Cardiovascular System Lecture

- What are the functions of the circulatory system?
- What are the components of the circulatory system?
- What are the components of the blood vessel and their functions, what would the cross section of a vein, artery and capillary look like?
- What is the path of the blood through the body, starting when it leaves the heart through the aorta, into arteries, then arterioles, then capillaries, then venules, to the veins, to the vena cava, back to the heart?
- How do arterioles affect blood pressure?
- What are the pressures that cause fluid to enter and leave the capillaries and what pressure causes gasses to enter and leave the capillaries. Be able to discuss in detail the transport of fluid, gasses, nutrients and waste across the capillaries?
- What is the function of capillaries?
- What are the chambers of the heart, which are the lower chambers and which are the more muscular chambers?
- What cavity is the heart located in?
- What is the path of the blood through the heart?
- Be able to describe the cardiac cycle.
- What are the valves in the heart, where are they located, when are they opened, when are they closed?
- How is the heartbeat is regulated, both intrinsically and extrinsically?
- What records the electrical changes that occur in the myocardium during a cardiac cycle?
- What are the three waves on the ECG and be able to describe the events that happen during each of the waves on the ECG?
- What measures blood pressure?
- What causes blood to flow in the arteries and in the veins?
- What are the pulmonary, systemic renal, hepatic portal, and coronary circuits, what tissues do they go to?
- What is the function of the aorta, vena cava, pulmonary arteries, pulmonary veins, coronary arteries and coronary veins?
- What is the role of LDL and HDL in coronary artery disease?
- What are the causes and effects of the cardiovascular diseases discussed in lecture
- How can you prevent high blood pressure.
- What are two treatments of coronary artery blockage
- How is coronary artery blockage detected?
- What are the function of the lymphatic system?
- What are the components of the lymphatic system and their functions
- What are lacteals are what is their function?
- What causes fluids to travel through lymphatic vessels?

Definitions:
- Lumen, vasoconstriction, vasodilation, osmotic pressure, blood pressure, low density lipoproteins (LDL), high density lipoproteins (HDL), septum, capillaries, arteries, veins, arteriole,
venule, vena cava, aorta, sinoatrial node (SA), atrioventricular node (AV), pericardium, myocardium, endocardium, Cardiac cycle, systole, diastole, atrioventricular bundle, purkinje fibers, extrinsic control, intrinsic control, electrocardiogram, pulse, systolic pressure, diastolic pressure, sphygmomanometer, coronary arteries, renal circuit, hepatic portal circuit, coronary circuit, hypertension, interstitial fluid, lacteal

Blood Lecture

- What kind of tissue is blood
- What is the ratio of blood plasma versus formed elements
- What is the composition of blood, plasma, and formed elements
- What are the functions of blood
- What are examples given in class of the proteins found in blood, and what are the functions of these blood proteins
- Know the function of lipoproteins, difference between LDL and HDL
- Where are blood cells formed
- What type of cell gives rise to platelets by breaking into fragments
- How do white blood cells leave the blood vessels and enter tissues.
- What organelle is missing in mature RBCs, how is their production regulated, what hormone regulates their production, what organ produces this hormone
- What is the effect of carbon monoxide poisoning?
- What are the characteristics, functions, and life span of Red Blood Cells, White Blood Cells, Platelets
- How and where are RBCs destroyed
- What are the types of white blood cells and their functions
- In detail, be able to discuss how is a blood clot formed – know the abbreviated steps of clot formation
- What vitamin is necessary for clotting to occur
- What common drug inhibits clotting
- What is an example of a genetic disorder that affects blood clotting.
- What are the major blood types, what are their differences, what antigens do they have, what antibodies do they have. What blood types can donate to each other. What is the universal donor, and the universal recipient
- What is the Rh factor, what problems does it cause in pregnancy and blood donation, how does the body mount a defense to Rh factor. What drug is given to Rh negative pregnant women, why is this drug given, what is the effect of this drug.
- What is the result of a reaction to a foreign blood type antigen
- Know all the blood disorders discussed in class

Definitions

- Plasma, formed elements, hemoglobin, oxyhemoglobin, Stem cells, thrombocytes, megakaryocytes, leukocytes, phagocytes, histamine, dilate, permeable, erythrocytes, biconcave,
erythropoietin, bilirubin, glycoproteins, homeostasis, agglutination, antibodies, antigen, lipoproteins, High density lipoproteins, Low density lipoproteins,

Respiratory System

- What cell types lines the trachea, what are their functions, be able to discuss how smoking effects this tissue?
- Where does the exchange of gases occur in the lungs?
- What cavity contains the lungs?
- What controls the rate of breathing?
- Be able to discuss the mechanics of breathing?
- How is oxygen carried in the blood?
- How is carbon dioxide carried in the blood, know all the ways, and the which is the predominate mode? (You don’t need to know the chemical equation of bicarbonate formation)
- What is the diaphragm and what is its function?

Definitions:

- Goblet cells, sinuses, epiglottis, surfactant, diaphragm, intercostal muscles,
- Inhalation/inspiration, exhalation/expiration tidal volume, inspiratory reserve volume, expiratory reserve volume, residual volume, vital capacity, hemoglobin, oxyhemoglobin, chemoreceptors

Digestive System

- What is the purpose of the digestive system?
- What are the layers of the GI tract and be able to describe the layers and what are the functions of the layers?
- What are the parts of the mouth and their functions?
- What are the major parts of the digestive system and their functions. Be able to describe the parts of the digestive system (mouth, pharynx, esophagus, stomach, small intestine, large intestine, pancreas, liver, gall bladder)
- What are the three regions of the small intestine, what is their order (food passes through it in what order)
- How is food absorbed in the small intestine? How are fats absorbed versus other nutrients. What is the structure of villi, what is the role of blood capillaries and lacteals. What is the role of bile and lipase in fat digestion.
- What type of muscle is found in the wall of the GI tract, how many layers are in the stomach and the in the rest of the GI tract. What is the function of these muscles
- What are the components of the large intestine and their functions?
- What is the function of bile
- What do pancreatic secretions contain, and what are their functions.
- What are the digestive enzymes, and chemical secretions (bile and acid) what are their specific functions, and where they are secreted from and where is their site of action.
- What is the function of the acid secreted in the stomach
- What is the function of the globlet cells.
- Be able to describe all the disorders of the digestive system, including the causes, effects and treatments

Definitions:

- Gastrointestinal (GI) tract, digestion, absorption, mechanical, chemical digestion, lumen, peristalsis, chyme, bolus, sphincters, villi, microvilli, brush border, lacteals, bilirubin, goblet cells, emulsifies/emulsification, micelles, chylomicrons, feces, polyps, diverticula

Renal (Urinary) System

- What are the functions of the urinary system?
- What compounds are contained in urine, what compounds are not contained normally in urine?
- What are the organs of the urinary system and their functions, including all the functions of the kidney?
- What are the blood vessels that lead to and from the heart and the kidney and the vessels within the kidney?
- What are the three regions of the kidney?
- What is the function of a nephron, what are the parts of the nephron and the functions of these parts?
- What is glomerular filtration, reabsorption and secretion in the nephron, what is contained in the filtrate leaving the renal corpuscle, what compounds are reabsorbed and what are secreted and where in the nephron are the compounds reabsorbed or secreted?
- How is urinary output regulated, what are examples of diuretics? What hormones decrease or increase urinary output? What effect on blood pressure do these hormones have? Where are these hormones produced, stored and released from. What is their effect on the nephron?
- What is the cause of diabetes insipidus
- What is the function of renin, where it is produced, what is the target and what is the effect of renin on urine production and blood pressure?
- What is the function of erythropoietin, what is the target, where is it produced?
- What is the role of the kidney in Vit D production and calcium absorption? What is the active form of Vit D?
- How does the kidney regulate blood pH and maintain osmotic balance? How does the regulation of salt/water balance effect blood pressure?
- Be able to discuss the disorders of the urinary system, including the causes, effects and treatments?

Definitions:

- Excretion, renal pyramids, renal corpuscle, tubular reabsorption, tubular secretion, filtration, filtrate, diuretic, calcitrol