Quiz #8 Key, Spring 2013 – all lab sections:

1. Define:

Photophosphorylation – Photophosphorylation is the process of making ATP using light as the energy source. Organisms categorized as phototrophs (algae, Cyanobacteria, *Halobacterium*, etc.) use light sensitive pigments to capture the energy provided by light, and ATP synthase enzymes to make ATP. The "light reactions" of photosynthesis are photophosphorylation reactions.

Calvin-Benson cycle – The Calvin-Benson cycle is a series of chemical reactions allowing autotrophs to fix inorganic carbon, i.e., to use carbon dioxide to make sugar (fructose). This is an anabolic process, so requires energy, and the energy is provided by ATP and NADPH + H^+. The "dark reactions" of photosynthesis typically involve the Calvin-Benson cycle.

Transcription – Transcription is the process of making RNA using DNA as a template or pattern, and like replication requires enzymes (primarily DNA-dependent RNA polymerase), and energy (as provided by r-NTPs). Transcription occurs in the nucleus of eukaryotic cells or within the nucleoid of prokaryotic cells (although can also occur in association with plasmids).

2. Bacteriochlorophylls/ bacteriorhodopsin

3. Plastoquinone/ water

4. Proton motive/ ATP synthase

5. Ferredoxin/ NADPH + H^+

6. Two possible answers apply here, either Bacteriophaeophytin or Ubiquinone

7. Ribulose-bisphosphate Carboxylase Oxygenase (RuBisCO)/ carboxysomes

8. Deoxyribose/ thymine

9. Replication/ polymerase

10. Primase/ ligase

The etiological agents of bubonic plaque are identified as *Yersinia pestis*.