Urinary Bladder (#461) - temporary storage for urine

**Nervous System**

Components: brain, cranial nerves, spinal cord, spinal nerves

Functions: coordination of body functions environmental sensing, thought

Brain (#95,97) - control of body systems, higher function (thought, memory, etc.)

Spinal nerve (#583) - conducts messages between body and spinal cord(reflexes)

**Lymphatic / Immune System**

Components: lymphatic vessels, spleen, thymus, bone marrow, white blood cells, lymph nodes

Functions: return body fluids to blood, defense (immune responses)

Lymph node (#606) - filters the lymph, produces white blood cells

**Reproductive System**

Components:

male – testes, epididymis, vas deferens, urethra and semen producing glands

female – ovaries, Fallopian tubes, uterus, vagina, mammary glands

Function: reproduction of more individuals of the species

**Exercise 13 Worksheet**

**Human Body**

Instructions: Complete the following. Use your textbook for help.

Use the numbers given for each structure to help identify the organ on

the human torso model

|  |  |  |  |
| --- | --- | --- | --- |
| **ORGAN** | **SYSTEM** | **LOCATION** | **FUNCTION** |
| adrenal gland #341,342 |  |  |  |
| aorta #288 |  |  |  |
| brain #95, 97 |  |  |  |
| bronchi #232,234 |  |  |  |
| clavicle #227 |  |  |  |
| deltoid #536 |  |  |  |
| diaphragm #625 |  |  |  |
| epidermis |  |  |  |
| esophagus #245 |  |  |  |
| gall bladder #429 |  |  |  |
| heart #267 |  |  |  |
| humerus #602 |  |  |  |
| intervertrebral disc #594 |  |  |  |
| kidney #340,343 |  |  |  |
| large intestine #442 |  |  |  |
| larynx #196 |  |  |  |
| liver #410 |  |  |  |
| lungs #299-313 |  |  |  |
| lymph node #606 |  |  |  |
| mandible #82 |  |  |  |
| pancreas #329-331 |  |  |  |
| pectoralis major #262 |  |  |  |
| scapula #585 |  |  |  |
| ribs #254 |  |  |  |
| small intestine #433,434 |  |  |  |
| spinal nerve #583 |  |  |  |
| spleen #338 |  |  |  |
| sternum #615 |  |  |  |
| stomach #396-404 |  |  |  |
| thyroid gland #198 |  |  |  |
| trachea #230,231 |  |  |  |
| ureter #363 |  |  |  |
| urinary bladder #461 |  |  |  |
| vertebral column #571 |  |  |  |