

**In the field of medical biology and the general genetics  
the Specialist should:**

**Have a notion about:**

- scientific biological picture of the world;
- structure, functioning, diversity and development of biological systems at all levels of wildlife organization;
- relationships between living organisms; about evolution and reasons for species diversity;
- the most significant biological processes proceeding in a cell, an organism, population, ecosystem, biosphere;
- main taxonomic categories (kingdom, type, class, group, family, species);
- position of the person in wildlife system;
- biology of the cell, peculiarities of its structure, organization of flow of matter, energy and information in the cell;
- main laws of heredity and variability of organisms;
- developmental biology and role of disorders in ontogenesis development in human pathology;
- population structure of humanity and influences of evolutionary and ecological factors;

**Know and be able to use:**

- scientific terminology;
- biological concepts, principles and laws;
- definition of the following concepts: cell, gene, genotype, phenotype, mutation, mutagenesis, genetic load, genetic drift, species, population, biocoenosis, biosphere, natural selection;
- problems and place of biology and biological ethics in medical education;
- relationship between medical biology with private medicobiological and clinical disciplines;
- structure and functions of cells, energy, substances and information in the cell;
- peculiarities of reproduction and sex determination in a person;
- regularities of inheritance of normal and pathological signs in a person; main types of variability and their manifestation;
- peculiarities of pre- and postnatal ontogenesis in a person; biological aspects of aging and death;
- population structure of humanity and influence of evolutionary factors on human populations;
- peculiarities of biology of human parasites to prevent parasitic diseases;
- biology of poisonous animals and prevention measures of poisoning;

**Be able to:**

- analyze, comprehend critically and use information on living organisms, use biological terminology and symbols confidently;

- use methods of biological sciences: microscope, genetic analysis, cytogenetic analysis, twins study, genealogical analysis;
- analyze normal and modified human karyotypes;
- solve situational problems on Mendel's laws, genetic linkage and interaction, on molecular genetics and parasitology;
- count frequencies of genes in human populations on the basis of the Hard-Weinberg`s equilibrium;
- make and analyze family trees of the person, to establish type of inheritance and to draw the conclusion about probability of the birth of a sick child;
- diagnose activators and carriers of parasitic diseases causative agents of humans;
- prove measures of personal and public prevention from parasitic diseases of humans;
- make a variational series of modification variability of signs;

**Have skills:**

- of data use in biology for justification of integrity of an organism, biological bases of a healthy lifestyle, unity of the organic world, protection of environment, species, biocenoses and biosphere;
- of microscopic equipment use ;
- of preparation of temporary preparations;
- of reading of mute microslides on parasitology;
- of activators and carriers of parasitic diseases definition ;
- of definition of helminthes eggs specific belonging;
- of X- chromatin detection in humans' somatic cells.