

# THE NAME OF THE TOPICS OF LABORATORY CLASSES AND THEIR CONTENT

## FOR STUDENTS OF 1<sup>st</sup> YEAR 2<sup>nd</sup> SEMESTER OF 2023/2024 SUBJECT "ECOLOGICAL PARASITOLOGY"

### 1. Introduction to ecological parasitology. «Parasite-host» system

1. Subject and object of ecological parasitology.
2. Parasitism as a form of relationship between organisms of different species. Origin of a parasitism.
3. "Parasitic system" and "parasite-host system" concepts. Morpho-physiological adaptations of parasites as components of the "parasite-host" system.
4. Pathogenic action of a parasite on the host's organism.
5. Responses of the host organism: cell, tissue, organism levels of defense reactions.
6. Defense mechanisms of parasites from the immune answer of the host: the phenomenon of antigen mimicry, change of composition of antigens, alternation of generations in life cycle of a parasite, immunosuppression.
7. The factors influencing the nature of relationship in the "parasite-host" system: genotypes of a parasite and owner, condition of an immune homeostasis of the host.

### 2. Parasitic system. Concept about parasitocenoses

1. Parasitic system.
2. Influence of the parasite population on the host population: regulation of the host population.
3. Influence of abiotic, biotic and anthropogenic factors on parasitic systems.
4. Stability of parasitic systems. Specificity of parasites. Evolution of parasitic systems
5. Distribution of parasite populations in host populations. Change of the genetic structure of the host population. Extensity and intensity of an invasion, intraspecific competition, effect of congestion.
6. The concept of parasitocenosis. Mix-invasion: examples of synergy and antagonistic relations between parasites of a single parasitocenosis.

### 3. Parasitic diseases and their classification. Biological basis of control of parasitic diseases

1. The concept of infection and invasion. The ways of parasite invasion.
2. Classification of parasitic diseases: anthroponoses, zoonoses, transmissible diseases, geohelminthoses, biohelminthoses, contact helminthoses.
3. The natural region of parasitic diseases: native, synanthropic, anthropurgic regions. The concept about natural regions of parasitic diseases and of the theory of academician E.N. Pavlovsky about the Natural Focality of Diseases.
4. The specificity of parasitic diseases of tropical countries.
5. Biological principles of the fight against transmissible diseases and diseases with natural regions. The «devastation» doctrine of academician K. Scriabin.

### 4. The host-parasite relationship at the population and organism levels at protozoan diseases

1. Anthroponous protozoan diseases (*giardiasis*, *trichomoniasis*): etiology, geographical distribution, susceptibility of different people groups, morphology features of parasites, life cycles, ways of invasion, pathogenic action, symptoms of disease, methods of diagnostics, personal and social prevention.
  2. Transmissible anthroponosis – malaria. *Plasmodium* sp.: etiology, geographical distribution, susceptibility of different people groups, morphology features of parasites, life cycles, ways of invasion, pathogenic action, symptoms of disease, methods of diagnostics, personal and social prevention.
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3. Opportunistic human invasion (*toxoplasmosis, cryptosporidiosis, pneumocystosis*): etiology, geographical distribution, susceptibility of different people groups, morphology features of parasites, life cycles, ways of invasion, pathogenic action, symptoms of disease, methods of diagnostics, personal and social prevention.

#### **5. The host-parasite relationship at the population and organism levels at biohelminthoses**

1. *Echinococcosis*: etiology, geographical distribution, susceptibility of different people groups, morphology features of parasites, life cycles, ways of invasion, pathogenic action, symptoms of disease, methods of diagnostics, personal and social prevention.

2. Biohelminthoses at natural region of distribution (*opisthorchiasis, diphyllbothriosis, trichinellosis (trichinosis)*): etiology, geographical distribution, susceptibility of different people groups, morphology features of parasites, life cycles, ways of invasion, pathogenic action, symptoms of disease, methods of diagnostics, personal and social prevention.

3. Cutaneous form (*Larva migrans*): cercarious schistosomal dermatitis.

4. *Dirofilariasis*: etiology, geographical distribution, susceptibility of different people groups, morphology features of parasites, life cycles, ways of invasion, pathogenic action, symptoms of disease, methods of diagnostics, personal and social prevention.

#### **6. The host-parasite relationship at the population and organism levels at geohelminthiasis and contact helminthiasis**

1. Geohelminthiasis (*ascariasis, toxocarosis, trichocephalosis*): etiology, geographical distribution, susceptibility of different people groups, morphology features of parasites, life cycles, ways of invasion, pathogenic action, symptoms of disease, methods of diagnostics, personal and social prevention.

2. Contact helminthiasis – *enterobiosis, hymenolepidosis*: etiology, geographical distribution, susceptibility of different people groups, morphology features of parasites, life cycles, ways of invasion, pathogenic action, symptoms of disease, methods of diagnostics, personal and social prevention.

#### **7. The ecology, biology and medical significance of ticks**

1. Morphology and biology of ticks, their adaptation to a parasitic life cycles.

2. Ticks as temporary ectoparasites of the human, carriers of pathogens of infectious diseases (*Ixodidae, Argasidae, Gamasina, Trombiculidae*): natural biotopes and geographical distribution, morphology features of parasites, their adaptation to the parasitic ways of life.

3. Ways of protection from ticks.

4. Human skin parasite mites (*Itch mites, Follicli mites*): morphology, life cycles, localization, pathogenic action, diagnosis and prevention of scabies and demodecosis, factors of spread.

5. Ticks as inhabitants of human housing (*Tyroglyphus farina, Tyroglyphus siro, Dermatophagoides*) their medical significance.

#### **8. The ecology, biology and medical significance of insects. Test class in the subject**

1. Permanent and temporary human ectoparasites (*bedbugs, lice, fleas*): features of morphology, biology, medical significance. Factors of pediculosis transmission and dynamics of morbidity in the population of the Republic of Belarus.

2. Features of morphology and biology, medical significance of components of midges (representatives of families *Culicidae, Simuliidae, Ceratopogonidae, Tabanidae, Phlebotominae*).

3. The family of Flies. Features of morphology, biology, medical significance.

7. Gadflies: gastric (*Gasterophilidae*), subcutaneous (*Hypodermatinae*), abdominal (*Oestrinae*) families. Features of morphology, biology, and medical significance of gadflies.