Questions for Biological Chemistry final class of the 1 semester, overseas students faculty (engl.).

Control test questions for "Enzymology and biological oxidation" section

1. Krebs tricarboxylic acid cycle (TCA) as a common end point utilization of biologic oxidation substrates. The sequence of TCA reactions, enzymes, coenzymes. Regulation and biological role.
2. The mechanism of enzyme action. Theory of intermediates. Thermodynamics of enzymatic catalysis.
3. The kinetics of enzymatic reactions. Km – definition, physiological significance.
4. The main role of biologic oxidation in life processes. The ways of oxygen utilization in the body. TCA. The sequence of TCA reactions, enzymes, coenzymes.
5. The mitochondrial electron-transporting chain (mtETC). The fundamental principles and mechanisms of functioning. mtETC complexes.
6. High-energy compounds, causes. ATP: structure, ways of formation, and role.
7. The similarity and difference of microsomal and mitochondrial oxidation. Communication of TCA, mitochondrial ETC with microsomal ETC.
8. Mechanisms of oxidative phosphorylation coupling. Structure and function of the proton-ATPase. Uncoupling of oxidative phosphorylation. Uncouplers of oxidative phosphorylation, their nature and mechanism of action. Mitochondrial ETC inhibitors.

Control test questions for "The biochemistry of carbohydrate" section

1. Structure and metabolism of glycogen (glycogenolysis and glycogenesis). Hormonal regulation of glycogen metabolism (the role of hormones, cAMP, Ca^{2+}).
2. Anaerobic glycolysis: alcohol fermentation. Localization, reactions, enzymes (classes), regulation and energy balance. The similarity and difference compared to lactic fermentation.
3. Metabolism of fructose and galactose in normal and pathological conditions.
4. Glycolytic oxidoreduction and substrate-level phosphorylation in glycolysis. The physiological significance.
5. Gluconeogenesis (GNG). Localization, reactions, enzymes (classes), regulation, biological role, and energy balance.
6. Substrate and energy for GNG. Interorgan substrate exchange (Cori and Felig cycles).
7. Pentose phosphate pathway (PPP): characteristics, localization, reactions, enzymes (classes), regulation, biological role.
8. Urgent and constant mechanisms of blood glucose level regulation (the role of the nervous system and hormones).
9. Insulin: mechanism of action, and biological role of insulin. Diabetes mellitus type I and II: the principal differences.