Biochem 4110 Term Project
“Pet Enzymes”

During this assignment, you will be assigned to a group of four and asked to obtain information about a single enzyme which your group will choose from an extensive list. The assignment will be broken up into three sections that will be handed in throughout the term. The projects will be handed in several days before each exam, to allow enough time for studying. The information that you will be asked to find will, for the most part, mirror what we are studying in class and therefore should reinforce what you are reading about in the text and hearing in class. There are a number of other objectives including familiarizing you with a number of resources, both electronic and paper, available to the biochemist, teaching both Web and library search skills, introducing scientific writing, and improving group work skills. I think this project will also be fun. Many of the previous years’ students thought this was the best part of the course.

Selecting your enzyme:
You will select your enzyme on the course website (Wiki found in the Pet Enzyme Project folder). Go there and pick one of the enzymes that are available by editing the page and adding your group members last names next to the enzyme that you’ve selected. Note the PDB code that is given for each enzyme.

Assignment 1: Complete details will be handed out separately, but in essence this assignment deals with protein structure. You will be asked to use various resources on the Web to find the amino acid sequence and then predict, analyze and visualize your protein’s secondary and tertiary (and maybe even quaternary, if it exists) structure.

Assignment 2: In this assignment you will be using both web resources and research articles in journals to discover kinetic information about your enzyme and to learn what is known about and/or predict the catalytic mechanism of the enzyme.

Assignment 3: In this assignment you will again be using the research literature to determine if the activity of your enzyme is regulated, and if so, in what manner and by what molecules and some guess or rationalization as to why.

Grading: The point total for the complete project is the equivalent of one exam grade (100 points). The point breakdown for each assignment is as follows:

PE Report I 40 points
PE Report II 30 points
PE Report III 30 points

To insure that everyone’s grade accurately reflects the amount of effort put into the project, individual grades will be based on the grade the group assignment is given, multiplied by a factor that is determined by an assessment from each team member of the amount of effort each member contributed. Each team member will distribute the 100% of effort between the group members, including him/herself, for each report handed in. Each person’s evaluation of him/herself will not be used directly,
while the remaining evaluations will be pooled to determine the overall multiplier for each individual. An example of the grading scheme appears on the next page.

**Example:**

<table>
<thead>
<tr>
<th>Evaluator</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<td>A</td>
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<td>D</td>
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<td>20</td>
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The diagonal line removes the grade that each member gave themselves. Each person’s multiplier is then the sum of their evaluations divided by a theoretical 75 (what the sum would be if everyone contributed equally). If the project was given a grade of 35/40 the following grades would result.

A: \( \frac{60}{75} = 0.8 \) \quad \text{Grade} = 0.8 \times 35 = 28

B: \( \frac{75}{75} = 1.0 \) \quad \text{Grade} = 1.0 \times 35 = 35

C: \( \frac{80}{75} = 1.1 \) \quad \text{Grade} = 1.1 \times 35 = 35^*

D: \( \frac{55}{75} = 0.73 \) \quad \text{Grade} = 0.73 \times 35 = 25.6

*NOTE: Multipliers greater than one will not be allowed unless the entire group meets with the professor and presents a convincing case. Therefore, student C would be given a grade of 35.*

If, as a group, you decide that everyone has contributed equally, you may turn in a single evaluation sheet. This sheet must be signed by each person in the group. Group evaluations lacking signatures will not be accepted.