LS-HHMI Outreach Summer Curriculum Project Classroom Resource Information Form	
Title	1. "Enzymes by Pires V2.ppt" a Power Point presentation **2.** "Enzyme Activity On Line" 3. "Lab Links Involving Enzymes" 4. "Quiz on Enzymes" 5. "Kinesthetic Review"
Resource Type	Power Point Presentation Activity ☒ Lab Activity ☒ Homework Assignment ☐ Correlations ☐ Other ☒ On-line tutorial
Description	Enzymes make it possible for living things to exist. They speed up the rate of many chemical reactions involved in metabolism and are seen time and again throughout biology curricula. Students who have a good understanding of enzymes will better handle topics such as DNA replication, Gene Expression, and digestion.
Author(s)	Malinda Pires
Author Institution(s)	Lowell High School

Objective	All resources were designed and/or chosen to give the students a strong background in the physiology and morphology of enzymes.		
Key Concepts	Enzymes: Catalyst, activation energy, classification, lock & key model, specificity, induced fit model, denaturing, inhibitors, activators, connection to human body (digestive system)		
Student Prep	Students need to have a basic understanding of the four major categories of macromolecules including carbohydrates, lipids, proteins, and nucleic acids.		
Materials	1. Power Point set up and copies of the Power Point notes. 2. Computer lab set up for number of students in your class and copies of handout or student access to computers before or after school to do tutorial for extra help or as a homework assignment. 3. See each lab link for necessary lab materials. 4. Copies of quiz. 5. Cutout shapes on cardstock.		
Grade Level(s)	Designed for all levels of high school biology. All resources can be easily modified to fit the needs of any biology student including special education and ELL.		
Teacher Prep Time	1. 10 minutes to review power point and check to see that animation links are working properly 2. Time to copy worksheets 3. Depends on which lab you choose. See lab links. 4. Time to copy quiz 5. 15 minutes to print, cutout and review	**Class Time**	1. 45-50 minute class, or split into mini-lectures 2. 45-50 minute class or give as homework or use to tutor students who were absent or use as review or give to students who need extra help/resources. 3. Approximately 50 minutes each. 4. 10 minutes 5. 2-5 minutes 4 different times during power point lecture
National Standards	**Standard C The Cell #2** Most cell functions involve chemical reactions. Food molecules taken into cells react to provide the chemical constituents needed to synthesize other molecules. Both breakdown and synthesis are made possible by a large set of protein catalysts, called enzymes. The breakdown of some of the food molecules enables the cell to store energy in specific chemicals that are used to carry out the many functions of the cell.		
State Standards	1. The Chemistry of Life *Broad Concept:* Chemical elements form organic molecules that interact to perform the basic functions of life. 1.3 Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, which have an effect on enzymes.		
Sources	1. Power Point and pictures http://en.wikipedia.org/wiki/Main_Page 2. Power Point Animations and Enzyme Activity on Line http://www.lpscience.fatcow.com/jwanamaker/ 3. See Document “Lab Links Involving Enzymes” for lab sources.		

Assessment	Possibilities: ❑ Labs make great assessments. ❑ Kinesthetic review as an ongoing assessment. ❑ Create a short quiz on enzymes or use the one provided. ❑ Test generators for most biology books also have great questions on enzymes. ❑ Add questions to the next test.