# Lab 2: Cell Metabolism

## **POST-LAB DATA SHEET AND WRITE-UP (15 pts)**

Name (s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### ACTIVITY 1. Protein Digestion and the Effect of Denaturation on Enzyme Activity

1. (3 points) Transfer your results on protein digestion to the following table. Do not just put a + or -, but describe the color, solid precipitate present, etc. In the conclusions column, explain why the results of the test are as they are, **or** why you expected something different.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| TUBE | EXPECTED RESULTS | | OBSERVED RESULTS | | CONCLUSIONS |
| BIURET | NINHYDRIN | BIURET | NINHYDRIN |
| PA |  |  |  |  |  |
| PB |  |  |  |  |  |
| PC |  |  |  |  |  |
| PD |  |  |  |  |  |
| PE |  |  |  |  |  |
| PF |  |  |  |  |  |

2. (1 point) What is denaturation? What causes it? (You may need to use your textbook for this question.)

3. (1 points) Where are the enzymes for protein digestion produced in the body? Where do these enzymes perform hydrolysis? Based upon their location of activity, predict the optimal pH for each of these enzymes.

### Notes on Lipid Digestion and the Effect of Emulsification on Lipid Digestion

4. (1 point) Where in the body is lipase produced?

### ACTIVITY 2. Carbohydrate Digestion and the Effect of pH on Enzyme Activity

5. (3 points) Transfer your results on carbohydrate digestion to the following table. Do not just put a + or -, but describe the color, solid precipitate present, etc. In the conclusions column, explain why the results of the test are as they are, **or** why you expected something different.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| TUBE | EXPECTED RESULTS | | OBSERVED RESULTS | | CONCLUSIONS |
| IODINE | BENEDICTS | IODINE | BENEDICTS |
| CA |  |  |  |  |  |
| CB |  |  |  |  |  |
| CC |  |  |  |  |  |
| CD |  |  |  |  |  |

6. (1 points) Describe the purpose of each tube in this experiment. Which tubes were the positive controls, which were the negative controls, which ones had altered enzyme activity, etc.?

CA:

CB:

CC:

CD:

7. (1 point) In which tube CF, CG, or CH, was the starch digested most quickly? Most slowly? Why?

8. (1 point) Why were most of the digestions performed at 37oC in this lab? What do you predict would have happened at room temperature (24oC)? At 60oC?

9. (3 points) After enzymatic digestion, the **proteins** are absorbed as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name the

monomer unit) into the capillaries/lacteals (circle one) of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name the organ).

After enzymatic digestion, the **lipids** are absorbed as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name the monomer unit)

into the capillaries/lacteals (circle one) of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name the organ).

After enzymatic digestion, the **carbohydrates** are absorbed as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name the

monomer unit) into the capillaries/lacteals (circle one) of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name the organ)