

Laboratory 1.

- Glucose as a source of ATP - reactions of the glycolysis pathway, substrate phosphorylation, regulation of glycolysis.
- Glycolysis under anaerobic conditions
- Synthesis of lactose
- Synthesis and degradation of glycogen, including diseases resulting from disorders of glycogen metabolism.

Laboratory 2.

- The course and regulation of gluconeogenesis.
- Hormonal regulation of the constant level of glucose in the blood.
- Pathogenesis and diagnosis of diabetes

Laboratory 3.

- Synthesis of fatty acids.
- β -oxidation of fatty acids.
- Metabolism of ketone bodies.
- The role of carnitine in the transport of fatty acids.

Laboratory 4.

- The role of arachidonic acid - the synthesis of eicosanoids.
- Synthesis and regulation of cholesterol synthesis
- Lipoproteins.
- Dyslipoproteinaemias.

Laboratory 5.

- The course of the respiratory chain, inhibitors and compounds uncoupling oxidative phosphorylation.
- Cell bioenergetics - rich energy compounds, the final balance of oxidation of the glucose molecule.
- Reactive oxygen species, antioxidant defense

Laboratory 6.

- Biosynthesis of endogenous amino acids in the human body.
- Catabolism of amino acids and removal of amine nitrogen.
- Urea cycle.

Laboratory 7.

- Nomenclature and structure of purine and pyrimidine bases both main and atypical ones.
- Synthesis of purines and pyrimidines and regulation of these processes.
- Catabolism of purine and pyrimidine bases.
- Selected diseases associated with purine catabolism disorders.
- Analysis of urine in selected pathological conditions.

Laboratory 8.

- Synthesis and catabolism of heme, regulation of these processes.
- Transport of indirect and direct bilirubin and their diagnostic significance.
- Hepatic-intestinal circulation of bile dyes.
- Hyperbilirubinemias - differentiation of jaundice.

Laboratory 9.

- Biochemical function of the kidneys.
- The contribution of the kidneys to regulating blood pressure.
- The role of the kidney in hematopoiesis.

Laboratory 10.

- The liver as the metabolic center of the body.
- The role of the liver in detoxification processes.
- The role of the liver in maintaining the proper level of glucose in the blood.