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«Гомельский государственный университет
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**АНГЛИЙСКИЙ ЯЗЫК ДЛЯ СТУДЕНТОВ
БИОЛОГИЧЕСКОГО ФАКУЛЬТЕТА**

Практическое пособие

для студентов специальности

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Практическое пособие направлено на формирование у студентов коммуникативной компетенции: корректного пользования английским языком как средством устной и письменной коммуникации. Издание содержит тексты и упражнения для проработки профессионально-ориентированного лексического материала и темы для обсуждения.

Адресовано студентам 1 и 2 курсов биологического факультета специальности 1-31 01 01 02 «Биология (научно-педагогическая деятельность)».

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ПРЕДИСЛОВИЕ

Настоящее практическое пособие ставит целью сформировать у студентов навыки говорения по предложенным профессионально-ориентированным темам, привить им навыки самостоятельной работы над языком и рассчитано как на аудиторную, так и внеаудиторную работу студентов.

Издание состоит из пяти разделов и включает аутентичные (адаптированные с учетом реальных знаний студентов) тексты для чтения, посвященные определенной тематике, а также комплекс послетекстовых упражнений, направленных на формирование и развитие у обучающихся коммуникативных навыков в рамках заданной проблематики.

Представленные тексты расширяют активный запас общей и профессиональной лексики, знакомят с грамматическими и синтаксическими структурами, широко используемыми в текстах данной направленности.

Комплексная организация учебного материала и коммуникативная направленность пособия способствуют активизации и совершенствованию навыков практического владения английским языком.

UNIT 1. BIOLOGY AS A SCIENCE

The word biology is derived from the Greek words “bios” meaning “life” and “logos” meaning “study” and is defined as the science of life and living organisms. An organism is a living entity consisting of one cell e. g. bacteria, or several cells e. g. animals, plants and fungi.

Aspects of biological science range from the study of molecular mechanisms in cells, to the classification and behaviour of organisms, how species evolve and interaction between ecosystems.

Biology is important because it helps us understand how living things work and how they function and interact on multiple levels. Advances in biology have helped scientists do things such as develop better medicines and treatments for diseases, understand how a changing environment might affect plants and animals, produce enough food for a growing human population and predict how eating new food or sticking to an exercise regimen might affect our bodies.

Four principles unify modern biology. They are the following:

1. Cell theory is the principle that all living things are made of fundamental units called cells, and all cells come from preexisting cells.
2. Gene theory is the principle that all living things have DNA, molecules that code the structures and functions of cells and get passed to offspring.
3. Homeostasis is the principle that all living things maintain a state of balance that enables organisms to survive in their environment.
4. Evolution is the principle that describes how all living things can change to have traits that enable them to survive better in their environments. These traits result from random mutations in the organism's genes that are “selected” via a process called natural selection. During natural selection, organisms that have traits better-suited for their environment have higher rates of survival, and then pass those traits to their offspring.

Although there are only four unifying principles, biology covers a broad range of topics that are further divided into many disciplines and subdisciplines.

Biology is subdivided into separate branches for convenience of study, though all the subdivisions are interrelated by basic principles. Thus, while it is common to separate the study of plants (botany) from that of animals (zoology), and the study of the structure of organisms

(morphology) from that of function (physiology), all living things share in common certain biological phenomena – for example, various means of reproduction, cell division, and the transmission of genetic material.

Biology is often approached on the basis of levels that deal with fundamental units of life. At the level of molecular biology, for example, life is regarded as a manifestation of chemical and energy transformations that occur among the many chemical constituents that compose an organism. As a result of the development of increasingly powerful and precise laboratory instruments and techniques, it is possible to understand and define with high precision and accuracy not only the ultimate physiochemical organization of the molecules in living matter but also the way living matter reproduces at the molecular level.

Cell biology is the study of cells – the fundamental units of structure and function in living organisms. Population biology deals with groups or populations of organisms that inhabit a given area or region. Included at that level there are studies of the roles that specific kinds of plants and animals play in the complex and self-perpetuating interrelationships that exist between the living and the nonliving world, as well as studies of the built-in controls that maintain those relationships naturally. Those broadly based levels – molecules, cells, whole organisms, and populations – may be further subdivided for study, giving rise to specializations such as morphology, taxonomy, biophysics, biochemistry, genetics, epigenetics, and ecology. A field of biology may be especially concerned with the investigation of one kind of living thing – for example, the study of birds in ornithology, the study of fishes in ichthyology, or the study of microorganisms in microbiology.

Vocabulary notes

to derive from – происходить от

a living entity – живое существо

to evolve – развиваться

growing – растущий

sticking – соблюдение

cell theory – клеточная теория

gene theory – генетическая теория

an offspring – отпрыск; детеныш

homeostasis – гомеостаз

traits – признаки; черты

epigenetics – эпигенетика
natural selection – естественный отбор
building blocks – структурные (составные) элементы
living things – живые существа
manifestation – проявление
constituent – компонент; составная часть
ultimate – основной; элементарный
fundamental units – основные единицы
population biology – популяционная биология
self-perpetuating – нескончаемый; продолжающийся бесконечно
taxonomy – таксономия; систематика

Ex. 1. Match the synonyms.

study classification multiple to affect modern offspring broad important medicine fundamental	remedy to influence principal research basic taxonomy numerous up-to-date children wide
--	--

Ex. 2. Match the antonyms.

life one better modern to adapt to unity to maintain random natural broad	ancient regular narrow to separate artificial to break off to misfit worse death many
--	--

Ex. 3. Guess who and what this is.

A disease, evolution, a science, an ecosystem, a gene, a species, a cell, a scientist, epigenetics, precision.

1. The intellectual and practical activity encompassing the systematic study of the structure and behaviour of the physical and natural world through observation and experiment.
2. The smallest structural and functional unit of an organism.
3. A group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding.
4. A biological community of interacting organisms and their physical environment.
5. A person who is studying or has expert knowledge of one or more of the natural or physical sciences.
6. A disorder of structure or function in a human, animal or plant that produces specific symptoms.
7. The process by which different kinds of living organisms are believed to have developed from earlier forms during the history of the earth.
8. The quality, condition, or fact of being exact and accurate.
9. The study of changes in organisms caused by modification of gene expression rather than alteration of the genetic code itself.
10. A unity of heredity which is transferred from a parent to offspring and is held to determine some characteristic of the offspring.

Ex. 4. Give definitions to the following branches of biology and principles.

Botany, zoology, physiology, morphology, taxonomy, biophysics, genetics, ecology, homeostasis.

Ex. 5. Translate into English.

Учение, живое существо, грибы, клетки, виды, взаимодействовать, меняющаяся среда, лекарства, объединять, клеточная теория, генетическая теория, выжить, существовавший ранее, отдельные разделы, деление клетки, передача генетического материала, преобразование энергии, с высокой точностью, живая материя, на молекулярном уровне, иметь дело, популяция, генетика, биофизика, ихтиология.

Ex. 6. Say whether the statements are true or false according to the text. If the statement is false, be ready to correct it.

1. Biology is the science of life and non-living organisms.
2. Biology is vital because it helps us understand how living things work.
3. Gene theory is the principle that all living things are made of fundamental units called cells.
4. Evolution is the principle that all living things maintain a state of balance that enables organisms to survive in their environment.
5. Biology is separate into separate branches for convenience of study.
6. The study of plants is called physiology.
7. The study of the structure of organisms is called botany.
8. Life is regarded as a manifestation of chemical and energy transformations at the level of population biology.
9. Cell biology studies molecules.
10. The study of fishes is called ornithology.

Ex. 7. Answer the following questions.

1. What is biology?
2. What words is the word "biology" derived from?
3. What is an organism?
4. Why is biology important?
5. What principles of modern biology do you know?
6. What is homeostasis?
7. What is cell theory?
8. What are cells?
9. What does microbiology study?
10. What does morphology study?

Ex. 9. Retell the text "Biology as a Science".

UNIT 2. HISTORY OF BIOLOGY

Biology is the study of life and living organisms. For as long as people have looked at the world around them, people have studied biology. Even in the days before recorded history, people knew and passed on information about plants and animals.

Modern biology really began in the 17th century. At that time, Anton van Leeuwenhoek, in Holland, invented the microscope and William Harvey, in England, described the circulation of blood. The microscope allowed scientists to discover bacteria, leading to an understanding of the causes of disease, while new knowledge about how the human body works allowed others to find more effective ways of treating illnesses. All this new knowledge needed to be put into order and in the 18th century the Swedish scientist Carl Linnaeus classified all living things into the biological families we know and use today.

In the middle of the 19th century, unnoticed by anyone else, the Austrian monk Gregor Mendel, created his Laws of Inheritance, beginning the study of genetics that is such an important part of biology today. At the same time, while traveling around the world, Charles Darwin was formulating the central principle of modern biology – natural selection as the bases of evolution.

It is hard to believe, but the nature of viruses became apparent only within the last half of the 19th century and the first step on this path of discovery was taken by the Russian botanist Dmitry Ivanovsky in 1892.

In the 20th century biologists began to recognize how plants and animals live and pass on their genetically coded information to the next generation. Since then, partly because of developments in computer technology, there have been great advances in the field of biology; it is an area of ever-growing knowledge.

During the past few hundred years biology has changed from concentrating on the structure of living organisms to looking more at how they work or function. Over this time biologists have discovered much about health and disease, about the genes which control the activities of our bodies and how humans can control the lives of other organisms. We need to understand how our activities affect the environment, how humans can take responsibility for their own health and welfare and how we must be careful to make appropriate rules for the use of our genetic information.

Nowadays biologists are making fantastic discoveries which will affect all our lives. These discoveries have given us the power to shape our own evolution and to determine the type of world we will live in. Recent advances, especially in genetic engineering, have dramatically affected agriculture, medicine, veterinary science, and industry, and our world view has been revolutionized by modern developments in ecology. There has never been a more exciting nor a more important time to study biology.

Vocabulary notes

recorded history – летописная история; документированная история

circulation of blood – кровообращение

to treat – лечить

to put into order – привести в порядок

a biological family – биологическое семейство

a monk – монах

laws of inheritance – законы наследственности

apparent – явный

to recognize – выяснять; узнавать

genetically coded information – генетически закодированная информация

an advance – успех; достижение

to take responsibility – брать ответственность на себя

welfare – благосостояние

to shape – создавать; определять

genetic engineering – генная инженерия

a world view – мировоззрение

Ex. 1. Give synonyms to the following words from the text.

To start, to create, a root, a disease, main, proficiency, well-being, people, attentive, production, inspiring.

Ex. 2. Give antonyms to the following words from the text.

To finish, to prevent, ineffective, old, unclear, present, illness, inattentive, former, boring.

Ex. 3. Match the following word with their definitions.

- | | |
|-----------------|--|
| 1. A plant | a) the physical structure including the bones, flesh and organs of a person or an animal; |
| 2. An animal | b) the branch of biology that deals with the relations of organisms to one another and to their physical surroundings; |
| 3. A microscope | c) to give medical care or attention to somebody; |
| 4. Blood | d) an act of finding out or learning of for the first time; |
| 5. To treat | e) a living organism presented by trees, shrubs, herbs, etc.; |
| 6. A virus | f) a living organism that feeds on organic matter, typically having specialized sense organs and nervous system; |
| 7. A body | g) an optical instrument used for viewing very small objects; |
| 8. A life | h) an infective agent that typically consists of a nucleic acid molecule in a protein coat; |
| 9. A discovery | i) the red liquid that circulates in the arteries and veins of humans and other vertebrate animals carrying oxygen to and carbon dioxide from the tissues of the body; |
| 10. Ecology | j) the existence of an individual human being or an animal. |

Ex. 4. Insert the prepositions according to the text.

1. Even... the days... recorded history, people knew and passed... information... plants and animals.

2. ...that time, Anton van Leeuwenhoek, ...Holland, invented the microscope.

3. The microscope allowed scientists... discover bacteria, leading... an understanding... the causes... disease.

4. ...the middle... the 19th century, unnoticed... anyone else, the Austrian monk Gregor Mendel, created his Laws... Inheritance.

5. ...traveling... the world, Charles Darwin was formulating the central principle... modern biology.

6. The nature... viruses became apparent only... the last half... the 19th century.

7. ...the 20th century biologists began... recognize how plants and animals live and pass... their genetically coded information... the next generation.

8. ...the past few hundred years biology has changed... concentrating... the structure of living organisms... looking more... how they work or function.

9. We need... understand how our activities affect the environment, how humans can take responsibility, their own health and welfare.

10. These discoveries have given us the power... shape our own evolution and... determine the type... world we will live... .

Ex. 5. Translate the following words and word combinations from Russian into English according to the text.

1. Biology is (учение о жизни и живых организмах).

2. At that time, William Harvey, in England, (описал кровообращение).

3. In the 18th century the Swedish scientist Carl Linnaeus (подразделил все живые организмы на биологические семейства).

4. In the middle of the 19th century, unnoticed by anyone else, the Austrian monk Gregor Mendel, (разработал Законы Наследственности).

5. (Сущность вирусов) became apparent only within the last half of the 19th century.

6. In the 20th century biologists began to recognize how plants and animals (живут и передают генетически закодированную информацию следующему поколению).

7. During the past few hundred years biology has changed (от сосредоточивания на строении живых организмов) to looking more at (как они работают и функционируют).

8. Nowadays biologists are making fantastic discoveries (которые окажут влияние на наши жизни).

9. Recent advances, (особенно в генной инженерии), have dramatically affected (сельское хозяйство, медицину, ветеринарную науку и промышленность).

10. (Наше мировоззрение) has been revolutionized by (современными открытиями в области экологии).

Ex. 6. Say whether the statements are true or false according to the text. If the statement is false, be ready to correct it.

1. For as long as people have looked at the environment around them, people have studied engineering.

2. Modern biology really began in the 13th century.

3. The microscope allowed scientists to discover bacteria.

4. Charles Darwin classified all living things into the biological families.

5. William Harvey created Laws of Inheritance.

6. Dmitry Ivanovsky invented the microscope.

7. We need to understand how our activities affect the environment.

8. In the 15th century biologists began to recognize how plants and animals live and pass on their genetically coded information to the next generation.

9. People's world view has been revolutionized by modern developments in ornithology.

10. There has never been a more horrifying nor a more insignificant time to study.

Ex. 7. Answer the following questions.

1. What is the definition of biology?

2. When did modern biology begin?

3. What scientist invented microscope?

4. What scientist described the blood circulation?

5. What scientist classified all living things into families?

6. When did Gregor Mendel create his Laws of Inheritance?

7. What scientist formulated the central principle of modern biology?

8. When did the nature of viruses become apparent?

9. What changes occurred in biology during the past few hundred years?

10. What sciences have recent advances affected?

Ex. 8. Retell the text “History of Biology”.

РЕПОЗИТОРИЙ ГГУ ИМЕНИ Ф. СКОРИНЫ

UNIT 3. PROMINENT SCIENTISTS IN BIOLOGY

A biologist is a scientist who conducts research in biology. Biologists are interested in studying life on Earth, whether it is an individual cell, a multicellular organism, or a community of interacting populations. They usually specialize in a particular branch (e. g., molecular biology, zoology, and evolutionary biology) of biology and have a specific research focus (e. g., studying malaria or cancer).

Biologists who are involved in basic research have the aim of advancing knowledge about the natural world. They conduct their research using the scientific method, which is an empirical method for testing hypotheses. Their discoveries may have applications for some specific purpose such as in biotechnology, which has the goal of developing medically useful products for humans.

In modern times, most biologists have one or more academic degrees such as a bachelor's degree plus an advanced degree like a master's degree or a doctorate. Like other scientists, biologists can be found working in different sectors of the economy such as in academia, nonprofits, private industry, or government.

Francesco Redi

Francesco Redi, the founder of biology, is recognized to be one of the greatest biologists of all time. He is referred to as the “founder of experimental biology”, and as the “father of modern parasitology”. He was the first person who demonstrated that the presence of maggots in putrefying meat does not result from spontaneous generation but from eggs laid on the meat by flies.

Charles Darwin

The most renowned biologist around the world, Charles Darwin is famous for his “Theory of Evolution”. For this, he is also referred to as the father of evolution. Born in 1809, this British scientist attended the University of Edinburgh where he studied medicine. He also proposed other concepts like “all living beings coming from one single source”. The famous book “On the Origin of Species” is authored by Charles which is a compilation of his researches and observations. A small chain of islands in South America, The Galapagos Islands is the place where Darwin observed and realized a wide range of species all displaying distinct characteristics. He then worked on almost fifteen different species of birds and animals.

Gregor Mendel

Gregor Mendel is known as the father of “Modern Genetics”. His research mainly includes finding those specific dominant traits in the same species, which he studied by analyzing pea plants. This conclusion is now referred to as the “Mendelian Inheritance”, which determined that some specific traits are dominant over the other regressive ones, which majorly influence the genetic makeup of an organism. After the publication of his “Experiments on Plant Hybridization”, Gregor paved the way for others to follow. Gregor Mendel laid the foundation for further studies on evolution and genetics.

Andreas Vesalius

Hailing from Brussels in the Netherlands, Andreas Vesalius is an anatomist and physician known around the world for some of his great discoveries. Born in the year 1514, he is one of the greatest known biologists of all time! He wrote a famous book on human anatomy named “On the Fabric of the Human Body”. Due to this publication, Andreas was awarded the title of the “Father of Modern Human Anatomy”. He even served Emperor Charles V as his royal physician. Later, Vesalius became a professor at the University of Padua, Italy.

Louis Pasteur

Louis Pasteur was the one who invented the concept of “Pasteurization”. Born in France in 1822, this internationally renowned chemist and biologist is one of the creators of Medical Microbiology. He even made groundbreaking discoveries in recognizing and preventing certain diseases. Louis is majorly recognized around the world for inventing the pasteurization technique of treating milk and other liquids. His germ theory which he deduced after performing fermentation experiments, has left a profound impact on modern science today. It is due to Pasteur’s findings that the shelf life of food items has been extended, leading to better food safety.

Carl Linnaeus

Carl Linnaeus was a famous zoologist and botanist who came from Sweden. He was born in 1707 and is known around the world for the identification, organization, and naming of living organisms based on certain characteristics. His studies are vastly used today. Also referred to as the father of modern ecology and modern taxonomy, Linnaeus proved that even distinct organisms are some way or the other related. He classified plants and animals into classes, kingdoms, genus, orders,

and species. Thus the Linnaean taxonomy was a cornerstone for other biologists who further studied this field.

Alexander Von Humboldt

Born in 1769, Friedrich Wilhelm Heinrich Alexander Von Humboldt was a naturalist and an explorer. This German biologist gave us the idea that the continents of South America, Africa, and other states along the Atlantic Ocean were once a consolidated piece of land. Humboldt is the pioneer in the field of biogeography and is globally famous for Humboldtian Science. Alexander combined the various branches of geology, biology, and meteorology to come to this conclusion. He is also the first person to introduce the role of humans in climate change. Thus, Humboldt majorly influenced the knowledge with which we are living today.

Antonie Van Leeuwenhoek

Antoine Van Leeuwenhoek, born in 1632 in the Netherlands is recognized today as the Father of Microbiology. It was due to his curiosity in lens making that he was the first and the foremost human to observe single-cell organisms. While examining the pond water, he found tiny organisms that inhabited it. This famous microscopist and biologist has majorly impacted science and technology since this discovery. Antonie Van Leeuwenhoek was a businessman and a self-taught scientist whose interest in science led to the discovery of microbes or micro-organisms. He developed his own microscopes and had built around twenty-five of them during his lifetime.

Joseph Lister

Famous for utilizing antiseptics in cleaning and sterilizing wounds, Joseph Lister is believed to have pioneered antiseptic surgery. He was born in the city of Essex, Britain in 1827 and studied at the University of London, University of Edinburgh, and also at the University of Glasgow. A surgeon by profession, Joseph Lister was the first one to observe the link between micro-organisms and diseases. Before this observation, doctors and surgeons performed surgeries without actually washing their hands or sterilizing the instruments, which lead to ample infections mounting up fatalities. Lister created the Antiseptic Carbolic Acid for sanitization purposes, which was to be used before performing any surgeries.

Vocabulary notes

to conduct research – проводить исследования

a multicellular organism – многоклеточный организм

a community – сообщество; ценоз
interacting – взаимодействующий
a branch – отрасль
a research focus – фокус исследования
a hypothesis – гипотеза; предположение
a bachelor's degree – степень бакалавра
a master's degree – степень магистра
a doctorate – степень доктора
a maggot – личинка
renowned – прославленный; знаменитый
a distinct characteristic – определенная особенность
a single-cell organism – одноклеточный организм
utilizing – использование
an ample infection – обширное заражение
a dominant trait – доминирующий признак
a pea – горошина
to lay foundation – заложить основу
a physician – врач; доктор
fabric – ткань; материя
groundbreaking – поворотный; прогрессивный
germ theory – микробная теория
to deduce – сделать вывод
a profound impact – сильное воздействие
a shelf life – срок годности
an order – подкласс
a cornerstone – основа; ключевой элемент
foremost – основной; первейший
tiny – крошечный
a wound – рана
a carbolic acid – карболовая кислота

Ex. 1. Match the synonyms.

an aim
 a physician
 a founder
 a maggot
 renowned
 a concept
 dominant

interest
 ruling
 a discovery
 a notion
 to grant
 a larva
 famous

to award
a finding
curiosity

a creator
a purpose
a doctor

Ex. 2. Match the antonyms.

private
first
small
mainly
groundbreaking
to deduce
various
single-cell
famous
spontaneous

planned
partially
to state
same
multicellular
unknown
conventional
last
public
large

Ex. 3. Guess who and what this is.

Empirical, parasitology, hybridization, anatomy, microbiology, genus, biogeography, a microbe, a wound, a physician.

1. An injury to living tissue caused by a cut, blow, or other impact, typically one in which the skin is cut or broken.
2. The branch of science that deals with microorganisms.
3. Based on, concerned with, or verifiable by observation or experience rather than theory or pure logic.
4. A person qualified to practise medicine, especially one who specializes in diagnosis and medical treatment as distinct from surgery.
5. The process of an animal or plant breeding with an individual of another species or variety.
6. The branch of science concerned with the bodily structure of humans, animals, and other living organisms, especially as revealed by dissection and the separation of parts.
7. A principal taxonomic category that ranks above species and below family.
8. The branch of biology or medicine concerned with the study of parasitic organisms.

9. The branch of biology that deals with the geographical distribution of plants and animals.

10. A microorganism, especially a bacterium causing disease or fermentation.

Ex. 4. Choose the right word.

1. A biologist is a *teacher/scientist* who conducts research in biology.

2. Biologists who are involved in basic research have the aim of advancing knowledge about the *natural/artificial* world.

3. Francesco Redi, the founder of *genetics/biology*, is recognized to be one of the greatest biologists of all time.

4. Charles Darwin was the *American/British* scientist.

5. Gregor Mendel is known as the father of *Modern/Ancient* Genetics.

6. *Andreas Vesalius/Francesco Redi* wrote a famous book about human anatomy.

7. *Louis Pasteur/Carl Linnaeus* invented the concept of pasteurization.

8. *Gregor Mendel/Carl Linnaeus* is the father of modern ecology.

9. Alexander Von Humboldt is the *first/last* person to introduce the role of *humans/planets* in climate change.

10. *Joseph Lister/Antonie Van Leeuwenhoek* is recognized as the father of microbiology.

Ex. 5. Translate into English.

Проводить исследование, биолог, ученый, многоклеточный организм, сообщество взаимодействующих популяций, молекулярная биология, предположение, степень бакалавра, степень магистра, основатель, личинка, прославленный, живое существо, наследственность, генетический состав, доктор, служить, изобретать, поворотное открытие, пастеризация, срок годности, класс, царство, род, отряд, вид, естествоиспытатель, биогеография, любопытство, одноклеточный организм, крошечный, ученый-самоучка, использование антисептика, хирургия, обширное заражение.

Ex. 6. Say whether the statements are true or false according to the text. If the statement is false, be ready to correct it.

1. A biologist is a scientist who conducts research in chemistry.
2. Biologists who are involved in basic research have the aim of advancing knowledge about the natural world.
3. Charles Darwin, the founder of biology, is recognized to be one of the greatest biologists of all time.
4. Dmitry Ivanovsky is regarded as the father of modern parasitology.
5. Charles Darwin is famous for his “Theory of Evolution”.
6. Antonie Van Leewenhoek is believed to have pioneered antiseptic surgery.
7. Joseph Lister is the pioneer in the field of biogeography.
8. Gregor Mendel wrote a famous book “On the Fabric of the Human Body”.
9. Carl Linnaeus published “Experiments on Plant Hybridization”.
10. Francesco Redi invented the concept of “pasteurization”.

Ex. 7. Answer the following questions.

What scientist...

- 1) is the founder of biology?
- 2) is famous for his “Theory of Evolution”?
- 3) is known as the father of “Modern Genetics”?
- 4) wrote the book “On the Fabric of the Human Body”?
- 5) is the father of modern parasitology?
- 6) is the author of the book “On the Origin of Species”?
- 7) published “Experiments of Plant Hybridization”?
- 8) is the father of Modern Human Anatomy?
- 9) invented the concept of “pasteurization”?
- 10) is known for the identification, organization, and naming of living organisms based on certain characteristics?
- 11) is the first person to introduce the role of humans in climate change?
- 12) is the father of Microbiology?
- 13) is the first one to observe link between microorganisms and diseases?
- 14) is one of the creators of Medical Microbiology?
- 15) is referred to as the father of modern ecology and modern taxonomy?
- 16) is the pioneer in the field of biogeography?
- 17) discovered microbes and microorganisms?

18) created the Antiseptic Carbolic Acid?

Ex. 8. Present the biography and discoveries of one of the prominent scientists.

Ex. 9. Watch the video “Learn English Via listening. Pre-Intermediate. – Lesson 1. Louis Pasteur”, fill in the words into the text, translate the text and answer the questions.

Louis Pasteur

Louis Pasteur was one of the greatest... of all time. Pasteur made very important discoveries in... and the techniques he developed helped greatly develop medical science and the agricultural and food industries.

Pasteur was born in a... town in France during the Year 1822. When he was a young man Pasteur studied... at a university in the city of Paris. He soon did some excellent work in chemistry and later began his famous study of germs. Pasteur was one of the first scientists to understand that many... could be caused by extremely small invisible organisms. Only a few other scientists had believed this before... . He advised doctors to wash their hands thoroughly before treating patients. Pasteur also demonstrated that life forms did not arise spontaneously.

His... confirmed the idea developed by previous scientists that a... would not appear unless other individuals of its kind were present.

One of Pasteur's most important contributions was a technique that has been named after him... . Pasteurization kills the germs that are found in drinks such as milk or beer. Because of Pasteur's technique people are no longer infected with diseases by drinking these liquids.

Just as important as pasteurization was a technique called... . Pasteur found that a person or animal could be made safe, or immune, from a disease by... the person with some weakened germs that cause the disease. The body can resist the disease after being immunized in this way. Today many diseases are... by the use of this technique.

Pasteur's discoveries also helped to save people who had already been infected with diseases. One such disease is... . Rabies is a disease that sometimes occur in animals. This disease usually kills the animal, but before dying, the... becomes very aggressive, and may spread the

disease by biting a person or another animal. One day, the parents of a young boy came to Pasteur, their son had been bitten by a dog that had the rabies disease. The... knew that their son would die from the disease, unless something could be done to save him. Pasteur agreed to help the boy and the immunization technique... the boy's life.

Pasteur... in 1895. He was greatly admired around the world for his... which have helped all of mankind. Today Pasteur is considered to be the greatest figure in the history of... .

Questions

1. Which field did Pasteur make important discoveries?
2. Where was Pasteur born?
3. What did Pasteur advise doctors?
4. What Pasteur's contribution was one of the most important ones?
5. Which techniques was the important discovery of Pasteur?
6. What Pasteur's discoveries helped to save people?
7. What is rabies?
8. How did Pasteur help the young boy and his parents?
9. When did he pass away?

UNIT 4. SCIENTIFIC RESEARCH IN BELARUS

Scientific research is a systematic way of gathering data and harnessing curiosity. This research provides scientific information and theories for the explanation of the nature and the properties of the world. It makes practical applications possible. Scientific research is funded by public authorities, by charitable organizations and by private groups, including many companies. Scientific research can be subdivided into different classifications according to their academic and application disciplines. Scientific research is a widely used criterion for judging the standing of an academic institution, but some argue that such is an inaccurate assessment of the institution, because the quality of research does not tell about the quality of teaching (these do not necessarily correlate).

Modern Belarusian science is a powerful intellectual industry, developing with an eye on practice and application of research results to all the spheres of national economy. Recommendations of scientists formed the basis of important national programs on nuclear power engineering, outer space, resource-saving technologies, rural and small town development in Belarus.

Belarus is one of the scientific leaders with a high level of scientific and technological development. In recent years, it has managed to preserve and strengthen the scientific potential of the country.

Belarusian science is a system of interacting organizations that are engaged in research and development across a wide range of areas with a view to obtaining and applying the newest knowledge and meeting the advanced frontier of world scientific and technological progress. Key scientific sectors are represented by academic, university, industry and corporate science.

The National Academy of Sciences of Belarus organizes, coordinates and carries out fundamental and applied research across major areas of natural, engineering and human sciences. It is the head organization providing scientific and methodological support for informatization. The areas of research are determined by the country's social and economic needs and scientific, technological and innovation priorities. The National Academy of Sciences functions as a large research and production

corporation integrating program, project and cluster forms of scientific institutions, R&D centers, and manufacturing capacities.

I am a student of Francisk Skorina Gomel State University. I study at the faculty of biology. The faculty consists of four departments: a department of botany and plant physiology; a department of zoology, physiology, and genetics; a department of chemistry and a department of forestry disciplines.

Currently, the dean of the faculty of biology is Averin Viktor Sergeevich, Doctor of Biological Sciences, Professor. The main scientific activities at the faculty are aimed at developing efficient and economically viable ways for the sustainable development of contaminated areas, improving measures to protect the population in case of accidents at nuclear power plants and long-term residence in the contaminated territory.

The faculty is a teaching and research center. Its structure includes 2 laboratories, the biological station “Chonki”, 5 students’ research laboratories, a zoological museum with an extensive collection and a unique botanical herbarium.

Vocabulary notes

scientific research – научное исследование

gathering data – сбор данных

to harness curiosity – пробудить любопытство

a charitable organization – благотворительная организация

standing – положение; ранг

an assessment – суждение; оценка

powerful – мощный; сильный

intellectual – интеллектуальный; культурный

industry – индустрия, промышленность

viable – целесообразный

long-term residence – долгосрочное проживание

nuclear power engineering – ядерная (атомная) энергетика

outer space – космическое пространство

a resource-saving technology – ресурсосберегающая

технология

to preserve – сберечь

newest – новейший

an advanced frontier – передовой рубеж

a scientific sector – научный сектор

an engineering science – техническая наука

R&D center – центр исследований и разработок

a sustainable development – устойчивое развитие

Ex. 1. Give synonyms from the text to the following words.

To collect, data, position, use, atomic, to save, latest, main, to conduct, a task.

Ex. 2. Give antonyms from the text to the following words.

Theoretical, practical, public, local, inward, urban, a hindrance, conservation, minor, to worsen.

Ex. 3. Match the following notions with their definitions.

- | | |
|------------------|--|
| 1. Application | a) a systematically arranged collection of dried plants; |
| 2. An assessment | b) the state of a country or region in terms of the production and consumption of goods and services and the supply of money; |
| 3. Teaching | c) a society or institution of distinguished scholars and artists or scientists that aims to promote and maintain standards in its particular field; |
| 4. Economy | d) the action of putting something into operation; |
| 5. Rural | e) a room or building equipped for scientific experiments, research, or teaching; |
| 6. Progress | f) a process in which one individual teaches or instruct another individual; |
| 7. An academy | g) relating to, or characteristic of the countryside rather than the town; |
| 8. A faculty | h) development towards an improved or more advanced condition; |

- | | |
|-----------------|---|
| 9. A laboratory | i) the act of judging or deciding the amount, value, quality, or importance of something; |
| 10. A herbarium | j) a group of university departments concerned with a major division of knowledge. |

Ex. 4. Insert the prepositions according to the text.

1. Scientific research provides scientific information and theories... the explanation... the nature and the properties... the world.

2. Scientific research can be subdivided... different classifications according... their academic and application disciplines.

3. Modern Belarusian science develops... an eye... practice and application of research results... all the spheres of national economy.

4. Belarus is one of the scientific leaders... a high level... scientific and technological development.

5. The National Academy of Sciences of Belarus organizes, coordinates and carries... fundamental and applied research... major areas of natural, engineering and human sciences.

6. I study... the faculty of biology.

7. The main scientific activities... the faculty are aimed... developing efficient and economically viable ways... the sustainable development of contaminated areas, improving measures... protect the population... case of accidents... nuclear power plants and long-term residence... the contaminated territory.

8. Scientific research is funded... public authorities, ...charitable organizations and... private groups.

9. The faculty... biology consists... four departments.

10. The National Academy of Sciences is the head organization providing scientific and methodological support... informatization.

Ex. 5. Translate the following words and words combinations from Russian into English according to the text.

1. (Научное исследование) is a systematic way of (сбора данных) and (пробуждения любопытства).

2. Scientific research (можно подразделить на) different classifications (согласно учебным и прикладным дисциплинам).

3. (Качество исследования) does not tell about (качестве преподавания).

4. (Современная белорусская наука) is (мощная интеллектуальная индустрия).

5. Belarus is one of the (лидеров в области науки) with a high (уровнем научного и технического развития).

6. Belarusian science is a (система взаимодействующих организаций).

7. (Национальная Академия Наук) of Belarus organizes, coordinates and (проводит фундаментальные и прикладные исследования) across major areas of (естественных, технических и гуманитарных наук).

8. The faculty of biology consists of four (кафедр): (кафедры ботаники и физиологии растений; кафедры зоологии, физиологии и генетики; кафедры химии и кафедры лесохозяйственных дисциплин).

9. Currently, (декан биологического факультета) is Averin Viktor Sergeevich.

10. The faculty structure includes 2 (лаборатории), the biological station "Chonki", (5 студенческих научно-исследовательских лабораторий, зоологический музей) with an extensive collection and (уникальный ботанический гербарий).

Ex. 6. Say whether the statements are true or false according to the text. If the statement is false, be ready to correct it.

1. Scientific research provides practical information and stories for the explanation of the environment and the properties of the world.

2. Scientific research is funded by state authorities, by public organizations and by non-private groups.

3. Scientific research is a widely used criterion for judging the standing of an academic institution.

4. Modern Belarusian science is a public practical industry.

5. Our country is one of the scientific leaders with a high level of scientific and technological development.

6. Key Belarusian industrial sectors are represented by academic, university, industry, and corporate science.

7. Francisk Skorina Gomel State University organizes, coordinates and carries out fundamental and applied research across major areas of natural, engineering and human sciences.

8. The faculty of biology consists of 3 departments.

9. The main scientific activities at the faculty of biology are aimed at developing efficient and economically viable ways for the sustainable development of contaminated areas.

10. The faculty of biology is a practical and intellectual center.

РЕПОЗИТОРИЙ ГГУ ИМЕНИ Ф. СКОРИНЫ

UNIT 5. BIOLOGY EDUCATION

Biology is a branch of life science that focuses on the study of life and living organisms of all types. It is concerned with everything involving a life form – no matter how small or large – including its structure, behavior, origin, growth, and reproduction. Biologists study the distribution, evolution, function, growth, origin, structure, and taxonomy of species. We're able to understand how our bodies work, how organisms work, how our cells work. It's the science that tells us everything about what we are.

As you may have guessed, biology is a large area of study. It's so broad that there are entire branches of science within biology. Fields like genetics, agriculture, ecology, virology, and even paleontology are all under this umbrella because they all revolve around the same basic principles of biology.

Why Is Biology Important? By studying biology, we're able to learn more about ourselves, plants, animals, and much of the world around us. We're also able to learn about diseases, treatments, and vaccines. With advancements in biological sciences, we're living life much more comfortably than people a hundred years ago.

We're able to tap into our knowledge about different plants and animals we use for food. With biology, we can learn more about the metabolic processes that help us get energy from our food. Biology helps us understand plants to be used for medicinal purposes and how our bodies react to them.

We're able to learn about human behavior and how we react to each other. With ecology, we can study how we interact with the non-living world around us. With ecology, we're constantly learning how animals use various materials around them and even how they adapt to a changing environment.

As you can imagine, in order to make vital biological discoveries, biologists need to study matter from animals, humans, and other living organisms both living and deceased. In order for biologists to ensure that their results are accurate and reproducible, they need to ensure their biological samples are in pristine condition. Biological storage facilities ensure biological samples remain in workable condition by using cryogenics and biorepository storage.

Researchers from universities, hospitals, and other interested parties around the world study millions of samples over a time frame of many

years – decades in some studies. They pore over the results and continue to repeat their tests hoping to find the key to solving another mystery of the human body, whether that be a cure for cancer or lengthening our lives.

Without a doubt, biology is the cornerstone of life on this planet and even beyond. Without dedicated biologists from all branches, life we enjoy it would not exist. People are living longer, healthier, and doing more than was possible even just a few years ago. This would not have been possible without biology.

Ex. 1. Give synonyms from the text to the following words.

Branch, concerned with, broad, entire, to revolve, advancement, purpose, to interact, to ensure, to remain, cornerstone, dedicated.

Ex. 2. Fill in the right words into the sentences.

Biology is a... of life science that focuses on the study of life and living... of all types.

We're able to understand how our bodies work, how... work, how our... work.

It's so... that there are... branches of science within biology.

We're also able to learn about... , treatments, and... .

With biology, we can learn more about the... processes that help us get... from our food.

With ecology, we're... learning how animals use various materials around them and even how they... to a changing environment.

In order to make... biological discoveries, biologists need to study matter from animals, humans, and other living organisms both living and... .

They... over the results and continue to repeat their tests hoping to find the key to... another mystery of the human body.

People are living longer, ... , and doing more than was... even just a few years ago.

Without a doubt, biology is the cornerstone of life on this planet and even beyond.

Ex. 3. Insert the prepositions according to the text.

1. Biology focuses... the study of life and living organisms of all types.

2. It is concerned... everything involving a life form.
3. It's the science that tells us everything... what we are.
4. It's so broad that there are entire branches of science... biology.
5. We're also able to learn... diseases, treatments, and vaccines.
6. We're able to tap... our knowledge about different plants and animals we use... food.
7. With ecology, we can study how we interact... the non-living world around us.
8. ...order to make vital biological discoveries, biologists need to study matter from all living organisms.
9. Biological storage facilities ensure biological samples remain... workable condition... using cryogenics and biorepository storage.
10. ...a doubt, biology is the cornerstone of life... this planet and even beyond.

Ex. 4. Say whether the statements are true or false according to the text. If the statement is false, be ready to correct it.

1. Biology is concerned with animals only.
2. Biologists study the distribution, evolution, function, growth, origin, structure, and taxonomy of species.
3. Biology is a large area of study.
4. Fields like genetics, agriculture, ecology, virology, paleontology all revolve around the same basic principles of biology.
5. With biology, we can't learn more about the metabolic processes that help us get energy from our food.
6. We doubt that biology is the cornerstone of life on this planet and even beyond.
7. Without dedicated biologists from all branches, life we enjoy it would not exist.
8. Researchers around the world study millions of samples over a time frame of a couple of years.
9. With advancements in biological sciences, we're living life much more comfortably than people a hundred years ago.
10. Scientists continue to repeat their tests hoping to find a cure for cancer.

Ex. 5. Speak on the topic “Biology Education”.

РЕПОЗИТОРИЙ ГГУ ИМЕНИ Ф. СКОРИНЫ

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