Unit Four Homework Assignment - with answers
C23 The Digestive System

How Your Digestive System Works (5 min)
1. How many organs make up the digestive system?
2. What are the four main components of the digestive system?
3. When does the digestive process begin?
4. How much saliva is produced each day?
5. What moves the bolus towards the stomach?
6. What causes the stomach to secrete acids and enzymes?
7. What is the bolus changed to in the stomach?
8. What causes the release of digestive juices from the pancreas, liver, and gall bladder?
9. How is surface area increased in the small intestine?
10. What enters the large intestine?
11. What is reabsorbed in the colon?
12. How long is the digestive process?

Absorption of Nutrients (5 min)
1. What mechanism is used to move amino acids into our bodies?
2. What is the source of energy used to transport amino acids?
3. What is an enterocyte?
4. Where will the amino acid go after crossing the enterocyte?
5. What transport system is used to move saccharides into our bodies?
6.. What is the difference between primary and secondary active transport?
7. Where will the saccharides go after crossing the enterocyte?
8. What mechanism is used to transport nucleotides into our bodies?
9. Where will the saccharides go after they cross the enterocyte?
10. How do fats enter the enterocyte? Active or passive?
11. What occurs after fat enters the enterocyte?
12. How do chylomicrons enter our bodies?
13. Where does most of the digestion occur in the GI tract?
14. Where does most of the absorption occur?

How Micelles Are Formed (45 sec)
1. What is a micelle?
2. What forms when soap is added to water?
3. What are the two ends of a soap molecule called?
4. What is the structural arrangement of the soap molecule when placed in water?

Gastric Secretion (2 min)
1. What are the three phases of gastric regulation?
2. What are the three stimuli recognized by the first form of regulation? Sent where? By what nerve? Causes what to happen?
3. What hormone is released by the stomach?

4, What causes the gastric phase of regulation?

5. What do we call the food residue that enters the duodenum?
6. What occurs during the intestinal phase of gastric secretion?
7. What three mechanisms regulate the intestinal phase of gastric secretions?

Formation of Gastric Hydrochloric Acid (1:20 min)
1. What gastric cell produces HCL?
2. After CO2 moves into the gastric cell, what enzyme combines water and CO2? Forms what?
3. What happens to the acid?
4. Where is the bicarbonate transported into?
5. Where is the proton transported into? With what other ion?

The Making of the Fittest: Got Lactase? The Co-Evolution of Genes and Culture (15 min)
1. When did our species evolve?
2. What was our lifestyle in the beginning?
3. What happened 10,000 years ago?
4. What can all babies do that many adults can not do?
5. What is the main sugar in milk? What can this molecule not do?
6. What must happen to milk sugar before it may enter blood? What sugars enter blood?
7 What happens to most animals about the time they stop drinking their mother's milk?
8. What happens to most adult animals if they drink milk?
9. What is the one animal that may be able to drink milk as an adult?
10. About what percent of adult humans are able to drink milk without bad side effects? These people are called what?
11. How do you test to see if you are lactase persistent?
12. What areas of the world are people lactase persistent and not lactase persistent?
13. What did scientist find out when they looked at the gene responsible for the production of lactase?
14. What was found on the regulatory gene of Finish people that controls lactase is production or not to produced lactase located on chromosome two?
15. Was it the same or different mutation allowing East Africans to be lactase persistent?
16. What did the Finish and East Africans have in common?
17. Using analysis of ancient cooking pots, when was the earliest signs of milk being used as a food?
18. What is the selective advantage of having lactase persistents?
19. What is the only food designed to be consumed?
20. Was it safer to drink water or milk? Why?

21. If your crops failed and you did not have the lactase persistent gene, then what would be your fate?
22. What best describes the human story?

Glycolysis (1:30 min)
1. What occurs in glycolysis?
2. What is formed by the energy released in the oxidation reaction?
3. What is the first step in glycolysis?
4. Second step?
5. What is formed during the third step?
6. What happens to pyruvate during anaerobic conditions?
7. What happens to pyruvate during aerobic conditions?

Kreb's Cycle (2 min)
1. What happens to the pyruvate formed during glycolysis?
2. What molecule is reduced and what molecule is formed?
3. Where does this occur?
4. What occurs to the acetyly-CoA?
5. How many Kreb's cycle must occur to process one glucose molecule?

Electron Transport Chain (1:45 min)
1. What molecules are reduced during glycolysis and the Kreb's Cycle?
2. What occurs to the hydrogen when released from the NAD and FAD molecules?
3. What happens to the electrons at the end of the chain?
4. What do the protons that were concentrated across the mitochondria's inner membrane pass through and what is formed as these protons pass through this molecule?
5. What is the process called that make these ATP?