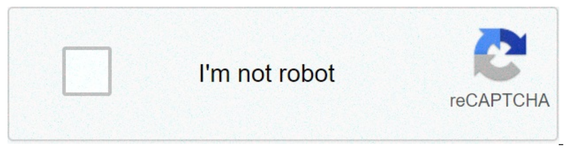

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Who took jerell's ipod an organic compound mystery answer key

Students learn about enzyme function, enzyme specificity and the molecular basis of lactose intolerance through experiments with the enzyme lactase and analysis and discussion questions. Students engage in the scientific practices of designing and carrying out experiments and interpreting data. Students also analyze how lactase functions in the digestive system and how the digestive and circulatory systems cooperate to provide cells all over the body with molecules that provide the energy for cellular processes. Before beginning this activity, students should have a basic understanding of atoms, molecules, and chemical formulae. This activity can be used in an introductory unit on biological molecules and scientific method or later in the course during a discussion of enzyme function. This activity will probably require two 50-minute laboratory periods or your students may be able to complete the three experiments in one 50-minute laboratory period if you have your students complete the "Introduction to Sugars and Enzymes" as a pre-lab and pages 6-7 of the Student Handout as a post-lab. Lactose solution: 5 g lactose per 200 mL water (20 mL for each group of 3-4 students); lactose is readily available from a variety of suppliers on the web Sucrose solution 5 g sucrose per 200 mL water (10 mL per group) Milk (20 mL per group) Lactase solution: 1 g lactase per 50 mL water (3 mL per group) you can order lactase from Fisher ( ). Store the lactase in the refrigerator until you make the solution on the day of the activity. When you make the solution you will need to smoosh the lumps and stir a lot. A cheaper alternative is to purchase lactase pills from a web supplier or your pharmacy (1 g of lactase has roughly 12,000-18,000 lactose units, so if you have lactase pills with 9000 units, you can dissolve two pills in 50 mL of water).* Beakers 25 mL graduated cylinders to measure lactose solution, sucrose solution, and milk 1 mL transfer pipet for lactase solution 15-milliliter test tubes (2 per group if students will be able to rinse these between uses; otherwise 5 per group) and test tube rack or something else to keep the test tubes upright (1 per group) Visually readable glucose test strips (5 per group; 2 for Experiment 1; 1 for Experiment 2; 2 for Experiment 3); glucose test strips are available from /Betachek-Visual- Blood-Glucose-Strips/dp/B00HTVECL6 or odSjUITA or search on the web for urine glucose test strips; you will need to provide your students with instructions for using the particular type of glucose test strip you have ordered and you will want to have the color chart for reading the test strips available for your students Gloves (3 per group) Permanent markers and tape or labels for labeling test tubes (1 set per group). "Enzyme Investigation" is presented on the last two pages of these Teacher Preparation Notes. This inquiry activity can be used as an extension activity. Students can expand their understanding of enzymes in the bioengineering design challenge included in "Alcoholic Fermentation in Yeast", available at . In the first part of this activity, students learn about the fundamentals of alcoholic fermentation and test for alcoholic fermentation by assessing CO2 production by live yeast cells in sugar water vs. two controls. In the bioengineering design challenge, students work to find the optimum sucrose concentration and temperature to maximize rapid CO2 production, using no more sucrose than needed for maximum CO2 production. Structured questions guide the students through the basic engineering steps of applying the relevant scientific background, developing and systematically testing proposed design solutions, and then using initial results to develop and test improved design solutions. Additional activities to help students understand the functions of proteins are presented in "Understanding the Functions of Proteins and DNA", available at . This overview provides a sequence of learning activities to help students understand that proteins and DNA are not just abstract concepts in biology textbooks, but rather crucial components of our bodies that affect functions and characteristics that students are familiar with. Students learn about how proteins contribute to the digestion of food and to characteristics such as albinism, sickle cell anemia, and hemophilia. Then, students learn about the relationship between the genetic information in DNA and the different versions of these proteins. The discussion, web-based, and hands-on learning activities presented are appropriate for an introductory unit on biological molecules or as an introduction to a unit on molecular biology. A hands-on activity for teaching about macromolecules is "Who took Jerell’s iPod?--An Organic Compound Mystery", available at /#organic. In this activity, students learn how to test for triglycerides, glucose, starch, and protein and then use these tests to solve a mystery. The activity reinforces students understanding of the biological functions and food sources of these different types of organic compounds. Another hands-on activity, "A Scientific Investigation – What types of food contains starch and protein?" is available at In this activity, students learn about scientific investigation by carrying out key components of the scientific method, including developing experimental methods, generating hypotheses, designing and carrying out experiments to test these hypotheses and, if appropriate, using experimental results to revise the hypotheses. Students design and carry out two experiments which test whether starch and protein are found in some or all foods derived from animals or plants or both. An analysis and discussion activity that will help students to understand levels of organization in biology and the function of the digestive system is "Structure and Function of Cells, Organs and Organ Systems", available at In this activity, students learn how the structure of cells, organs and organ systems is related to their functions. Students analyze multiple examples of the relationships between structure and function in diverse eukaryotic cells and in the digestive system. In addition, students learn that cells are dynamic structures with constant activity and they learn how body systems interact to accomplish important functions. Aligned StandardsThis vetted resource aligns to concepts or skills in these benchmarks. Related ResourcesOther vetted resources related to this resource. Close Continue to iCPALMS There was an error creating your account. Please Contact Support support@cpalms.org for assistance. Curated and Reviewed by Lesson Planet Resource Details Curator Rating Educator Rating Grade7th - 12th Within the setting of a crime scene investigation, biochemistry beginners analyze organic compounds as a means of determining "Who dunnit." They use a brown paper test for lipids, glucose test strips and iodine to identify carbohydrates, and Biuret reagent for proteins. They apply what they experience to the lunch remains of the suspects in order to solve the mystery of who stole Jerell's iPod. The procedures, data tables, and evaluation questions are well written Provides a teacher reference guide to help prepare for the lesson Save time and discover engaging curriculum for your classroom. Reviewed and rated by trusted, credentialed teachers. Try It Free

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