

### STUDY GUIDE FOR THE THIRD EXAM

The following will permit you to focus on information that you will need to know for the exam and provide you with an in-depth knowledge of many of the most salient points presented in the lectures.

For the exam, you will only be responsible for what was presented in the first four lectures -- the assigned reading in the text serves as a background to better understand the points raised in lecture.

The question on this year's exam will be of a similar type to those on the previous exams that are posted on the MBB Website: (<http://mbb.rutgers.edu/MBBCourses.html>)

#### Membrane transport

1. Know the mechanisms of the facilitated diffusion systems;
2. Be able to make mechanistic comparisons of the active transport systems, be able to distinguish primary and secondary active transport, know the directionality of relevant ion movements and how they are energetically driven.

#### Photosynthesis

1. Know the Z-Scheme for the functional relationships between PSII and PSI;
2. Know the difference between oxygenic and anoxygenic phototrophs;
3. Know the sequence of electron flow in PSI and PSII;
4. Know the functional protein components and cofactors of PSI and PSII;
5. Know the overall arrangements of the LHC-II and PSI and PSII light-harvesting complexes;
6. Understand the main features of the structure of higher plant PSI;
7. Know the photosynthetic pigments and how they function;
8. You don't need to know all the structural details of the complexes, just whether they are monmeric, dimeric or trimeric and the sequence of their cofactors.

#### Lipid Metabolism

1. Know the mechanisms of triacylglycerol hydrolysis;
2. Know the mechanisms of activation and transport of the early intermediates of fatty acid oxidation.
3. Be able to draw out the fatty acid oxidation and biosynthesis pathways, including structures of intermediates, designation of the enzymes and cofactors, know how unsaturated fatty acids are oxidized and ketone bodies are formed and utilized;
4. Understand the basis for the ATP yield of fatty acid oxidation;
5. Know the fatty acid desaturase mechanism.
6. Be able to distinguish the main pathways of phospholipid biosynthesis.

NOTE: A review session will be held in SEC 118, Wed Nov 17, 2010 at 6:40 PM