

Review sheet for tissues - circulatory system.

WARNING: I have tried to be complete, but I may have missed something. You are responsible for *all* the material discussed in class. This is only a guide.

1) Tissues

What is a tissue?

What are the four main tissue types?

Subtypes?

What do the different tissue types do?

Where are they found?

How do they come together to make up organs?

Organ systems?

What do the tissue types look like?

2) Homeostasis

What is homeostasis?

Be able to give some examples of homeostasis?

How can temperature be regulated? Exchanged?

What are the mechanisms that let you do this?

Be familiar with the following terms:

Homeotherm, ectotherm, endotherm, poikilotherm

How does an animal adapt to changing temperatures?

What behavioral mechanisms are available?

What physiological mechanisms are there (particularly for humans)?

Can dogs sweat? If not, how do they cool themselves?

What is hibernation?

What is the advantage of hibernating?

Do bears hibernate?

What is the problem with bats and hibernation?

How do ectotherms hibernate?

3) Digestive system

How do animals get food?

Be able to give some examples.

What is a carnivore? Herbivore? Omnivore?

What are the reasons for feeding? How do plants “feed”?

What are the main molecules that provide energy, and how much energy do they have?

How is excess energy stored in the long term? Short term?

What happens if energy balance stays in deficit?

What are raw materials, and where do we get these?

What are essential nutrients? How are these different from raw materials?

How many different kinds of essential nutrients are there?

Make sure you look over the table of vitamins.

What are the four steps in processing food?

What is a gastrovascular cavity?

What are the parts of the digestive system, and what happens at each step?

What is the oral cavity for, and why is taste so important?

Other than taste, what else happens in the oral cavity?

How does the esophagus work?

Describe peristalsis.

What happens when the cardiac sphincter doesn't work correctly?

What does the stomach do?

What chemicals/enzymes are released here? How are they changed? What do they do?

What is the function of the pyloric sphincter?

What does the small intestine do?

What enzymes are released in the duodenum?

Make sure you know what each of these does.

Where is the duodenum?

Where does bile come from?

How are nutrients absorbed?

Where are they taken?

What is unique about fat?

How does the structure of the small intestine help in absorption of nutrients?

What does the liver do?

What is the function of the large intestine and what happens when it does not work correctly?

How do animals deal with the digestion of cellulose?

What adaptations are there to handle this? Be able to describe each of these adaptations.

How is digestion controlled?

What is the role of gastrin? Where is it released?

What effect does it have?

4) Respiratory system

What is a respiratory organ? Why do we need one?

What different kinds of respiratory systems are there in the animal kingdom?

What do all of them share?

Make sure you understand how each of the following works, and is used:

Skin / gills / trachea / lungs

How do gills work?

How are they made more efficient?

What is a counter current system?

How is the surface area of gills increased?

What are trachea (in insects)?

How are they used? How can body contractions help?

How do lungs work?

What is the function of the trachea (in humans/vertebrates)?

What do the cartilage rings do?

What are bronchi? Bronchioles? Alveoli?

How are the lungs kept clean?

What is positive pressure breathing? Negative pressure breathing? What muscles are involved in helping humans breathe?

Why do we not have the most efficient lungs (who does?)?

How do we control breathing?

What is the role of CO₂? O₂?

How does hemoglobin transport oxygen?

How is CO₂ transported around to the lungs?

What reactions are involved, and what is the role of hemoglobin and H⁺ in this?

What buffers the blood?

4b) Smoking

What are the dangers of smoking?

What does smoking do to the lungs?

What diseases and other problems can be caused by smoking?

What cancers become more common with smoking?

What other negative effects does smoking have?

How many people (in the U.S.) are killed each year due to smoking?

How bad is the effect of second hand smoke?

What are the benefits of quitting smoking?

How many years earlier does the average smoker die than the average non-smoker?

5) Circulatory system

What are the functions of a circulatory system? Why do we have one?

What is the difference between an open and closed circulatory system?

Know an example of an animal with each type of system.

What does the atrium do? The ventricle? Arteries? Arterioles? Capillaries? Venules? Veins?

What is the flow of blood through the adult mammal (e.g. human)?

Why is high pressure considered a good thing (compared to fish)?

How is the flow of blood different in the fetus?

What special adaptations does the fetus have? Where does the fetus get Oxygen?

Know all the parts of the human heart (e.g., right atrium, left atrium, right ventricle, left ventricle, the various valves, main blood vessels, etc.).

What do each of these do?

What is the cardiac cycle? What is heart rate? Stroke volume? Cardiac output? Systole? Diastole (be careful with the last two - they're not the same as systolic pressure and diastolic pressure).

What causes the heart sounds?

What coordinates cardiac muscle cells? What does the SA node do? The AV node?

What influences the SA node?

What is an EKG (or ECG)? What can it show?

What do the different peaks in an EKG represent?

What do the intercalated disks do?

Why can a defibrillator be useful?

What influences heart rate?

What effect do food, hormones, body temperature, condition, etc. have on heart rate?

What is blood pressure? What systolic pressure? Diastolic pressure?

How do we measure blood pressure? What units are used?

Why do we have a minimum blood pressure?

How does a sphygmomanometer (blood pressure cuff) work?

What happens to blood pressure as we move away from the heart?

In the capillaries? In the veins?

What structures do veins have to help move blood back to the heart?

What else is needed by veins to help move blood back to the heart?

Be familiar with capillary function.

How can capillary beds be turned on and off? What is the advantage of this?

What is the danger from anaphylactic shock?

What is the lymphatic system?

What does it do? Where does it put lymph?

What can happen if lymph vessels get blocked?

How is lymph moved?

What % of blood is living? Non-living?

What are the components of blood (both living and non-living)?

How many molecules of hemoglobin in a red blood cell?

What are stem cells (in regard to blood)? What can happen if they do not work correctly?

What triggers blood clotting?

What are the steps in blood clotting (know the names of the enzymes involved)?

Why would you want two steps here?

5b) Heart disease:

Know the risk factors for heart disease.

Are they the same as for hypertension?

Which factors can you control?

Which can you not control? Why?

What effect do these factors have?

What are the different kinds of heart disease discussed in class?

How serious are they?

What is a heart attack (what are coronary arteries)?

Incidentally, what is a stroke?

Why are heart attacks and strokes so serious?

How can blockages be treated?