

**What to know from our lecture on the chemistry of photosynthesis
(a study guide for the exam...)**

The posted lecture notes from our photosynthesis lectures are necessarily long and are detailed. If you master the following items, you should perform well on the exam questions that cover this material. Needless to say, also study the posted study guides for Quiz #1 and Midterm #1.

Big picture:

- 1) In the light reactions, light energy is converted to chemical energy (ATP and NADPH)
- 2) During the light-independent reactions (aka; dark reactions, Calvin cycle) the chemical energy from the light reactions is used to drive carbon fixation.
- 3) The light, and light-independent, reactions both occur in the chloroplast.
- 4) Structure of the chloroplast (thylakoid, grana, thylakoid membrane, stroma, lumen).
- 5) Where is the proton gradient that forms during the light reactions?

Digging deeper:

- 6) Be able to place the following in their proper order on the thylakoid membrane: PS II, plastoquinone (PQ), Cyt b6/f, plastocyanin (PC), PS I, and ATP synthase, and be able to tell me what each does during the light reactions. **STUDY THIS!!!!**
- 7) What is Rubisco?
- 8) Compare/contrast C₃, C₄, and CAM plants – with specific emphasis on (STUDY THIS!!!!):
 - a) How do they differ w/ regard to how CO₂ is introduced to Rubisco?
 - b) What types of plants do each type? How prevalent is each in the Kingdom Plantae?
 - c) Which one evolved first and which two came later.
 - d) In what types of environments is C₄ and CAM and adaptive trait?
 - e) What limitation of Rubisco does C₄ and CAM minimize?

OK, that covers it. Use detail in the posted lecture notes to help you understand the points listed here.