

Name: \_\_\_\_\_

**CHEM 645 Proteins, Structure and Function**

Take Home Final Exam, assigned 12/7/11,

instructor: Brian Bahnson  
(man or machine???)



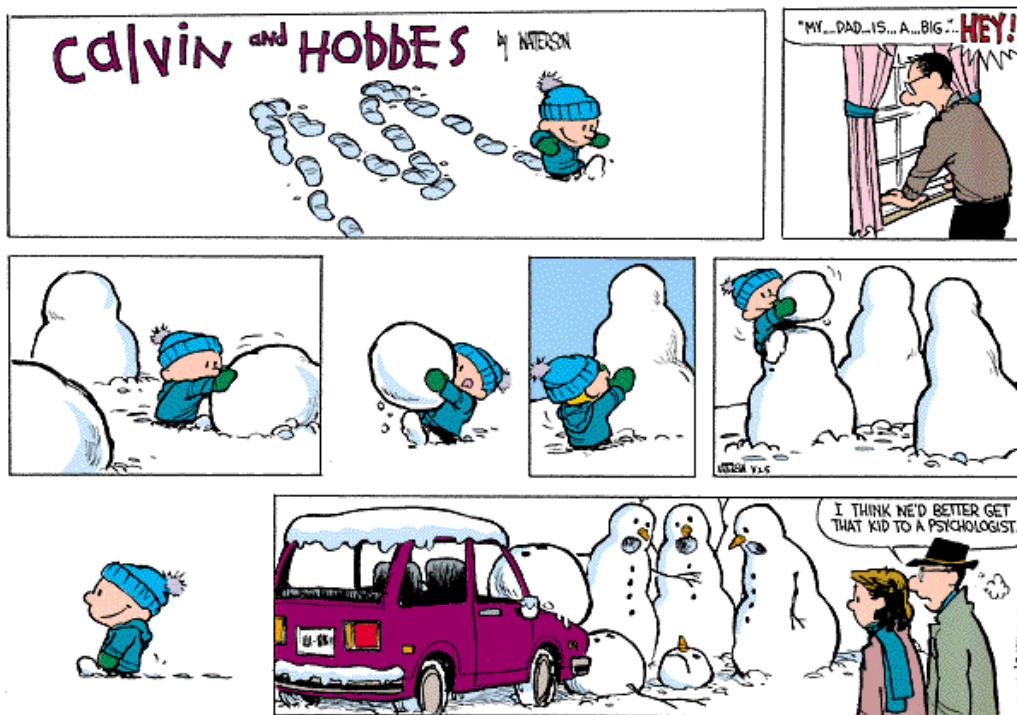
due before midnight on Wednesday 12/14/11

You can either type answers in, or hand write. Add extra pages to the word file if you need more space. However, if you hand write, you'll need to hand me a hard copy or put in my mail box. Please feel free to draw simple pictures to help explain your answers.

This is an open book and open notes take home final exam.

**But you need to answer these questions on your own, and cite sources from the literature if appropriate.**

Good Luck!



1	40	
2	20	
3	20	
4	20	
Total		100

**1. (40 pts.) Research proposal** - Choose one of the topics from the presentations (you can choose your own presentation topic) and the science discussed on the system as a starting point for a **concisely** written proposal. Your proposal should be aimed at answering the questions:

- a) In your opinion, what would be the next significant step that should be made in order to advance the field?
- b) What is the main goal of your proposed research project?
- c) What is the hypothesis to be addressed?
- d) What techniques would be used?
- e) What are some possible results and how would the possible results support or discount the hypothesis?

The best proposal will draw on what you have learned from other presentations and lectures in the class, if appropriate, to attack the problem in a multidisciplinary manner.

Question-1. continued

**2. (20 pts.) Rational drug design.** A combination of high binding affinity and specificity are generally important criteria of a successful rationally designed drug. From either our NCEH1 project or our class presentations, choose an example that fits the criteria below and explain.

You can use the same topic for both or pick two different topics for each part.

**a)** how a drug target was improved for its binding affinity.

**b)** how and why a drug was rationally improved in regards to specificity.

**3. (20 pts.) Critiquing the Papers (not the presenters).** Pick one paper you particularly liked and thought was well done and had the most important impact. And pick one paper that you thought was less significant, and had little scientific impact. For each paper, explain your choice explaining strengths/weaknesses and impact on science.

**Liked:**

**Disliked:**

**4. (20 pts.) Protein misfolding disorders.** Several of our presentations on protein misfolding disorders involved amyloid formation. Using information from at least two of the presentations, explain why the structural study of amyloids is a complex challenge, and how this challenge has been successfully faced.