Your report should be typed or computer-printed, and stapled. All pages should be numbered, except the Title Page. The components of the lab report should each be labeled ("Materials and Methods," "Results," etc.). Double-space and leave approximately 1-inch margins all around, so that we have room to write comments. Part of your grade will depend on the overall clarity of your writing, use of correct grammar, spelling, neatness, and whether you followed directions about what information to include in each section, how to name and provide legends for figures, etc.

Follow the format given in Chapter 4 of “A Student Handbook for Writing in Biology” by Knisely – be sure to read this chapter before you start to write your paper, and refer to it often as you write each section. We also recommend chapters 3, 5, and 6. Familiarize yourself with the overall format of Knisely’s book; use the index to find help on specific topics. Do not hesitate to seek the advice of your instructor, TA, or writing tutors at The Write Place. A poorly written lab report will not be graded.

**Materials and Methods**

Present the experimental protocol in a coherent and logical format. Only present the information necessary for someone to be able to repeat your experiments. Try to be both clear and concise. It should be clear what you did and how you did it. You should include the names of any specialized instruments you used. You should provide a level of description such that someone who has used a similar experimental protocol before would recognize what you did and would be able to repeat your experiment. A chronological list of events (First, I… Then, I…) is generally not appropriate. Since you will be reporting on what you have done, use the past tense.

**Results**

Here you present and describe your findings. The key here is to decide which information is important to be able to answer your experimental question(s), and the best method for presenting that information. In some cases graphs work best, at other times a table is more clear. Remember that you do not need to present all of your observations, drawings, etc. – only that which is relevant to answering the experimental question(s).

In your report, you should not include all of the simple graphs of absorbance vs. time that you use to determine initial velocities. You are attempting to characterize the protein alkaline phosphatase and investigate the effect of another variable on enzyme kinetics. To
do this, you will need to include the following items:

• a graph of \( v_0 \) (in nmol/min) as a function of [S] (the final concentration in the reaction mixture)
• a double reciprocal (Lineweaver-Burke) plot of \( 1/v_0 \) as a function of \( 1/[S] \), including the best fit line and the equation for the line.
• your calculated values of \( K_m \) and \( V_{max} \)

We encourage you to analyze your results and discuss their implications with your lab partners. However, when you actually make the final graphs and do the writing, your paper should be a solo effort.

For each figure, describe the important details of the graph or table in your text account. You will be marked down if the text does nothing more than tell the reader to look at a table or figure, as in "The results are summarized in Figure 2." You need to summarize the important trends from the figure verbally in the Results section. On the other hand, if you never refer to your figures in the text of your results, you might as well not include the figures – check Knisely's book for help referring to your figures. In a sense, both the text and the figures should stand alone – that is, your reader should be able to read either the text or the figures alone and understand each. While you describe your results in this section, be careful not to interpret the overall implications of the results; save that for the Discussion section (which is not part of your lab write-up this week).

You should make all of your figures yourself; decisions about how to present data are one of the creative aspects of writing a report, and it is not acceptable just to make copies of the same figure for all of the students in a group. The figures and tables may be placed on separate pages at the end of the report or inserted between paragraphs in the text. Each figure and table should have an explanatory caption (also called a legend) that includes: (1) the figure or table number, (2) a descriptive title for your figure or table, (3) a description of where the data came from and (4) a description of the important features of the data in the figure/table (e.g., how many trials). A table caption goes above the table, while a figure caption goes below the figure. Following the figure or table number, the title is usually an incomplete sentence with only the first word capitalized. There is no need for an additional title at the top of your graph. Study the sample graphs and tables in Knisely carefully to get a sense of proper format.

D. Plagiarism

Plagiarism is a very serious offense and should be scrupulously avoided. Examples of plagiarism include: (1) copying text (even only a portion of a sentence) from another source such as the lab manual and (2) not citing a source of information. If you are in doubt about what constitutes plagiarism, please consult the booklet Academic Honesty issued to all incoming students. Remember that you may be guilty of plagiarism even if you do not intend to deceive.

E. Avoiding Common Mistakes

• The word “data” is always plural; the singular form of this term is “datum.”
• The plural of “hypothesis” is “hypotheses.”
• “Affect” is usually used as a verb; “effect” is usually a noun. Look up the usage if you are unsure.
• Certain words, like “significant” and “theory,” have very special meanings in the context of scientific writing. Use them correctly.