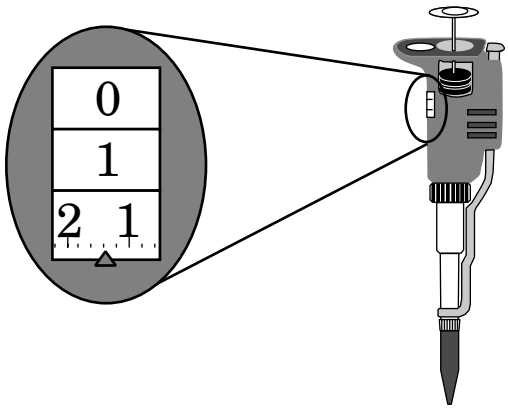
CHEM 433 Pre-lab Problem Set #1 Spring, 2012-13 Dr. Brandt
Due date: Wednesday, March 13, 2013 at the beginning of lab

1. Your lab partner hands you a P200 Pipetman set as shown in the diagram at right. For what volume is it set? Is this the proper Pipetman for this volume? Why (or why not)?



2. You have a 0.5 M stock solution of Tris base. How would you make 100 ml of 0.03 M Tris base?
3. Is the extinction coefficient for a molecule the same at all wavelengths?
4. You prepare several dilutions of an unknown compound. You measure the absorbance of each solution at 340 nm using a 1 cm cuvette (your results are listed in the table below). What is the extinction coefficient (in $(M \bullet cm)^{-1}$) of the compound? Are all of the values likely to be equally accurate? Why? (**Hints**: assume that each of the individual values contains some degree of experimental error, and assume that the Ocean Optics Spectrometer used tends to lose accuracy significant at when less than about 3% of the incident beam reaches the detector.)

Concentration (μM)	Absorbance at 340 nm
4	0.023
12	0.077
36	0.225
108	0.670
324	1.681

5. You have 5 ml of 3 mg/ml protein solution. (This solution is valuable so you don't want to waste it.) How would you make up at least 100 μl of 0.1 mg/ml using a **convenient** dilution (*i.e.* how much buffer and how much protein solution do you need to add, and is it possible to pipet the amount you need **accurately**)?
6. What do the letters PMSF stand for? What is PMSF used for?
7. Why are you saving three 0.5 ml aliquots of your crude homogenate? (Note: you may need to read ahead to find the answer to this question.)