

Physiology

Study Questions for Friday 11 Sept 2015

1. For the notes handout "ENERGY TRANSFORMATIONS, LINKED PROCESSES AND PROTEINS" please bring in solutions to the problems in the boxes

- on p. 7 (the answer is already given – satisfy yourself that it is correct) and
- pp. 9-10. The problem is near the top of this box on p 9. The actual energy value of the system (asked for in the problem) is given in the problem on page 7 of those notes.

When you work out these problems, please include units and be careful to do your solution using molar concentrations.

Please also be able to discuss the non-problem questions within these boxes.

2. The "Aerobic_RQ" notes state that in aerobic glycolysis a total of 34 or 35 ~P are generated by the mitochondrial ETS-ATP synthase system per mol of hexose that enters glycolysis. This is a theoretical number – the actual number is more like 30 ~P (for a total of 32 mols ~P conserved per hexose). What does this do to the efficiency of energy conservation and why do you think the actual measure is less than theoretical – hint – it has to do with membranes and protons (hydronium). We will try the RQ problems together or in the next class.

3. We will probably discuss the effects of anaerobic metabolism on apparent \dot{V}_{CO_2} . Why does anaerobic metabolism lead to an overestimate of aerobic metabolism if aerobic metabolism is measured using \dot{V}_{CO_2}