Problem Set #4

1. What are some of a neuron’s Calcium sources (or what can increase a neuron’s intracellular Calcium)?

2. Can CaMKII interact with Calmodulin that is not bound to Calcium? What makes CaMKII a good candidate for a molecular mechanism for learning and memory? What is a possible function of the ring-structure arrangement of CaMKII?

3. If you made a CaMKII knockout, why would it be difficult to attribute a particular molecular mechanism to the experimental results? What is an alternative genetic manipulation that can be used to study the role of CaMKII in learning and memory? What is the effect of this genetic manipulation on LTP?

4. How can you find out if a protein is phosphorylated? One experiment we saw in class showed that CaMKII phosphorylates GluR1. Once you know that GluR1 is phosphorylated, how do you go about figuring out the site of phosphorylation? What amino acid was found to be the site of phosphorylation?