Problem Set Discussion Points:

1. These problems are meant as learning exercises. I can’t promise that every single problem will be wonderful, but many will reinforce a lecture topic. Just as importantly, many will reproduce types of situations involving reasoning with experimental results that you will encounter in your own laboratory work. Getting you used to thinking through these problems will hopefully help you not only in your course work but also with your quals, prelims, and thesis work.

2. On a more practical note- the style of these problems mimics the style you can expect in many of the exam problems. You need to get used to READING THE PROBLEM, understanding what is really being asked, and directly answering the question being asked. Otherwise you will do poorly on the exam, possibly even when you really do understand the material.

3. What you get out of doing the problems will be proportional to what you put into the problem set. If you do not make an effort to solve them, you will not get much from them. The act of trying to understand what the problem is, checking your class notes and/or textbook readings for information, thinking through the problem is how you will learn.

4. I encourage you to work on the answers with friends, but only after you yourself try to solve the problems, and work hard at any problem you don’t get. Again, just learning the answer directly from a friend will not provide the same learning experience.

5. CHECK THE POSTED ANSWERS AND MAKE SURE YOU UNDERSTAND THE EXPLANATIONS. If you do not, ask classmates or schedule office hours with the instructor. Some of these problems, or variations along a theme, will reappear on the exams.

Specific Examples, Feedback:

1. Any answer must explain data. Make sure whatever your answer is that it EXPLAINS the data presented in the problem. If your answer does not somehow use the data presented and provide an explanation for the data, then take that as a sign that you are not addressing the problem.

2. THINK THE PROBLEM THROUGH. Again if you are on the right track usually this means that you should not just be able to explain part of the problem, but all of it.

3. Your answer must not only explain the data, but if you think through the implications your solution should not generate inconsistencies with the data.

4. Give complete answers: Don’t give an answer that makes sense to you but not to anyone else. Don’t laugh- this is a common student fault. The student knows what they are thinking but doesn’t add it to the answer. WE ARE NOT MIND READERS.
Complete your answer as if your instructor does not know the answer himself or herself. Explain EXPLICITLY your reasoning.

5. Do not rephrase the question as an answer:

   Example: Question: “She screens by in situ hybridization using her DNA probes…. Much to her surprise, she finds that each of her clones hybridizes over the entire lengths of all human chromosomes. Why?”

   Answer: “Low specificity”- (This is just a rephrasing of what the question tells you, NOT an explanation for the observation.)

6. Keep it simple. If you understand the question and the background material usually the answer will not be too complicated. The space left for the problem on an exam or on problem sets is a good clue to roughly how extensive your answer should be. The space should be adequate for even the most complete answers if you know the answer and are concise.