AP BIO LAB DAY- What to put in your lab notebook

LAB 6- Cellular Respiration

BEFORE LAB

~ Read BACKGROUND info on page S71

~ Set up and run lab protocol comparing germinating and non-germinating peas
(You will run 3 tubes containing: Germinating peas, beads, and dry peas/beads)

~ Collect data, log results in your lab notebook, add print out of class data, graph and analyze results

~ ANSWER the following ?'s in you lab notebook:

1. What is the purpose of adding KOH to the cotton balls in the respirometers in this procedure?
2. Why is it necessary to correct the readings from the peas with the readings from the beads?
3. Describe and explain the relationship between the amount of O_2 consumed and time in this experiment.

DESIGN YOUR OWN EXPERIMENT

~ GETTING STARTED -Answer ?'s 1-6 on page S73

~ Design and conduct your own experiment using this lab procedure
Your lab notebook should include: A hypothesis, Materials/methods section, data tables, graphs, appropriate analysis of results, and discussion sections, Independent/dependent/control variables, Is there a control group?

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LAB 8-Bacterial transformation

DURING LAB

~ Create a METHODS SECTION noting what you did, volumes used, steps you followed, etc.

~ Create a data table to show results for each of the plates you innoculated

~ Answer the following questions in your lab notebook

1. What is a plasmid?
2. How are plasmids used in genetic engineering?
Give some examples (Use your Campbell textbook to help you)
3. Describe the characteristics of the pGLO plasmid you are using in this lab. What genes does it carry?

AFTER LAB TODAY/BEFORE YOU LOOK AT PLATES LATER THIS WEEK

~Answer ANALYZING RESULTS ?'s 1-5 on page S105

LATER THIS WEEK AFTER OBSERVING RESULTS

~ Fill in data table with observations

~ Discuss results: What happened on the various dishes? Explain WHY.
What are some factors that might influence transformation?

~Complete calculations for Transformation Efficiency and answer ?'s 1-4 on pages S106-109

~Answer Evaluating results ?'s on page S109

LAB 8-RESTRICTION ENZYME ANALYSIS OF DNA

WHILE YOUR GEL IS RUNNING COMPLETE THE FOLLOWING:

~ GETTING STARTED

- Activity I- answer ?'s 1-2 on page S113
- Activity II- answer 2 ?'s on p S115
- Activity III- answer ? on page 115

~ ANSWER THE FOLLOWING QUESTIONS in your lab notebook:

1. Discuss how each of the following factors would affect the results of electrophoresis:
   a. Voltage used
   b. Running time
   c. Amount of DNA used
   d. Reversal of polarity
2. What are restriction enzymes? How do they work? What are recognition sites?
3. What is the source of restriction enzymes? What is their function in nature?
4. What is the function of the loading dye in electrophoresis?
5. What are some ways DNA bands in a gel can be visualized?
6. How could a mutation that alters a restriction site be detected by gel electrophoresis?

AFTER DESTAINING OVERNIGHT

~ Use a transparency sheet to mark the bands on your gel/ cut and paste this in your lab notebook

~ Complete Analyzing Results section (S120-122)

- copy table on pages S121 into your lab notebook
- Plot the standard curve using the data from DNA sample cut with *HindIII* on log graph paper, and connect the data points with a line of best fit (Paste into lab notebook)

-Use the standard curve graph to calculate the approximate sizes of *EcoRI* and *BamHI* fragments and fill in data table from page S 121 in your lab notebook

~ Use the graph you prepared to predict how far (in cm) a fragment of 8,000 bp would migrate

~ A certain restriction enzyme digest results in DNA fragments of the following sizes: 4,000 bp, 2,500 bp, 2,000 bp, and 400 bp. Draw a diagram that shows the results of their separation by gel electrophoresis. Show starting point, positive and negative electrodes, and resulting bands.

~ Thinking about your results: Choose 2 of the 4 DISCUSSION ?'S (page S123) to answer in your lab notebook. Use outside resources to help you. (2-3 good paragraphs each

LAB 13- Enzyme Activity: Do FLOATING DISC LAB instead of procedure in lab book

~ Create a METHODS SECTION noting what you did, volumes used, steps you followed, etc.

~ Data table for experiment varying SUBSTRATE CONCENTRATION

~ Graph group data

~ RESULTS: DATA ANALYSIS- determine rate of reaction

~ DISCUSSION- What happened?

What is the relationship between rate of enzyme activity and substrate concentration?

~ Design and conduct your own experiment using this lab procedure

Your lab notebook should include: A hypothesis, Materials/methods section, data tables, graphs, appropriate analysis of results, and discussion sections, Independent/dependent/control variables, Is there a control group?