

УДК 069:57:378.4:61(477.84)  
DOI 10.11603/me.2414-5998.2018.1.8822

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## EDUCATIONAL BIOLOGICAL MUSEUM OF MEDICAL BIOLOGY DEPARTMENT – VALUABLE TREASURE AND PRIDE OF THE UNIVERSITY

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## НАВЧАЛЬНО-БІОЛОГІЧНИЙ МУЗЕЙ КАФЕДРИ МЕДИЧНОЇ БІОЛОГІЇ – ЦІННИЙ СКАРБ І ГОРДІСТЬ УНІВЕРСИТЕТУ

**The aim of the study** – to expose a many-sided value (educational, scientific and pedagogic) of the Educational Biological Museum named after I. I. Yaremenko of Medical Biology Department.

**The main body.** Natural objects and their images are at the top of leading places among great variety of wildlife around us. That is the reason why natural and biological educational museums occupy a certain place in the educational process.

Educational Biological Museum named after I. I. Yaremenko of Medical Biology Department has many-sided value: educational, scientific and pedagogic. Educational value: exhibits of the museum expose the thematic chapters of the science’s educational programme, with the help of which students are looking for intercommunication of the plant and animal world between themselves and environment. They are of essential importance while learning the structure of multicellular organisms and the human role in changing natural ecosystems. Scientific value: exhibits of the museum afford an opportunity to form the system of knowledge concerning the laws of nature and are the foundation to study the bases of parasitism and parasitic invasions in humans. Pedagogic value: museum forms humane, careful and thrifty attitude toward nature of homeland, ability esthetically to behave to all living, it plays an important role in the formation of ecological consciousness of students.

**Conclusions.** Educational-Biological Museum is an exhibition project and remains a teaching resource of the Department. It reflects not only the history of the organization and establishment of the Museum, but the history of the Department, Institute, Academy and University in the whole. The Museum was and still remains a pride in honour of those people who laid its foundations.

**Key words:** Medical Biology Department; nature; Educational Biological Museum; Ternopil State Medical University.

**Мета роботи** – висвітлити багатогранне значення (навчальне, наукове та виховне) навчально-біологічного музею імені І. І. Яременка кафедри медичної біології.

**Основна частина.** Серед різноманітності наочностей одне з перших місць повинні зайняти натуральні об’єкти і їх зображення, які створюють найповніше уявлення змісту оточуючої нас живої природи. З огляду на це, певне місце в навчально-виховному процесі займають музеї.

Навчально-біологічний музей імені І. І. Яременка кафедри медичної біології має багатогранне значення: навчальне, наукове та виховне. Навчальне: експонати музею відображають тематичні розділи програми з дисципліни, за допомогою яких студенти спостерігають взаємозв’язок рослинного та тваринного світу, організмів між собою і навколишнім середовищем, формують уявлення про будову багатоклітинних організмів, а також вивчають роль людини у зміні природних екосистем. Наукове: експозиції секцій музею цінні тим, що формують систему знань про закони природи, вони є базою для дослідження основ паразитизму та паразитарних інвазій у людини. Виховне: музей формує гуманне, дбайливе та бережливе ставлення до природи рідного краю, вміння естетично ставитися до всього живого, він відіграє важливу роль у формуванні екологічної свідомості студентів.

**Висновки.** Навчально-біологічний музей є експозиційним проектом і освітнім ресурсом кафедри медичної біології, який відображає не лише історію розвитку живих організмів, але й історію створення музею природи, історію кафедри, історію вузу. Музей завжди був та залишається гордістю навчального закладу, насамперед гордістю за людей, які заклали його фундамент.

**Ключові слова:** кафедра медичної біології; природа; навчально-біологічний музей; Тернопільський державний медичний університет.

**Introduction.** In the modern rhythm of life, we sometimes do not think about what the next generation of people will have left to us for science. The main

mission of the demonstration of the accumulated scientific heritage to contemporaries are the museums [1, 5]. Museums are memory custodians, who are called upon to carry out educational, research and cultural

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functions, to accumulate information and to identify patterns relating to the processes of knowledge and knowledge transfer through museum objects [4].

Nowadays, I. Horbachevsky Ternopil State Medical University has museums of both historical profile and museums of the educational profile, in particular Educational Biological Museum named after I. I. Yaremenko of Medical Biology Department, Educational Museum of Human Anatomy Department, Educational Museum of Pathoanatomy Department with Forensic Medicine and Sectional Course [2, 3].

**The aim to the study** – to expose a many-sided value (educational, scientific and pedagogic) of the Educational Biological Museum named after I. I. Yaremenko of Medical Biology Department.

**The main body.** At the Department of Medical Biology, located in the building of the Educational-Scientific Institute of Medical-Biological Problems, in one of the most picturesque places of Ternopil, there is its pride – Educational-Biological Museum founded in 1957 by the first Chief of the Department of Biology, Ternopil Medical Institute, Candidate of Biological Sciences, Associate Professor, Ivan Ivanovych Yaremenko.

In a short guide about the Educational Museum written as far back as in 1974 Ivan Ivanovych noted: “On the basis of I.P. Pavlov’s study concerning the relationships between the first and second signal systems, the high school didactics substantiated an important role of conscious learning by the university students among other means of teaching process. Amidst the variety of visual aids one of the first places should be occupied by natural objects and their images as they create a complete conception of the nature surrounding us. Due to this fact, museums should be on a special position in the educational process. It is especially valuable and important while learning one of the fundamental sciences – Biology”.

While organizing the exhibition of the Museum including more than 2000 exhibits, Ivan Ivanovych paid special attention to the demonstration of integrity between the organisms and environment, the origin of living matter from non-living one, a great diversity of the plant and animal worlds, modern principles of organism structure, processes of reproduction and development, issues of heredity and variability.

Formal opening ceremony took place in 1967 coinciding with the 10<sup>th</sup> anniversary of foundation of Ternopil Medical Institute.

The Educational Biological Museum is an exhibition project and teaching resource of the Department. The Museum reflects not only the history of develop-

ment of living beings but the history of creation of the Natural History Museum, the history of Department, and the history of the University.

Today, the Educational-Biological Museum occupies the territory of 44 m<sup>2</sup>, including 2155 exhibits, in particular: 345 stuffed animals, 263 wet mounts, 64 animal skeletons, 5 collections of representatives of insects including 500 species, about 260 molds, diagrams and models.

The majority of stuffed animals – representatives of carnivorous, artiodactyles, rodents, pigeon and fowl-like birds – were made by Ivan Ivanovych Yaremenko himself, as he was interested in biological and ecological aspects of the Western Ukrainian fauna.

In 2012–2013 the staff of the Department of Medical Biology on the initiative of its Chief, Professor Larysa Yaroslavivna Fedonyuk, conducted a huge work to reorganize the Educational-Biological Museum and named it after I. I. Yaremenko.

The main purpose of the reorganization was a common idea to prevent the phenomenon when museums become a collection of monotonous unsystematized exhibits, facts and objects. A general aim of simultaneous separation and integration of biological, nature conserving, ecological, evolutionary and medical directions enabled to create a complete conception about our environment and give medical-biological content to living nature.

There are two units in the Educational-Biological Museum:

“Evolution of the Earth, Biosphere and Man” – 2012.

“Wildlife – a Multilevel System of the Earth” – 2013.

Every unit includes a number of exhibitions. In particular, the unit “Evolution of the Earth, Biosphere and Man” includes three exhibitions:

“Chronology of Wildlife Evolution”.

“The Way of Human Evolution by Darwin”.

“Wildlife in Geological Past”.

The unit “Wildlife – a Multilevel System of the Earth” consists of 8 exhibitions:

2.1. “The Prominent Biologist and Founder of the Department – I. I. Yaremenko”.

2.2. “Animal Kingdom in Eukaryote Empire”.

2.3. “Poisonous Animals”.

2.4. “Medical-Biological Aspects of Parasitism”.

2.5. “Representatives of Insects Class”.

2.6. “The Conception of Ecosystem in Modern Ecology”.

2.7. “The Red Book Plants and Animals of Ternopil Region”.

2.8. “Wildlife Preservations of Ternopil Region”.

The exhibition “Chronology of Wildlife Evolution” is presented by a geochronological scale reflecting the main way of the organic world evolution, geologic his-

tory of the Earth, and all the stages of life development.

The exhibition “The Way of Human Evolution by Darwin” deals with the existing evolution theories, the aspects of formation of evolutionary Biology as an independent branch of science. The exhibition presents illustration material about the origin of the man as well as plaster casts of the craniums of fossil men.

The exhibition “Wildlife in Geological Past” presents geological materials, minerals, rare mineral compounds found in different periods of the Earth formation on the territory of Ternopil region. The exhibition contains an interesting information about deleted species of plants and animals existed in Ternopil region dozens and hundreds million of years ago.

The exhibition “The Prominent Biologist and Founder of the Department – I. I. Yaremenko” deals with the life, scientific achievements and labour activity of the first Chief of the Department of Biology – Ivan Ivanovych Yaremenko.

The exhibition “Animal Kingdom in Eukaryote Empire” occupies a central part of the museum. It is contained in 18 glass stands demonstrating a great variety of invertebrate and vertebrate animals. The biggest taxons are contained in separate glass stands with a detailed information concerning the systematization, morphology, ecology and life cycle of animals.

The exhibition “Animal Kingdom in Eukaryote Empire” begins with the representatives of the Sponge phylum. In the glass stands one can see the structure of Coelenterata on the example of Hydra, a fresh water polyp, variety of corals which skeletons differ by their shapes and colour – white, red, blue.

The following glass stand contains the representatives of the Mollusc phylum: gasteropods, bivalve, and cephalopoda.

Wet mounts of leaches are demonstrated separately supplied with the information of their medical application.

One of the next stands contains starfish and seaurchins belonging to the Echinoderms phylum.

A number of stands deals with their representatives of the Arthropoda phylum and demonstrates the following classes of animals: canciform, arachnids, and insects.

Internal structure of canciforms can be studied on the example of a river cray fish presented on wet macrospecimens and educational sets.

Honey combs and vespiary as well as the collection of butterflies attracts everybody’s attention.

The stands with the representatives of the Fish superclass continue the exhibition. Their external and internal structure can be studied on wet specimens, skeletons, diagrams and models of the internal organs.



Fragment of the exhibition  
 “The Prominent Biologist and Founder of the Department – I. I. Yaremenko” (2017)

The stuffed pur dog (spiny dogfish) and ray (guitar fish) are bright exhibits of these stands.

The next stands present the representatives of the Amphibious class.

A variety of the reptiles and peculiarities of their environment can be seen on the following stand where there is a stuffed monitor lizard grey, wet macrospecimens of three-headed python, grass snake, Amur, desert and slender racers, anguine lizard.

Internal structure of the reptiles can be studied on wet specimens of a Caucasus lizard.

The exhibition contains the skeleton and wets specimens of turtles.

One of the most numerous collection of animals is the stands with birds living in different geographic zones of Ukraine.

Special attention is drawn to the stand with bird eggs – from the biggest ostrichone to one of the smallest – quail.

A separate stand contains wet macrospecimens with internal structure of birds.

The next stand presents specimens of homological and analogical organs of the representatives of chordate animals.

The mammals finish the exhibition. Peculiarities of their structure can be studied by means of numerous wet macrospecimens, skeletons and teaching sets.

The history of the exhibition “Poisonous Animals” has very deep roots in the history of the Department, as I. I. Yaremenko paid much attention to the study of poisonous animals. One of his monographs deals with these creatures “Poisonous Animals”.

The exhibition presents wet specimens, stuffed poisonous animals and information stands containing the materials concerning general characteristics of poisonous animals, their classification, way of existence.

A certain stand contains the information dealing with the clinical manifestation of toxic action of poisons, rules to give the first aid in case of bites/stings of poisonous animals as well as peculiarities of snake venom and its use in medicine.

The exhibition “Medical-biological Aspects of Parasitism” is grouped by the principle of interaction of a parasite and host, demonstrates nature-mediated character of parasitic diseases, presenting a clear notion about interaction of the way of living of animals and signs of parasitic diseases, forming clinical thinking of future medical specialists.

The exhibition is located on the wall with the size of 30 m<sup>2</sup>. Special containers considering biological systematization presents tuffed animals of the following classes: Canciforms, Cartilaginous and Osseous Fish,

Birds, Rodents, Lagomorphs, Insectivores, Feral animals, Cloven-Hoofed animals and Primates.

Under these containers with stuffed animals on special places fixed on the stands of the central exhibition there is the information about 13 diseases which causative agents, carriers or hosts are the animals presented.

Systematic position, morphology, the developmental cycle of a causative agent, ways of infection, clinical signs, methods of laboratory diagnostics and prevention are indicated and illustrated on 7 infectious and 6 invasive diseases.

The exhibition “Representatives of Insects Class” is created on the basis of the collection compiled by the Chief of the Department of Normal Physiology, Doctor of Medical Sciences, Professor, Kovanov Kostiantyn Vasyliovych, and granted to the Educational-Biological Museum in 1992. During 2013 204 its exhibits were identified, systematized and signed according to up-to-date requirements. The collection is located and put in special containers ensuring a long storage of insects. 177 representatives of Lepidopterous insects are grouped by the directions “Variability” and “Species Diversity of Butterflies”.

The exhibition “The Conception of Ecosystem in Modern Ecology” is presented by the examples of freshwater and surface ecosystems according to the scheme: producers, consumers of the I, II and III order. The exhibition is organized by the level order with the aim to visualize the chains of supply and rules of ecological pyramid.

The exhibition “The Redbook Plants and Animals of Ternopil Region”, occupying 2 glassstands, presents herbal specimens of 29 rare species of plants collected in the outskirts of Ternopil close to the towns of Kremenets and Husiatyn. It also contains threatened species of animals of Ternopil region with stuffed animals made by the staff of the Department under the leadership of Yaremenko I. I. All the exhibits are signed according to up-to-date systematic conceptions, a short information about ecological and biological features of the species, causes of their decrease in number and factors promoting their revival is contained on the stands.

A real decoration of the exhibition is herbarium specimens of three attended species of plants in Ternopil region granted to the Museum by the staff of the Department of Botany, Volodymyr Hnatiuk Ternopil National Pedagogical University in 2013.

A valuable treasure of the exhibition is “The Red Book of Ukraine” – the principal document summarizing the materials about contemporary state of rare species of plants and animals and those which are under the danger of extinction. On the basis of this nature-conservative document scientific and practical

measures are worked out directed to preserve nature and its rational use. The copies of “The Red Book of Ukraine (Animal World)” and “The Red Book of Ukraine (Plant World)” are granted to the Museum by the authors of this edition – the workers of the Institute of Zoology of the National Academy of Sciences of Ukraine in 2012.

The exhibition “Wildlife Preservations of Ternopil Region” presents regional map-diagram of the territories and objects of an ecological network of Ternopil region possessing a recreation value. Already existing wildlife preservation territories and perspective for them objects are presented there.



A stylized exhibition of birds – representatives of the fauna of the western region of Ukraine is organized on one of the windowsills of the Museum.

The Museum organized a mini-library containing educational, scientific and informative literature.

The exhibits of the Educational-Biological Museum are kept under proper conditions keeping to the rules of fire safety and standards of safety measures.

The Educational-Biological Museum is a place where subject excursions for school pupils are organized, the meeting of the Students’ Scientific Club are held, mini-lectures are conducted, and the meetings with labour veterans of the Department of Medical Biology are held.



General view of the Educational Biological Museum (2018)

**Conclusions.** Educational-Biological Museum is an exhibition project and remains a teaching resource of the Department. It reflects not only the history of the organization and establishment of the Museum,

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Received 29.01.18

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