

LS-HHMI Outreach Summer Curriculum Project Classroom Resource Information Form

Title	Nutrition in the Animal Kingdom		
Resource Type	Lesson Plan <input type="checkbox"/> Activity <input checked="" type="checkbox"/> Lab Activity <input type="checkbox"/> Homework Assignment <input checked="" type="checkbox"/> Correlations <input type="checkbox"/> Other <input type="checkbox"/> <Specify>		
Description	Advanced Placement Biology is a fast-paced course which requires students to study prior to class so that they obtain maximum benefit from discussions during classtime. The powerpoint included here is a focused set of questions that students should be able to answer regarding animal nutrition.		
Author(s)	Todd A. Ryan		
Author Institution(s)	Westborough High School		
Objective	At the conclusion of this powerpoint, students should understand; 1. the components of a healthy diet for organisms and some of the problems if the appropriate amounts are not acquired, 2. the major organs of the mammalian digestive system and their contributions to the digestion of macromolecules, and 3. some of the ways in which the digestive system is regulated.		
Key Concepts	Organisms have a variety of dietary needs that can only be met by eating the material. The digestive system is composed of many parts that each have unique roles that contribute to the digestion and absorption of nutrients. The digestive system can be regulated by hormones within the system. The exact structure of the digestive system of organisms depends upon the type of food the organism eats.		
Student Prep	The student must have read Chapter 41, Animal Nutrition, of Biology 8e by Campbell and Reese prior to class in order to discuss the concepts in this chapter.		
Materials	The students should bring their notes from their reading of the textbook.		
Grade Level(s)	11 th /12 th : Advanced Placement Biology		
Teacher Prep Time	2 hours to read the chapter	Class Time	2 days is all the time we can allot to this topic
National Standards	The chemical bonds of food molecules contain energy. Energy is released when the bonds of food molecules are broken and new compounds with lower energy bonds are formed . Cells usually store this energy temporarily in phosphate bonds of a small high - energy compound called ATP. The complexity and organization of organisms accommodates the need for obtaining, transforming, transporting, releasing, and eliminating the matter and energy used to sustain the organism.		
State Standards	1.1 Recognize that biological organisms are composed primarily of very few elements. The six most common are C, H, N, O, P, and S. 1.2 Describe the basic molecular structures and primary functions of the four major categories of organic molecules (carbohydrates, lipids, proteins, nucleic acids). 1.3 Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, that have an effect on enzymes. 4.1 Explain generally how the digestive system (mouth, pharynx, esophagus, stomach, small and large intestines, rectum) converts macromolecules from food into smaller molecules that can be used by cells for energy and for repair and growth. 4.8 Recognize that the body's systems interact to maintain homeostasis. Describe the basic function of a physiological feedback loop.		
Sources	Biology AP Edition, 8e. 2008. Campbell, Neil A. and Jane B. Reece. Benjamin Cummings, San Francisco, CA.		

References	Most of the images in the PowerPoint came from the online resource, Wikipedia.
Assessment	<p>The reason the material is covered in a questioning format is so that students can determine if they understand the concepts within the chapter and I can assess what they understand. To encourage participation, I award points for class participation. In general, here is how points are allotted;</p> <p>2 pts: Student has demonstrated a thorough knowledge of the material asked in the question. 1 pt: student has demonstrated a rudimentary knowledge of the material in the question.</p> <p>A randomized listing of the students is created prior to class and students are called upon in order. After a student has had an opportunity to respond, other students can add or correct material stated by the original student. In order to earn points, the student must prove that they heard the original student's answer and then either embellish or correct points made. The next question is then presented. In my classes, students must earn 2 points of classroom participation for every day of classroom discussion. A typical unit will have 5-8 days of classroom discussion for a total of 10 – 16 points.</p>