

As a TA for Biochemistry 301, I lead two recitation sessions throughout the semester. I did not develop the materials shown below, but I was responsible for leading the discussion and supplying answers to student questions.

Recitation 1

3-9-18

**Redox, Glycolysis,
PDH, Krebs**

1. Extending the table of redox reactions that we started to build last week, but now including the reactions of Krebs as well as glycolysis and PDH. Once the students have done this, Hannah will be pointing out some patterns.
2. Identifying the cases where an energy-releasing redox step is immediately followed by an energy-utilising step, with some kind of storage used to capture the energy from the first step and provide it in the second step.
3. Identifying reactions from glycolysis, PDH, and Krebs where carbanions are part of a mechanism to form or break a C–C bond, and how those carbanions are stabilized.

Recitation 2

3-30-18

**Regulation of Oxphos
Additional Sugar
Pathways**

1. Pentose phosphate: what happens?
 - a. Eating food with lots of DNA/RNA?
 - b. Repairing a large amount of ROS damage?
 - c. Tissue growth in a child?
2. Regulation of gluconeogenesis and glycolysis
 - a. Cell wants to turn off glycolysis and gluconeogenesis completely
 - i. What regulatory actions need to be taken?
 - ii. How do these actions impact the other steps in the pathways?
 - b. Cell wants to turn off glycolysis and turn on gluconeogenesis
 - i. Which reactions must turn on? Which turn off? Which change direction?
 - ii. What regulatory actions need to be taken?
 - iii. How do these actions impact the other steps in the pathways?
3. Loss of O₂
 - a. Which reactions reverse and why?
 - b. Which reactions stop and why?
 - c. Which reactions continue and why?



4. Brown fat

- a. Why is heat produced? Where does the energy come from?
- b. Is $|\Delta G_{\text{redox}}|$ higher than/lower than/same as normal? Why?
- c. Is $|\Delta G_{\text{proton gradient}}|$ higher than/lower than/same as normal? Why?
- d. Is $|\Delta G_{\text{ATP synthesis}}|$ higher than/lower than/same as normal? Why?
- e. Is flux through ETC higher than/lower than/same as normal? Why?
- f. Is flux through ATP synthase higher than/lower than/same as normal? Why?