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**АНГЛИЙСКИЙ ЯЗЫК
ENGLISH FOR ANIMAL SCIENCE**

СБОРНИК УЧЕБНЫХ ТЕКСТОВ

Учебно-методическое пособие для студентов по специальностям:

1 – 74 03 02 «Ветеринарная медицина», 1 – 74 03 04 «Ветеринарная санитария и
экспертиза», 1 – 74 03 05 «Ветеринарная фармация», 1 – 74 03 01 «Зоотехния»

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ПРЕДИСЛОВИЕ

Настоящее пособие является одним из компонентов учебно-методического комплекса по дисциплине иностранный язык (английский) для студентов специальностей 1 – 74 03 02 «Ветеринарная медицина», 1 – 74 03 04 «Ветеринарная санитария и экспертиза», 1 – 74 03 05 «Ветеринарная фармация», 1 – 74 03 01 «Зоотехния». Данный сборник учебных текстов является связующим звеном, позволяющим осуществить плавный переход от модуля “General English” к модулю “English for Special Purposes”. Учебные тексты, содержащиеся в данном пособии, тематически связаны с содержанием учебного издания «Английский язык/English», грамматический материал соответствует программным требованиям для студентов неязыковых факультетов, структурно связан с материалами грамматического справочника, включенного в учебно-методический комплекс. Содержание учебных текстов позволяет расширить профессионально ориентированный лексический запас студентов, совершенствовать навыки различных видов чтения, перевода англоязычных текстов, способствует формированию языковых и профессиональных компетенций студентов. Тексты данного пособия предваряют переход к работе с оригинальными текстами более узкой специализации. Пособие может быть рекомендовано для работы в аудитории, а также для самостоятельной внеаудиторной работы студентов, магистрантов, соискателей.

UNIT I

LIVING AND NONLIVING MATTER

Vocabulary

1. to distinguish – различать
2. substance – вещество
3. disease – болезнь, заболевание
4. to arrange – организовывать
5. individual – индивид, индивидуальный
6. whale – кит
7. flea – блоха
8. common – обычный, широко распространенный
9. recognize – распознавать, признавать
10. feature – характерная черта
11. respect – аспект, смысл, уважение
12. grain – зерно, зернышко, песчинка
13. composition – состав
14. carbon – углерод
15. hydrogen – водород
16. oxygen – кислород
17. nitrogen – азот
18. amount – количество
19. calcium – кальций
20. phosphorus – фосфор
21. sodium – натрий
22. potassium – калий
23. iron – железо
24. copper – медь
25. sulphur – сера
26. chlorine – хлор
27. molecular weight – молекулярная масса
28. cell – клетка
31. stimulus /pl. stimuli – стимул, раздражитель

Text

LIVING AND NONLIVING MATTER

Most living organisms, animals or plants, can usually be distinguished from nonliving or inorganic material, but this is not easy with some lower forms of life. The main differences between living and nonliving things are as follows:

1. **Form and size of organism.** Each kind of living organisms is usually of a definite form and of a characteristic size. Most of them are also arranged as different individuals. A whale, a flea or any common plant is recognized by

such features. Nonliving materials vary widely in such respects as from a sand grain to a mountain or from a drop of water to an ocean.

2. **Chemical composition of organism.** Living organisms are composed chiefly of carbon, hydrogen, oxygen and nitrogen in various but definite proportions, together with small amounts of calcium, phosphorus, sodium, potassium, iron, copper, sulphur, chlorine etc. These materials are organized into complex organic molecules, often of great molecular weight, and collectively form the living substance or protoplasm.
3. **Organization.** The parts of each living organism are composed of microscopic cells, and these are assembled into interrelated systems for performing life processes.
4. **Metabolism.** Various vital processes, collectively known as metabolism, are constantly in progress within living organism including the intake and use of food, respiration, secretion, excretion etc. Nonliving things are relatively stable.
5. **Irritability.** The protoplasm and living organisms react to changes in the environment. These changes act as stimuli that produce changes in or responses by the organism. The stimuli may be external (heat, light, moisture, pressure or contact) or internal (hunger, thirst, pain etc.). If inanimate materials react, there is a definite quantitative relation between the intensity of the environmental change and the reaction produced as in the expansion of metal with heat.
6. **Reproduction.** All living organisms give rise to organisms of the same kind – they reproduce. Organisms reproduce by using materials within their bodies produced by metabolism. They reproduce both sexually and asexually. Non-living things can not reproduce.
7. **Growth and life cycle.** Living organisms grow by development of new parts between or within older ones and may replace parts during life. Each individual has a definite life cycle as follows: **birth, growth, stage of maturity, and death.** If nonliving things increase, they do so by external addition (crystals).

Learning Activities

I. Guess the meaning.

Organism, virus, characteristic, form, individual, ocean, complex, organic, molecule, proportion, phosphorus, collectively, substance, protoplasm, microscopic, system, organization, chlorine, protoplasm, reaction, material, metal, stimulus, progress.

II. Give the plural for the following.

	<i>Singular</i>	<i>Plural</i>
1	man	
2	woman	
3	human	
4	child	
5	animal	
6	bird	
7	fish	
8	swine	
9	sheep	
10	organism	
11	virus	
12	cell	
13	size	
14	substance	
15	difference	
16	stimulus	
17	nucleus	
18	fungus	
19	focus	
20	locus	
21	mouse	
22	louse	

III. Translate into Russian. Pay attention to the prepositions.

Forms of life; kind of organisms; part of the body; are distinguished from; easy with; is composed of; are organized into; is recognized by; grow by; differences between; in various proportions; in some years; within parts.

IV. Match nouns with the corresponding adjectives.

	<i>Noun</i>		<i>Adjective</i>
1	organism	1	organic
2	kind	2	living
3	form	3	characteristic
4	size	4	complex
5	process	5	old
6	individual	6	quantitative
7	addition	7	definite
8	amount	8	external
9	relation	9	internal
10	molecule	10	small

V. Supply a noun to an adjective.

- | | |
|---------------------|-----------------|
| 1. lower... | 6. old... |
| 2. inorganic ... | 7. definite... |
| 3. vital ... | 8. various |
| 4. external... | 9. inanimate... |
| 5. environmental... | 10. new... |

VI. Give synonyms.

Alive, person, multiplication, shape, consist of, small quantity, change parts, type of animal, usual plant, enlarge by development, inanimate materials, give rise to new cells.

VII. Give English equivalents.

Следующие отличия; более низкая форма жизни; низшая форма жизни; живая материя; неживая материя; обычное растение; невидимые под микроскопом; видимые под микроскопом; организмы состоят из; сложные органические молекулы; простые молекулы; образуют протоплазму; образуют комплекс.

VIII. Make the following sentences negative.

1. Most living organisms can usually be distinguished from nonliving materials.
2. Many of them are arranged as different individuals.
3. These materials are organized into complex organic molecules.
4. The parts of each living organism are composed of microscopic cells.
5. This is easy with some lower forms of life.
6. A whale, a flea or any common plant is recognized by such features.
7. They do so by external addition.
8. These materials collectively form the living substance or protoplasm.
9. This cell can reproduce.
10. Inanimate materials grow.

IX. Make the following sentences interrogative.

1. Viruses are invisible under the microscope.
2. This is very easy with the lowest forms of life.
3. Nonliving materials vary widely.
4. Organic materials are arranged into large organic molecules.
5. A whale, a flea or any common plant is recognized by certain features.
6. Each individual has a definite life cycle.
7. Nonliving things can not reproduce.
8. Various vital processes are constantly in progress.

X. Translate into English.

1. Живую и неживую материю можно отличить.
2. Органическая материя – живая, неорганическая материя – неживая.
3. Форма и размер живых существ бывают разные.

4. Протоплазма – живая субстанция клетки.
5. Сложные молекулы образуют живые существа.
6. Живые организмы реагируют на изменения окружающей среды.
7. Металлы расширяются при нагревании.
8. Неживые материалы не размножаются.
9. Метаболизм – это различные жизненные процессы в организме.
10. Протоплазма реагирует на изменения в окружающей среде.

XI. Make a list of living and nonliving things around you. Compare your list with your partner's one.

№	Living things	Nonliving things

XII. Make up 5 questions of your own to the text “Living and Nonliving Matter” in writing.

XIII. Form the general idea of the text “Living and Nonliving Matter” in a few words.

**XIV. Read the text and find the description for the following:
population, communities, ecosystems, biosphere.**

UNIVERSITY AND DIVERSITY

The diversity of living things is astonishing. Biologists estimate that from 5 million to 30 million different species exist on Earth. Scientists have discovered, described and catalogued probably less than half of them. Unfortunately, many species are becoming extinct or dying out as their habitats are destroyed before scientists can study and classify them.

Living things interact with each other and with their environment. The interactions between the organisms and their environment are classified as **populations, communities, ecosystems** and the **biosphere**. A population consists of the individuals of a given species that occur together at one place and at one time. Populations of different species that interact with one another, make up a community of organisms. Within the community populations of different species interact with one another in a particular place. For instance, a forest community may be made up of populations of bacteria, fungi, earthworms, insects, mice, deer, frogs, foxes, snakes, trees, grasses etc. These populations within the forest community compete with one another for resources, or form relationships in which two different species live in a close association to the benefit of both. An ecosystem is a community of

plants, animals and microorganisms that interact with one another and their environments and that are interdependent. The forest ecosystem includes all living organisms as well as nonliving components of the environment, which contribute substances needed for the ecosystem to function.

The biosphere is the part of the Earth where biological activity exists. Within this global environment, living things interact with each other and with nonliving resources in a great number of ways.

XV Make a brief summary of the text “University and Diversity” in writing.

XVI. Give English equivalents.

Живая материя, неживая материя, существо, вещество, организм, тело, форма, размер, образуют, капля воды, химический состав, организация, структура, метаболизм, раздражимость, воспроизводство, размножение, клетка, реакция, ответ, рождение, рост, стадия зрелости, смерть.

XVII. Translate into English.

1. Живая материя – это органическая материя.
2. Живая материя имеет определенные характерные свойства.
3. Я всегда смотрю состав продуктов.
4. Живые организмы имеют определенный размер и форму.
5. Химический состав вещества очень важен.
6. Метаболизм – свойство живой материи.
7. Неживые вещества не могут воспроизводиться.
8. Разнообразие живых существ поражает.
9. Различные биологические виды взаимодействуют друг с другом.
10. Вирусы могут вызвать болезнь.
11. Биосфера – это часть земли, где существует биологическая активность.
12. К сожалению, многие виды становятся вымирающими.

XVIII. Answer the questions.

1. Can living organisms be easily distinguished from nonliving things?
2. What are the main differences between living and nonliving matter?
3. Does each living organism have a definite form and a characteristic size?
4. Can a whale or a flea vary in form and size?
5. Do inanimate things react to environmental changes?
6. What internal stimuli within a living thing do you know?
7. What external stimuli can you mention?
8. How do living organisms grow?
9. What are the stages of the life cycle?
10. What is metabolism?
11. Do all materials reproduce?
12. Have all living things been classified by scientists?

XIX. Supply questions to the following answers.

1. Yes, the parts of each living organism are composed of microscopic cells.
2. Each kind of living organisms is usually of a definite form and of a characteristic size.
3. No, non-living materials vary widely in form and size.
4. Organisms reproduce by using materials within their bodies.
5. Yes, they do. Living things interact with each other and with their environment.
6. Populations of different species that interact with one another make up a community of organisms.

UNIT 2

PROTOPLASM

Vocabulary

1. compound – соединение, составной, сложный
2. substance – вещество
3. fluid – жидкий, жидкость
4. semifluid – полужидкий
5. contents – содержимое
6. liquid – жидкий, жидкость
7. solid – твердый, прочный
8. mixture – смесь
9. property – свойство, качество
10. to differentiate – дифференцировать, различать
11. transparent – прозрачный
12. carbohydrate – углевод
13. composition – состав
14. nucleic acid – нуклеиновая кислота
15. enzyme – фермент, энзим
16. irritability – раздражимость, возбудимость
17. to respond (to) – отвечать (на), реагировать
18. retina – сетчатка (глаза), ретина
19. excretion – экскреция, выделение
20. to get rid of – освобождать, избавляться от
21. exhibit – показывать, обнаруживать, проявляться
22. contractile – сократительная
23. to contain – содержать, вмещать
24. movement – движение
25. tissue – ткань
26. peculiar – свойственный, особенный
27. average – средний
28. percentage – процент, процентное отношение
29. waste – отходы, выделения организма

Text

PROTOPLASM

With the introduction of the microscope it became possible to study the finer details of structure of organs and tissues and minute organisms. The ultimate living substance in the cells of all plants and animals is called protoplasm. Protoplasm – the semifluid cell contents, including the cell organelles and nucleus (control centre) of the cell. Protoplasm is a complex mixture of many substances including water, mineral salts and many organic compounds. In different species and in the parts and organs of any one animal the protoplasm differs in its chemical, physical and biological properties. It has however certain common characteristics and may be called the "physical basis of life". Protoplasm is the "living substance" of the cell. It can be differentiated into cytoplasm and the nucleus.

- **Physical Properties of Protoplasm**

It is a transparent and jelly-like material, the consistency varying from the more liquid, slightly gelatinous white of a fresh egg to that of semi-solidified gelatin of jelly.

- **Chemical Properties of Protoplasm**

The chemical properties of protoplasm can be divided into inorganic and organic substances.

- **Inorganic Substances**

Inorganic substances are water, which makes up 90% of the protoplasm, mineral salts, such as NaCl-salt, and gases like oxygen and carbon dioxide.

- **Organic Substances**

Organic substances include proteins, carbohydrates, lipids, nucleic acids and enzymes.

Functions of Protoplasm:

- **Reproduction**

Cells divide to form identical daughter cells.

- **Irritability**

The living protoplasm responds to stimuli, e.g. retinal cells in the eye respond to light.

- **Chemical Functions**

All these functions are carried out inside the cell, e.g. respiration in the mitochondria.

- **Excretion**

Cells must get rid of excretory wastes; they usually diffuse out of the cell through the cell membrane.

- **Movement**

Movement is exhibited by certain cells, e.g. unicells; the protoplasm of these cells has a contractile ability.

- **Growth**

Growth follows on cell division; there is an assimilation of protoplasm and an increase in size.

- **Chemical composition**

Protoplasm contains about 20 known chemical elements the proportion of which differs and the specific compounds into which these elements are organized differ in various elements and in the different cells and tissues of the same animal. These elements are most common in soils and waters of the Earth. They are present in foods taken by animals, in products of their secretion and wastes. No chemical element is peculiar to living things. An average percentage chemical composition of animal protoplasm is as follows:

№	Chemical element	Symbol	%	№	Chemical element	Symbol	%
1	Oxygen	O	76.0	7	Magnesium	Mg	0.02
2	Carbon	C	10.5	8	Calcium	Ca	0.02
3	Hydrogen	H	10.0	9	Sulphur	S	0.2
4	Nitrogen	N	2.5	10	Phosphorus	P	0.3
5	Potassium	K	0.3	11	Sodium	Na	0.05
6	Iron	Fe	0.01	12	Chlorine	Cl	0.10

Learning Activities

I. Supply Russian Equivalent.

Organelle, organ, salt, biological, to control, characteristics, basis, membrane, jelly, physical, gelatin, gases, protein, enzyme, identical, principal, chemical.

II. Derive nouns from the given verbs.

to mix – mixture

to grow – growth

to produce –

to live –

to reproduce –

to move –

to function –

to compose –

to respire –

to contain –

III. Give the three forms of comparison for the following adjectives.

Dense, thick, complex, different, liquid, fresh, specific, common, advanced, little.

IV. Supply Russian equivalents.

Animal diseases, food intake, complex mixture, cell membrane, egg white, cell movement, mitochondria respiration, tissue regeneration, organism intoxication, membrane contents.

V. Match the columns as appropriate.

Species are...	living things.
Organisms are...	the most narrow and specific taxonomic classification.
A cell is...	groups of similar cells that work together to perform a function.
Tissues are...	a microscopic mass of protoplasm.

VI. Translate into Russian. Use in the sentences of your own.

Reproduction takes place; cell division occurs; the gas exchange is carried out; two species live; organs carry out the principal activities; cells form tissues; protoplasm contains water.

VII. Supply prepositions.

(into, from, in, of, about)

1. Organisms are very different ... one another.
2. The ultimate living substance ... the cells ... all plants and animals.
3. Protoplasm is a complex mixture ... many substances.
4. The consistency varies ... semi-liquid ... solid.
5. Protoplasm contains ... 20 known chemical elements.
6. Cells must get rid ... excretory wastes.
7. It can be differentiated ... protoplasm and nucleus.
8. Living protoplasm responds ... stimuli.

VIII. Give synonyms.

to introduce, to divide, to react, to increase in size, to decrease in size, to contain, to diffuse out, to waste, living beings, food consumption, to perform activities.

IX. Put the verb in a proper form.

1. Organic substances (include, includes) proteins, carbohydrates, lipids, nucleic acids and enzymes.
2. The living protoplasm (responds, respond) to stimuli, e.g. retinal cells in the eye respond to light.
3. All these functions (are, is) carried out inside the cell.
4. Movement (is, are) exhibited by certain cells.
5. Protoplasm (contain, contains) about 20 known chemical elements.
6. The protoplasm of these cells (has, have) a contractile ability.
7. These elements (is, are) most common in soils and waters of the Earth.
8. No chemical element (is, are) peculiar to living things.

X. Put the sentences in the past forms.

1. The ultimate living substance in the cells of all plants and animals is called protoplasm.
2. In different species and in the parts and organs of any one animal the protoplasm differs in its chemical, physical and biological properties.
3. They are present in foods taken by animals, in products of their secretion and wastes.
4. No chemical element is peculiar to living things.
5. Cells must get rid of excretory wastes.
6. There is an assimilation of protoplasm and an increase in size.
7. The living protoplasm responds to stimuli.

XI. Read the sentences. Say what comes first.

1. Growth follows on cell division. (Growth or cell division)
2. Practice follows on theory. (Practice or theory)
3. Response follows on stimuli. (Stimuli or response)
4. Absorption follows the intake. (Intake or absorption)

XII. Make the sentences negative.

1. Protoplasm is a transparent and jelly-like material.
2. The chemical properties of protoplasm can be divided.
3. Cells divide to form identical daughter cells.
4. All these functions are carried out inside the cell.
5. Cells must get rid of excretory wastes.
6. Protoplasm contains about 20 known chemical elements.

XIII. Make the sentences interrogative.

1. Although these organisms are very different from one another, each has characteristics that are common to all species.
2. The diversity or variety of living things is astonishing.
3. Other types of interaction may also exist within the community.
4. The protoplasm of these cells has a contractile ability.
5. Some elements are the most common in soil.
6. It has, however, certain common characteristics.

XIV. Name the element designated by their symbols.

O; C; Cl; H; N; K; Mg; Ca; P; S; Na; Fe.

XV. What symbols are accepted for the following elements?

Iron, Copper, Zinc, Molybdenum, Iodine, Aluminum, Manganese, Fluorine, Boron, Cobalt, Selenium.

XVI. Match the element and the explanation according to your knowledge.

Oxygen	Electron carrier, component of water and most organic molecules.
Hydrogen	Necessary for cellular respiration, component of water.
Carbon	Backbone of organic molecules.
Calcium	Critical component of hemoglobin in the blood.
Iron	Component of bones and teeth.

XVII. Answer the questions.

1. When did it become possible to study the finer details of organs and tissues?
2. What is the protoplasm?
3. Is protoplasm the same in every species?
4. What elements does protoplasm contain?
5. Which element is peculiar to living things?
6. What properties does protoplasm possess?
7. Can protoplasm reproduce?
8. What are inorganic substances of protoplasm?
9. What organic substances of protoplasm do you know?
10. Can protoplasm be found in non-living things?

XVIII. Supply English equivalents.

Введение, растение, животное, тело, организм, различные виды, общие характеристики, цитоплазма, ядро, клетка, состав клетки, органеллы, биологические свойства, свежее яйцо, пресная вода, соль, кислород, водород, азот, калий, кальций, натрий, магний, другие элементы, органические свойства, функция, прозрачный, полупрозрачный.

XIX. Translate into English.

1. Клетка – это функциональная единица всех живых организмов.
2. Ядро бывает круглым, но иногда оно овальное.
3. Некоторые клетки имеют два ядра или больше.
4. Генетическая информация позволяет клеткам воспроизводить свою организационную структуру.
5. Не существует типичной клетки – все клетки разные.
6. Ядро – это контрольный центр клетки.
7. Какие клеточные органеллы вы знаете?
8. Большинство клеток очень малы, их можно увидеть при помощи микроскопа.
9. Вы знаете об органических свойствах протоплазмы, не так ли?
10. В лаборатории мы можем наблюдать клетки под микроскопом.
11. Организмы бывают одноклеточные и многоклеточные.

XX. Supply questions for the given answers.

1. I have never seen a living substance under the microscope.
2. Yes, we studied the structure of cell at school.
3. This is not so, bacteria are prokaryotes.
4. The cell takes up nutrients through its membrane.
5. Of course, each cell utilizes energy.
6. Sure, cells have certain common properties.

UNIT 3

CELL

Vocabulary

1. to enclose – вмещать
2. corresponding – соответствующий
3. helical – спиральный, спиралевидный
4. succeeding – последующий
5. to arrange – организовывать
6. generation – поколение, генерация
7. to possess – обладать, иметь
8. to utilize – использовать
9. surroundings – окружающая среда
10. vertebrate – позвоночное животное, позвоночный
11. vertebra/vertebrae – позвонок, позвонки
12. elongated – удлиненный, вытянутый
13. lobed – дольчатый
14. feature – характерная черта
15. hereditary – наследственный
16. grain – зернышко, песчинка
17. definite – определенный
18. amount – количество
19. corresponding – соответствующий
20. molecular weight – молекулярная масса
21. maintenance – поддержание, содержание, уход
22. to pass – передавать

Text

CELL

Cell is a functional unit of all living organisms in which all the chemical reactions necessary for the maintenance and reproduction of life take place. A cell is a mass of protoplasm enclosed in a membrane and containing nucleus. Structurally

speaking cells are either prokaryotic or eukaryotic. All prokaryotes (before nucleus) are independent single-celled organisms (e.g. bacteria). All eukaryotic cells possess nucleus surrounded by a membrane containing DNA. In addition eukaryotic cells contain many other structures called organelles, which carry out specific functions. Both a nucleus and a cytoplasm arise by division of the corresponding elements of a pre-existing cell. The nucleus is commonly oval and near the center of the cytoplasm but may be elongated or lobed and at one side.

The cell has hereditary information in molecules of DNA, processes genetic information using RNA intermediates to form proteins at ribosomes, and uses ATP as the central cellular form of energy. This genetic information permits each cell to reproduce its own organizational pattern by itself. Cells in multicellular animals are organized to form the structures and to perform the functions of the organism.

All cells have certain common functional and structural properties:

1. Each cell has a **cytoplasm membrane** within which the cell contains a fluid called cytoplasm. The cytoplasmic membrane regulates the passage of materials into and out of the cell.
2. Each cell contains a fluid substance, called the **cytoplasm**. Chemical reactions that transform the energy and material needed for cell growth and reproduction take place in the cytoplasm. The cytoplasm consists of a solution called the cytosol, and various particulate structures. This molecule carries the genetic code and codes of all proteins that make up the structural and functional components of life.
3. Each cell contains hereditary information stored in a double helical macromolecules of **DNA (deoxyribonucleic acid)**. All life is based on a fundamental molecule, deoxyribonucleic acid. DNA directs the activities of the cell. It is copied and transferred to new cells formed as a result of cellular reproduction and passes hereditary information to succeeding generations.
4. Each cell has thousands of small structures called ribosomes where proteins are made. The actual transfer of genetic information from DNA into proteins involves the formation of another informational molecule, **RNA (ribonucleic acid)**. RNA carries the genetic information to the ribosomes where that information is used to direct the synthesis of proteins. Proteins that act as enzymes are the molecules that actually perform the metabolic functions of the cells.
5. Each cell utilizes energy from ATP (adenosine triphosphate). Energy is needed to convert raw materials obtained from the cell surroundings into cellular structures. Because cells vary so much in form and function there is no typical cell existing. Most cells are small and can be seen only with the help of the microscope, with some exceptions (e.g. the eggs of most vertebrates: fishes, amphibians and birds, and some long nerve cells).

Learning Activities

I. Give the plural for the nouns.

Virus, bacterium, information, knowledge, cell, analysis, focus, fungus, locus, stimulus, nucleus, vertebrate, vertebra, phenomenon, criterion.

II. Guess the meaning.

Functional, mass, oval, genetic, central, to organize, to regulate, passage, structure, macromolecule, ribosome, synthesis, energy, form, microscope, amphibians, nerve, microscope.

III. Pick out nouns and adjectives from the text and group them according to the suffixes.

Nouns	Adjectives

IV. Form verbs from the following nouns:

a function, a maintenance, a container, a division, a process, information, organization, a structure, a passage, a copy, a transfer, reproduction, conversion, a reaction, use, an act, a regulation, a form, a performance, a permission, a base.

V. Translate the sentences paying attention to the prepositions.

1. A cell is a microscopic mass of protoplasm.
2. Both a nucleus and a cytoplasm arise by division of the corresponding elements of a pre-existing cell.
3. It is copied and transferred to the new cells formed as a result of cellular reproduction.
4. Proteins that act as enzymes are the molecules that actually perform the metabolic functions of the cell.
5. Each cell utilizes energy from ATP (adenosine triphosphate).
6. Because cells vary so much in form and function there is no typical cell existing.
7. Most cells are small and can be seen only with the help of the microscope.

VI. Make the sentences negative and interrogative.

1. A cell is a functional unit.
2. A cell is a mass of protoplasm enclosed in a membrane.
3. The nucleus is commonly oval but may be elongated.
4. All cells have certain common properties.
5. The cell has hereditary information in molecules of DNA.
6. Each cell has thousands of small structures called ribosomes.
7. Most cells are small and can be seen only with the help of the microscope.

VII. Read and translate the following sentences. Put the questions as required.

1. All prokaryotes are independent single-celled organisms (e.g. bacteria). (What...?)
2. The cytoplasmic membrane regulates the passage of materials into and out of the cell. (Does ...?)
3. The cytoplasmic membrane also has specific receptors for external molecules that alter the cell's function. (What for...?)
4. The cell takes up nutrients and eliminates wastes through its surface plasma membrane. (Does ... or...?)
5. Eukaryotic cells also have a network of specialized structures called filaments and tubules, organized into the cytoskeleton, which gives shape to the cell and allows intracellular movement. (... don't they?)

VIII. Read the following passage and answer the questions. Entitle the passage.

A cell is a microscopic mass of protoplasm, a chemically active mixture of complex substances suspended in water that is bounded by a membrane and contains hereditary material. Until the invention of the microscope around 1600, naturalists could not probe this invisible level of organization of living things.

And it was not until the mid of 1800-s when advances in the technology of the microscope allowed botanist Matthias Schleiden and zoologist Teodor Schwann to determine that the unit of structure of all living things is the cell. Living things or organisms are either multicellular or unicellular.

Some organisms called colonial organisms are single-celled organisms that work and live together as a team. But whether unicellular, multicellular or colonial, every organism has the cell as its simplest level of structure.

1. When was the microscope invented?
2. What did Schleiden and Schwann determine?
3. What does the word multicellular mean?
4. What does the word unicellular mean?

IX. Answer the following questions.

1. Is a cell a functional unit of living organisms or nonliving things?
2. Do all cells possess nucleus?
3. What are the two types of cells differentiated by the scientists?
4. Are bacteria prokaryotes or eukaryotes?
5. Where does the cell have hereditary information?
6. What does the genetic information permit?
7. All cells possess certain common functional and structural properties do they?
8. All life is based on a fundamental molecule, deoxyribonucleic acid (DNA), isn't it?
9. What are ribosomes?
10. Where to does RNA carry the genetic information?
11. Do cells utilize the energy from ATP or from RNA?
12. Is there a typical cell existing?

X. Give English equivalents.

Клетка, прокариоты, эукариоты, клеточная мембрана, деление клетки, наследственная информация, ядро, многоклеточные животные, одноклеточные организмы, иметь структуру, выполнять функцию, свойства клетки, протеины.

XI. Put your own questions to the sentences.

1. Cell is a functional unit of all living organisms.
2. Each cell has thousands of small structures called ribosomes.
3. The cytoplasm consists of a solution called the cytosol.
4. Chemical reactions that transform the energy and material needed for cell growth and reproduction take place in the cytoplasm.
5. RNA carries the genetic information to the ribosomes.

XII. Translate into English.

1. Клетка – это функциональная единица живых организмов.
2. Как ядро, так и цитоплазма появляются путем деления элементов предшествующей клетки.
3. Ядро клетки обычно находится в центре.
4. Клетки организованы так, чтобы образовать структуру и выполнять функции организма.
5. Химические реакции происходят в цитоплазме.
6. ДНК – основа жизненных процессов.
7. РНК передает генетическую информацию рибосомам.
8. Существует много разных видов клеток, но не существует типичной клетки.
9. Цитоплазматическая мембрана регулирует прохождение материала в клетку и из нее.

UNIT 4

TISSUES

Vocabulary

1. germ – зародыш, семя, микроорганизм
2. connective tissue – соединительная ткань
3. muscle tissue – мышечная ткань
4. to line – выстилать
5. lining – выстилка
6. to cover – покрывать
7. sensory reception – чувственное восприятие
8. protection – защита
9. layer – слой
10. to stratify – наслаиваться
11. stratified squamous epithelium – многослойный плоский эпителий

12. flat – плоский
13. to suspend – находиться во взвешенном состоянии, суспензировать
14. cuboidal cell – кубовидная клетка, кубическая клетка
15. columnar cell – цилиндрическая, призматическая клетка
16. cilium /pl. cilia – ресничка/реснички
17. fluid tissue – жидкая ткань
18. loose connective tissue – рыхлая соединительная ткань
19. fibrous connective tissue – волокнистая соединительная ткань
20. adipose tissue – жировая ткань
21. cartilage tissue – хрящевая ткань
22. bone tissue – костная ткань
23. blood – кровь
24. to serve – служить
25. contractile – сократительный
26. extension – распространение, растяжение
27. to conduct – проводить
28. process – процесс, отросток

Text

TISSUES

A tissue is a group of similar cells specialized for the performance of a common function. In an animal, tissues differentiate during development to perform individual function.

Cells in a multicellular animal may be divided into:

- 1) **somatic cells**, constituting the individual animal throughout its life.
- 2) **germ cells**, having to do only with reproduction.

Somatic tissues are classified as one of four types:

- 1) **epithelial** (covering)
- 2) **connective** (supportive), including fluid tissues
- 3) **muscular** (contractile)
- 4) **nervous**

1. Epithelial tissue. Epithelial cells cover and line the surfaces of the body, both internal and external. All epithelial cells are collectively called the *epithelium*. Usually, epithelial tissues are separated from underlying, adjacent tissues by a basement membrane. The typical functions of epithelial tissues are absorption (e.g. lining of small intestine), transport (e.g. kidney tubules), excretion (e.g. sweat glands), protection (e.g. the skin) and sensory reception (e.g. the taste buds in the tongue). The sizes, shape, arrangement of epithelial cells are directly related to these specific functions.

Epithelium can be simple, consisting of only one layer of cells, or stratified, consisting of two or more layers. The shapes of the individual epithelial cells can be flat (squamous epithelium), cube shaped (cuboidal epithelium), or columnlike

(columnar). The cells of pseudostratified ciliated columnar epithelium possess cilia and appear stratified or layered, but they are not. The layered effect occurs because their nuclei are located at two or more levels within cells of the tissues.

2. Connective tissue (supportive), including fluid tissues – blood and lymph.

Connective tissues serve to support and bind tissues together. Connective tissues are of two general types: loose connective tissues (e.g. binding the skin to underlying muscle tissue), fibrous connective tissues (connects muscles to bones or to other muscles). (**Adipose tissue, cartilage, bone cells, blood**).

3. Muscle tissue allows movement. These are contractile tissues of three kinds: smooth muscle, skeletal muscle and cardiac muscle.

4. Nervous tissue is composed of individual cells called neurons. Neurons are specialized for conducting electrical impulses. Neurons receive information about changes in external and internal environment of an animal. Most neurons contain three principal parts: a cell body, dendrites and an axon. The cell body has a large central nucleus. Dendrites are actually extensions of the cell body and conduct signals towards the cell body. The axon is a long process that conducts signals (information) away from the cell body.

5. Fluid tissues. The blood and lymph that serve as means for transport and distribution of material within the animal body consist of a fluid plasma containing free cells or corpuscles. Colourless white blood cells, leukocytes are found in all animals with body fluids. Some of them, phagocytes, have the function to protect the body by engulfing bacteria and other foreign materials. The blood of vertebrates also contains red blood cells or erythrocytes, coloured red by haemoglobin that serves for transport of oxygen. The fluid plasma transports most materials carried in the blood stream. It is colourless in vertebrates, but in some invertebrates is coloured either blue or red by dissolved respiratory pigment.

Learning Activities

I. Guess the meaning.

Group, specialized, classified, basement, gland, general, fibrous, cardiac, electrical, impulse, neuron, signal, principal, pigment, transport, respiratory, leukocytes, haemoglobin, plasma, signal, lymph, information, typical, dendrite, axon, effect.

II. Form nouns from the following verbs and use them in sentences.

To group, to perform, to function, to develop, to classify, to base, to protect, to receive, to taste, to shape, to process, to lay, to respire, to excrete, to arrange.

III. Put the verb in a proper form.

1. Epithelial tissue (*exists, exist, existed, will exist*) in many structural forms.
2. The size, shape, arrangement of epithelial cells (*is, was, are, were, will be*) directly related to these specific functions.
3. Connective tissues (*served, serves, will serve*) to support and bind tissues together.

4. Muscle tissue (*allowed, allows, will allow*) movement.
5. The cell body (*have, has, had*) a large central nucleus.
6. Some of them, phagocytes, (*have, has, will have shall have*) the function to protect the body by engulfing bacteria and other foreign materials.
7. Dendrites (*is, are, was, were, will be, shall be*) actually extensions of the cell body.
8. The blood of vertebrates also (contains, contained, will contain) red blood cells or erythrocytes.

IV. Make the sentences negative and interrogative.

		<i>Negative</i>	<i>Interrogative</i>
1	All epithelial cells are collectively called the epithelium.		
2	Epithelium can be simple, consisting of only one layer of cells, or stratified, consisting of two or more layers.		
3	Neurons receive information about changes in external and internal environment of an animal.		
4	The axon is a long process that conducts signals away from the cell body.		
5	The fluid plasma transports most materials carried in the blood stream.		
6	Most neurons have three principal parts.		
7	Connective tissue joins the other tissues of the body.		
8	Cardiac muscle makes up the heart acting as a pump for the circulatory system.		

V. Translate the sentences. Define the verbs in bold type as active or passive. Complete the chart.

1. A tissue **is** a group of similar cells.
2. Tissues **differentiate** during development to perform individual function.
3. Somatic tissues **are classified** as one of four types.
4. The cells of pseudostratified ciliated columnar epithelium **possess** cilia.
5. Colourless white blood cells, leukocytes **are found** in all animals with body fluids.
6. In some invertebrates the fluid plasma **is coloured** either blue or red by dissolved respiratory pigment.
7. The fluid plasma **transports** most materials carried in the blood stream.
8. These cells **are arranged** in ways that best **suit** their function.

9. Certain epithelium cells **are specialized to produce and discharge** substances which **are called** glands.

	<i>Active voice</i>	<i>Passive voice</i>
1		
2		
3		
4		
5		
6		
7		
8		
9		

VI. Turn active into passive.

1. The system conducts "current". 2. We separate epithelial tissues from adjacent tissues. 3. The size, shape and arrangement of epithelial cells directly relates to their specific function. 4. Two or more layers compose stratified epithelium. 5. Muscle tissues allow movement. 6. Individual cells called neurons compose the nervous tissue. 7. The cell body possesses a large central nucleus. 8. We find leukocytes in all animals with body fluids. 9 Phagocytes engulf bacteria. 10. The fluid plasma transports most materials.

VII. Read the following passage. Put a question to each paragraph.

The epithelial layers function in six different ways:

1. Protection. They protect the tissues beneath them from drying out, sustaining mechanical injury and being invaded by microorganisms.
2. Absorption. They provide a barrier that can help the movement of materials into the tissue beneath.
3. Sensation. Many sensory nerves end in epithelial cells layers. The epithelium therefore provides a sensory surface.
4. Secretion. Certain epithelium cells are specialized to produce and discharge substances which are called glands. Glands may be single cells (intestinal lining). Most glands however are multicellular structures (thyroid glands, sweat glands).
5. Excretion. Specialized epithelial cells in the kidney excrete waste products during the formation of urine. Also the epithelium forming the air sacs of the lungs excrete the waste gas carbon dioxide.
6. Surface transport. Some epithelial cells have hairlike projections called cilia. The cell lining of the respiratory passageways, for example, keeps foreign particles from entering the lungs.

VIII. Match the name of tissues with their description.

	Tissue	Description
1	Epithelial tissue	contains microfilaments that are capable of contraction. Smooth muscle contracts involuntarily and is located in the walls of certain internal structures such as blood vessels and the stomach. Skeletal muscle is connected to bones and allows the body to move. Cardiac muscle makes up the heart acting as a pump for the circulatory system.
2	Connective tissue	covers and lines the internal and the external surfaces of the body and composes the glands. These cells are of three shapes and are arranged in ways that best suit their function.
3	Muscle tissue	is made up of two kinds of cells: neurons which transmit nerve impulses, and supporting cells which nourish and protect the neurons. They are specialized to conduct an electric chemical "current". The cell body of a neuron contains the nucleus of the cell. The dendrites serve for the reception of nerve impulses and conduct these impulses towards the cell body. An axon conducts impulses away from the cell body.
4	Nervous tissue	provides the body with structural building blocks and potent defenses. Connective tissue joins the other tissues of the body. Functionally they are grouped as defensive, structural and isolating connective tissues. Connective tissue and its cells provide a framework for the body, join its tissues, help defend it from foreign invaders, and act as storage sites for specific substances.

IX. Translate into Russian.

1. Tissues is a group of similar cells that work together to perform a function.
2. Epithelial tissues are groups of similar cells that cover body surfaces and line body cavities.
3. Muscle tissues are groups of similar cells that are capable of contraction.
4. Nervous tissue are groups of similar cells that are specialized to conduct electrical impulses, and other supporting cells.

X. Make a plan of the text "Tissues". Retell the text according to your plan.

XI. Answer the following questions.

1. What is a tissue?
2. What kinds of tissues are mentioned in the text?
3. How can somatic cells be classified?
4. What shapes of the epithelial tissue are found?
5. What do the germ cells deal with?
6. What tissues serve to support and bind tissues together?
7. What are the three kinds of contractile tissue?
8. Name the three principal parts of the neuron.
9. Name the fluid tissues of the animal body.
10. What tissue is colourless in vertebrates and may be colored blue or red in some invertebrates?

XII. Ask your partner some questions about tissues.

XIII. Give English equivalents.

Выполнение функции, развитие клетки, соматические клетки, зародышевые клетки, эпителиальные клетки, соединительная ткань, мышечная ткань, сократительная ткань, нервная ткань, покровная ткань, эпителий, типичные функции, кожа, выделение, защита, всасывание, поддержание, слой, уровень.

XIV. Translate into English.

1. Ткань – это группа клеток, имеющих сходную структуру и выполняющих общую функцию.
2. Эпителиальные клетки покрывают и выстилают наружные и внутренние поверхности тела.
3. Есть четыре типа соматических тканей: эпителиальная ткань, соединительная ткань, мышечная и нервная.
4. Кровь и лимфа – это жидкие соединительные ткани организма.
5. Мышцы обеспечивают движение.
6. Нервная ткань состоит из нейронов.
7. Красные клетки крови называются эритроцитами, а белые – это лейкоциты.
8. Большинство нейронов имеют три основные части – тело, дендриты и аксон.
9. Какие виды тканей вы знаете?
10. Какая наука изучает ткани?

UNIT 5

ORGANS AND ORGAN SYSTEMS

Vocabulary

1. to carry out – выполнять, проводить
2. to form – формировать, создавать

3. to interact – взаимодействовать
4. nutrient – питательное вещество, питательный
5. to remove – удалять
6. to defend – защищать
7. to supply – поставлять, снабжать
8. small intestine – тонкий отдел кишечника
9. digestion – пищеварение, переваривание
10. large intestine – толстый отдел кишечника
11. intestinal – кишечный
12. circulatory system – сердечно-сосудистая система
13. bloodstream – кровообращение, кровоток
14. solid – твердый
15. internal – внутренний
16. external – внешний, наружный
17. excess – избыток, излишек
18. to ensure – обеспечивать
19. continuance – продолжение
20. fertilization – оплодотворение, удобрение
21. intestinal wall – стенка кишечника
22. feedback – обратная связь
23. steady – стабильный, устойчивый
24. loop – петля
25. to trigger – запускать, вызывать
26. integumentary system – покровная система, кожный покров

Text

ORGANS AND ORGAN SYSTEMS

The body is composed of combination of the four types of tissue, assembled in various ways. These tissues form the organs of the body. Each organ contains several different types of tissue coordinated to form the structure of the organ and to perform its function. The many organs working together to carry out the principal activities of the body are traditionally grouped together as organ systems.

An organ system is a group of organs that function together to carry out the principal activities of the body. The organ systems interact with one another to keep the organism alive and well.

The **skeletal system** supports and protects the body. The skeletal system is moved by the large voluntary muscles of the muscular system. Other muscles of this system help in moving internal fluids throughout the body.

The nervous system regulates most of the organ systems. It can sense conditions in both internal and external environments of the body, and helps to respond to this environmental information.

The organs of **the endocrine system** secrete chemicals called hormones that also regulate body processes and functions.

The **circulatory system** is the transportation system of the body. It brings nutrients and oxygen to all cells and removes the waste products of metabolism.

Along with the **immune and integumentary** (skin) systems, it also helps defend the body against infection and disease. The **respiratory system** works hand in hand with the circulatory system, supplying the blood with the oxygen and riding it of carbon dioxide. The food the animal eat is broken down by the **digestive system** and is absorbed through the intestinal wall into the bloodstream. Solid wastes are also eliminated from the body by this organ system. Liquid wastes are eliminated by **the urinary system** after it collects waste materials and excess water from the bloodstream. And to ensure the continuance of the animal kind **the reproductive system** produces sex cells that can join in the process of fertilization to produce the first cell of the individual.

The major organ systems of vertebrates are:

1. Digestive system
2. Respiratory System
3. Circulatory system
4. Endocrine and immune systems
5. Urinary system
6. Nervous system
7. Skeletal and integumentary systems
8. Muscular system
9. Reproductive system

The state of wellness is called **homeostasis**. Homeostasis is a maintenance of a stable internal environment despite what may be a very different external environment. To maintain this, internal equilibrium, all the molecules, cells tissues, organs and organ systems must work together, maintaining a steady state. The body maintains a steady state by means of feedback systems, or feedback loops. **Feedback loops** are mechanisms by which information regarding the status of a physiological situation or system is fed back. Homeostasis is maintained by negative feedback loops, regulatory mechanisms that slow down or shut down output systems when they reach certain levels. For example, a high internal body temperature triggers mechanisms that lower the temperature.

Learning Activities

I. Guess the meaning.

To compose, combination, to assemble, to coordinate, activity, traditionally, grouped, to regulate, to secrete, chemical, hormone, transportation, metabolism, to absorb, to collect, mechanism, equilibrium, status, situation, temperature.

II. Form the verbs from the nouns.

Combination, coordination, work, activity, interaction, support, protection, movement, help, waste, secretion, transportation, removal, product, infection, respiration, supply, digestion, wastes, continuance, reproduction, circulation, regulation.

III. Give Russian equivalents.

Organ systems, body surface, organ structure, body activities, system function, waste gas, body fluid, body processes, transportation system, waste materials, sex cells, animal kind, immune system, feedback system, feedback loops, body temperature.

IV. From the following sentences pick out Participle I. Translate the sentences.

1. Many organs working together to carry out the principal activities of the body are traditionally grouped together as organ systems.
2. The respiratory system works hand in hand with the circulatory system, supplying the blood with the oxygen and riding it of carbon dioxide.
3. To maintain this, internal equilibrium, all the molecules, cells tissues, organs and organ systems must work together, maintaining a steady state.
4. The distinguishing characteristic of muscle cells is the abundance of special thick and thin microfilaments.
5. After passing into the pharynx the food enters the oesophagus.
6. The oesophagus is moving the food down, toward the stomach.
7. In the internal equilibrium all molecules, cells, tissues, organs and organ systems are working together.

V. Change passive forms into active.

1. The body is composed of tissues.
2. The principal activities are carried out by organ systems.
3. Most of the organ systems are regulated by the nervous system.
4. Transportation of food and oxygen is performed by the circulatory system.
5. The oxygen to the blood is supplied by the respiratory system.
6. Liquid waste materials are collected by the urinary system.
7. Sex cells are produced by the reproductive system.
8. Homeostasis is maintained by negative feedback loops.

VI. Change active into passive.

1. The body obtains the energy from raw materials.
2. The blood vessels supply the heart with the blood.
3. Respiration releases the waste gas.
4. We call the movement of air into and out of the lung breathing.
5. The bronchi divide into smaller and smaller brunches.

VII. Translate the sentences.

1. The human body, like the bodies of all other multicellular animals, is made up of many different types of cells.
2. There are several levels of organization in the vertebrate animal body: atoms and molecules are organized into cells, cells are organized into tissues, tissues are organized into organs, and organs are organized into organ systems.
3. A complex structure such as the lung is called an organ and forms only one of the levels of organization of the animal body.

4. The cells are organized to form the structures and perform the functions of the animal body.
5. The human body can be divided into 11 different organ systems.
6. The digestive system is composed of individual organs concerned with the digestion and absorption of food.

VIII. Complete the sentences according to the text.

1. The body is composed of ...
2. The tissues form the organs ...
3. Organ system is a group of organs that ...
4. The skeletal system supports and...
5. The nervous system regulates the most of ...
6. The circulatory system is the ...
7. The respiratory system works hand in hand with ...
8. The urinary system collects wastes and excess water from ...

IX. True or false?

1. Several different tissues grouped together in a structural and functional unit make up an organ.
2. Organs that work together to carry out particular body activities are called organ systems.
3. There are four major classes of tissues that form the organs of the body.
4. Homeostasis is maintenance of a stable internal environment in the mouth.
5. The food we eat is broken down by the respiratory system.
6. The food is absorbed in the digestive system.
7. The organs of the endocrine system secrete chemicals called hormones.
8. The circulatory system is not a transportation system.
9. The exchange of gases between the blood and the alveoli is known as external respiration.

X. Read the following passage and briefly express the general idea of each paragraph.

1. Teeth shred and grind the plant and animal material that is the food. Saliva secreted into the mouth moistens the food which helps enzymatic digestion begin. When the tongue pushes the food into the pharynx, nerves stimulate the swallowing reflex. Then the food is moved to the stomach by rhythmic muscular contractions called peristalsis.
2. The liver and pancreas, although not organs of the digestive system, help digestion take place. The pancreas secretes a number of digestive enzymes. The liver produces bile as one of its numerous and diverse functions. One component of bile, bile salts, aids in lipid digestion.
3. Respiration is the uptake of oxygen and the release of carbon dioxide by the body. The process of cellular respiration, internal respiration, and external respiration are all part of the general processes of respiration. Air passes from the nasal cavities into the

pharynx. Then passes over the vocal cords and moves into the trachea on its way to the lungs.

4. The circulatory system is made up of the heart, the blood vessels, and the blood.

The heart circulates the blood throughout a system of vessels in the body. The circulatory system is the transportation system of the body, carrying nutrients, oxygen and hormones to the cells and removing metabolic wastes. The lymphatic system helps the circulatory system by collecting, filtering and returning the fluid that moves out of the blood and into the tissues.

XI. Read the following passage and answer the question to each paragraph.

1. Blood plasma contains nutrients, hormones, respiratory gases, wastes and a variety of ions and salts. It also contains high concentrations of the protein serum albumin, which functions to keep the blood plasma in osmotic equilibrium with the cells of the body. **(What system does the plasma belong to?)**

2. The three principal types of formed elements in the blood are erythrocytes, leukocytes and platelets. Erythrocytes, or red blood cells, carry oxygen. Leukocytes, or white blood cells defend the body against invading microorganisms and other foreign substances. Platelets play an important role in blood clotting. **(What elements defend the body against invading microorganisms?)**

3. Excretion is a process whereby metabolic wastes, excess water, and excess salts are removed from the blood and passes out of the body. The primary organs of excretion are the lungs and the kidneys. The kidney is a regulatory as well as an excretory organ. Kidney maintains the proper balance of water in the body, retains substances the body needs, and eliminates metabolic wastes. **(What is excretion?)**

XII. Put questions to the words in bold type.

1. Nerve cells **transmit** information in the form of electrical signals.

2. A neuron transmits **an impulse** when it is excited by an environmental change or stimulus.

3. Drugs affect body functions **by interfering** with the normal activity of neurotransmitters.

4. The nervous system **is made up** of the central nervous system, which consists of the brain and spinal cord, and the peripheral nervous system, which consists of nerves that extend from the brain and spinal cord to the muscles and glands.

XIII. Answer the questions.

1. What is the difference between cells, tissues, organs and organ systems?

2. What are the four basic types of tissue in an animal body? Give your examples.

3. What systems do you know in the animal body? Do they differ from the human ones?

4. What organs in the animal body do you know?

5. What is homeostasis?

6. What system provides the body with a means of rapid communication?
7. What system breaks down the nutrients?
8. What functions does the skeletal system perform?
9. Which system deals with animal reproduction?
10. Which system eliminates liquid wastes from the body?
11. Do all organ systems work separately within the body?

IX. Give English equivalents.

Тело, орган, система органов, организм животного и человека, осуществлять деятельность, поддерживать равновесие, поверхность тела, образуют органы, взаимодействие систем, по всему телу, скелетно-мышечная система, пищеварительная система, дыхательная система, сердечно-сосудистая система, секреция, выделение, сердце, легкие, желудок, кишечник, пищеварение, покровная система, иммунная система, эндокринная система, репродуктивные органы, температура тела, гомеостаз, обратная связь, пища, жидкие отходы.

X. Translate into English.

1. Ткани образуют органы.
2. Органы выполняют определенную функцию.
3. Все системы взаимодействуют друг с другом.
4. Скелет защищает и поддерживает тело.
5. Нервная система координирует работу всех частей организма.
6. Сердечно-сосудистая система – это транспортная система.
7. Дыхательная система тесно взаимодействует с сердечно-сосудистой системой.
8. Кожа тоже защищает тело.
9. Работа всех органов поддерживает тело в стабильном состоянии.
10. В организме есть защитные механизмы.
11. Почки поддерживают правильный водный баланс в организме.
12. Органы и системы млекопитающих похожи.
13. Какие части тела человека ты знаешь?

UNIT 6

CLASSIFICATION OF ORGANISMS

Vocabulary

1. diverse – разнообразный
2. ancestry – происхождение, родословная
3. ancestor – предок
4. to resemble – быть похожим
5. to lack – испытывать недостаток
6. lack (of) – недостаток
7. hereditary – наследственный

8. algae – водоросли
9. fungus / pl. fungi – гриб, грибы
10. to survive – выживать
11. to break down – разрушать
12. decomposer - деструктор, редуцент (организм, разлагающий органические вещества)
13. division – деление, раздел, отдел (животных), тип (растений)
14. order – отряд
15. family – семейство
16. genus / pl. genera – род
17. species – вид, виды (биологический)
18. to nourish – питать
19. gland – железа
20. mammary gland – молочная железа
21. to originate – происходить
22. to indicate – указывать
23. provide – обеспечивать
24. phylum / pl. phyla – тип

Text

CLASSIFICATION OF ORGANISMS

Modern taxonomy, the classification of the diverse range of species, categorizes organisms based on their common ancestry (their evolutionary history). Therefore, organisms that are close relatives and resemble one another in a variety of ways are placed in common groupings reflecting their similarities and closeness. All living things are grouped into broad categories called kingdoms. The taxonomic scheme we use recognizes five kingdoms of life: Monera, Protista, Plantae, Fungi and Animalia. Kingdom Monera includes the bacteria. This kingdom differs from the other four kingdoms in that its cells lack membrane-bounded intracellular structures, called organelles. In addition, the hereditary material of the cell is not bounded by a membrane. Such cells are called **prokaryotes**. The organisms of the other four kingdoms are made up of cells that have organelles and a membrane bounded nucleus. Such cells are called **eukaryotes**.

Ancestors of the monerans gave rise to organisms in the kingdom Protista. The protist kingdom consists of primarily single-celled eukaryotes whose cells are much more complex and much larger than the bacteria. This kingdom also includes the algae, which include both unicellular and multicellular organisms that seem to be more closely related to the protists than to the plants, animals or fungi.

The remaining three kingdoms originated from the protists. The plants are multicellular organisms that live on land and make their own food by using carbon dioxide from the air and light energy from the sun.

Animals are multicellular organisms that can not make their own food and that obtain food by eating and digesting other organisms.

Fungi are decomposers (as are many species of bacteria) and survive by breaking down substances and absorbing the break down products. Many of these multicellular eukaryotes live off organisms that are no longer alive. Such as fallen trees and leaves or dead animals. Some fungi attack living organisms.

The kingdoms Monera, Plantae and Fungi are each subdivided into **divisions**.

Kingdoms Protista and Animalia are each subdivided into **phyla** (sing. phylum).

The next subcategory is **class**. The class mammalia is a subgroup of phylum Chordata. Mammals are characterized by having skin with hair and by nourishing their young with milk secreted by mammary glands. The next subcategory is **order**. Closely related families are grouped into orders. Above the species and the genus level, organisms are grouped into **families**. The last three subgroupings in order of increasing relatedness, are **family, genus and species**.

The last two categories in the hierarchy of classification, genus and species provide the scientific name of an organism. Organisms in the same species are more closely related than organisms in the same order. This system is known as binominal (two names) nomenclature. The first word indicates the genus, and the second part of the name indicates a species to which the organism belongs. The name of the genus is usually taken from Latin or rarely, from the Greek language. It is a noun, and it is always capitalized. The species name begins with a lowercase letter. Scientifically, humans are *Homo sapiens*, meaning “wise man”. House cats are *Felis domesticus* (domesticated cat). Every organism has at least one name to distinguish it from other kinds of organisms. A scientific name is more or less international in meaning. Although Karl von Linnee (1707-1778) is primarily remembered for collecting and classifying plants, his work was also a milestone for zoology. His system of naming, binominal nomenclature, has been adopted for animals as well as plants.

Learning Activities

I. Guess the meaning. Taxonomy, to categorize, based, evolutionary, grouping, reflect, scheme, prokaryotes, eukaryotes, decomposers, attack, binominal, naming, category, family.

II. Judging by suffixes, distinguish the nouns from adjectives or verbs. Complete the chart.

Classification, categorizes, variety, evolutionary, similarity, closeness, kingdom, taxonomic, structure, hereditary, multicellular, characterize, relatedness, classify, nomenclature, similar, taxonomy, characteristic, category, character, relation.

	<i>Noun</i>	<i>Adjective</i>	<i>Verb</i>
1			
2			
3			
4			
5			
6			
7			
8			<i>Etc.</i>

III. Give the degrees of comparison for the following adjectives and adverbs:
 complex, common, close, broad, much, large, closely, long, little, many, similar.

IV. State the form of verbs in the following sentences. Translate the sentences.

1. Modern taxonomy categorizes organisms based on their common ancestry.
2. Organisms that are close relatives and resemble one another in a variety of ways were placed in common groupings.
3. Such cells are called eukaryotes.
4. Kingdom Monera includes the bacteria.
5. The first word indicates the genus.
6. Karl von Linnee (1707-1778) is primarily remembered for collecting and classifying plants.
7. His system of naming has been adopted for animals as well as plants.

V. Make sentences interrogative.

1. Each kind of organism is described with a two-part name.
2. A group of closely related species is spoken of as a genus.
3. Several orders make a class.
4. However, bacterial microorganisms display the characteristics of both plants and animals but for the sake of the convenience they have been grouped under the plant kingdom.
5. Most living organisms possess the characteristics of one kingdom or the other and may be sharply differentiated.
6. Sometimes a species is subdivided into varieties.
7. With the use of this two-part names each kind of organisms can be recognized throughout the world.

VI. Fill in prepositions.

(to, into, of, in, on, by, from)

1. All living things are grouped ... broad categories called kingdoms.
2. This kingdom differs ...the other four kingdoms.
3. Ancestors ... the monerans gave rise ... organisms ... the kingdom Protista.
4. The plants are multicellular organisms that live ... land and make their food ... using carbon dioxide ...the air and light energy ...the sun.

5. ...addition, the hereditary material ... the cell is not bounded ... a membrane.
6. The Kingdoms Monera, Plantae and Fungi are each subdivided ... divisions.
7. The name ... the genus is usually taken... Latin or rarely ... the Greek language.

VII. Translate the sentences.

1. This kingdom also includes the algae, which include both unicellular and multicellular organisms that seem to be more closely related to the protists than to the plants, animals or fungi.
2. The taxonomic scheme we use recognizes five kingdoms of life.
3. The protist kingdom consists of primarily single-celled eukaryotes whose cells are much more complex and much larger than the bacteria.
4. Animals are multicellular organisms that can not make their own food and that obtain food by eating and digesting other organisms.
5. The last three subgroupings in order of increasing relatedness are family, genus and species.
6. A scientific name is more or less international in meaning.
7. From the point of classification living organisms have been placed into either the plant or the animal kingdom.

VIII. Put questions for the given answers.

1. Learning about animals is more than learning their scientific names or biological facts.
2. Yes, learning about animals is learning about how to protect them and how to take care of them.
3. The scientific name for a human is Homo sapiens.
4. Sure, some organisms are more closely related than others.
5. Fossils provide scientists with a record of the history of life and document the changes in living things.

IX. Match the word with its explanation.

Taxonomy	Broad categories in which taxonomists group all living things.
Kingdoms	A method of classification of diverse range of species based on their common ancestry.
Family	A taxonomic subcategory of divisions and phyla; as organisms appear to be increasingly related to each other.
Order	A taxonomic subcategory of class.
Class	A taxonomic subcategory of order.
Genus	A taxonomic subcategory of family.

X. True or false according to your knowledge?

1. The protist kingdom consists of primarily single-celled eukaryotes whose cells are much more complex and much larger than the bacteria.
2. By collecting a small amount of pond water and looking it under a microscope you

can see some of the organisms in the animal kingdom.

3. The protist kingdom also includes the algae, which include both multicellular and unicellular organisms that seem to be more closely related to the protists than to the plants, animals or fungi.
4. The plants are multicellular organisms that live on land and make their own food by using carbon dioxide from the air and light energy from the sun.
5. Animals are multicellular organisms that can make their own food and do not obtain food by eating and digesting other organisms.

XI. Read the text for comprehension. Entitle the text. Share interesting information from the text with your partner.

All organisms have common characteristics because they are related to one another. Yet all organisms have differences as they change over time. The Earth itself has changed from its beginnings **some 4.6 billion years ago**. Scientists agree that it was a harsh environment, different from today's. Under these conditions many scientists hypothesize that the elements and simple compounds of the primitive atmosphere reacted with one another, forming complex molecules. They hypothesize that biochemical change took place and resulted in the appearance of the single-celled organisms approximately **3.5 billion years ago**. The remains of these early cells preserved in rocks are called fossils. Fossils provide scientists with a record of the history of life and document the changes in living things that have taken place over billions of years. The fossil record documents the existence of cells more complex than the first cells, and an abundance of multicellular organisms with members of group similar to those that exist today.

XII. Answer the following questions.

1. What does the "evolutionary history" mean?
2. What does taxonomy deal with?
3. How many kingdoms of living organisms do you know?
4. Which kingdom includes the bacteria according to the given classification?
5. What kingdom are animals referred to?
6. What kingdom are humans referred to?
7. By what features are mammals characterized?
8. How is the scientific name of an organism formed?
9. Is the scientific name of an organism easily understood by scientists?
10. In what century did Karl von Linnee live?
11. What is he famous for?
12. What do fossils provide scientists with?

XIII. Translate into English.

1. Таксономия – это классификация организмов.
2. Есть царство животных и царство растений.
3. Растения – это многоклеточные организмы.
4. Рыбы относятся к царству животных.
5. Животные бывают позвоночные и беспозвоночные.

6. Животные не могут производить пищу, поэтому они должны ее искать.
7. Близкие семейства объединяются в отряды.
8. Организмы одного вида более тесно связаны, чем организмы одного отряда.
9. Такая система называется биномиальной и применяется для обозначения растений и животных. Первое слово указывает на род, второе слово обозначает вид.
10. Название рода всегда пишется с большой буквы, название вида – с маленькой.

UNIT 7

BACTERIA

Vocabulary

1. abundant – обильный, достаточный
2. compartment – отделение
3. binary fission – бинарное деление (клетки)
4. fusion – слияние
5. to split – расщепляться
6. to cause – вызывать, быть причиной
7. cause – причина
8. agent – агент, возбудитель (болезни), фактор
9. pathogen – болезнетворный организм, патогенный микроорганизм
10. pickle – соленье, маринад, рассол, соленые или маринованные огурцы
11. sauerkraut – кислая капуста
12. host – хозяин, организм-носитель
13. to poison – отравлять
14. poison – яд
15. to contaminate – загрязнять, заражать
16. contamination – загрязнение, заражение
17. to inhale – вдыхать
18. injury – повреждение
19. to attach – прикреплять
20. tetanus – столбняк
21. to thrive – процветать
22. fever – лихорадка
23. spring – ключ, родник, источник
24. pressure – давление
25. favourable – благоприятный
26. damage – урон, повреждение
27. vomiting – тошнота
28. diarrhea – диарея
29. failure – несостоятельность, неисполнение, провал
30. ground water – подземные воды
31. to occur – случаться, происходить

Text

BACTERIA

Bacteria are the oldest, most abundant and simplest organisms. Bacteria were abundant over two billion years before eukaryotes appeared in the world. They were largely responsible for creating the properties of the atmosphere and the soil during the long ages in which they were the only form of life on the Earth. Bacteria are present on and in nearly everything we eat and touch. Bacteria are also the only organisms with a prokaryotic cellular organizations. Bacteria have a cell structure different from other organisms: the cytoplasm contains non interval compartments or organelles; the hereditary material is not enclosed by a membrane to form a nucleus; and the cell is bounded by a membrane encased within a cell wall. For these reasons bacteria are classified as a separate kingdom of organisms, Monera, meaning “alone”.

Bacteria and viruses both have reputation as being agents of diseases. But the role of bacteria in the world of living things is much broader than that of a pathogen. Bacteria make life on Earth possible because they perform integral functions as decomposers of organic materials and are natural recyclers of nitrogen and other organic compounds in ecosystems. They are also used to produce certain foods such as yogurt, sauerkraut, cheese, pickles etc.

Bacteria reproduce asexually by binary fission, a splitting in two after replication of the genetic material takes place. Bacteria within a population increase rapidly when growth conditions are favourable. A few genera of bacteria cause diseases in plants and many genera cause diseases in animals, including humans. Most disease producing bacteria use their host food, but some poison their hosts.

To cause disease, bacteria or the poisons they produce must get into the body. Usually this happens when eating contaminated food or drinking contaminated water. Bacteria present in the air may be inhaled. Sometimes bacteria enter the body through broken skin as a result of an injury or injection of a contaminated needle. After entering the body bacteria attach to body cells and cause various types of tissue damage. The chemicals bacteria produce digest the tissues so that the breakdown products can be taken into the bacteria and metabolized. In addition, certain bacteria such as the bacteria that caused staphylococcal food poisoning, tetanus or cholera, produce toxins or poisons. These toxins can cause powerful effect, such as high fevers, muscle spasm, vomiting, diarrhea, heart damage, and respiratory failure.

Bacteria occur in wide range of habitats and play key ecological role in each of them. Some thrive in hot springs in which the water temperature can be as high as 78° C. Others live more than a quarter of a mile beneath the surface of the ice in Antarctica. Still there are other bacteria capable of dividing only under high pressures. Bacteria live practically everywhere, even in ground water where they were once thought to be absent.

Learning Activities

I. Guess the meaning.

Bacteria, billion, to create, atmosphere, agent, recycler, role, pathogen, yogurt, genetic material, injection, ecosystem, metabolized, staphylococcal, integral, effect, cholera, ecological, mile, practically, habitat, toxin, reputation, reasons.

II. Attribute the words to a certain part of speech. Complete the chart. Compare your chart with your group mates' ones. Discuss the results.

These, bacteria, oldest, most abundant, simplest, appeared, its, properties, atmosphere, atmospheric, classified, reputation, produced, cause, favorable, conditions, powerful, respiratory, metabolize, capable, hot, springs, chemicals, happens, largely, nearly, long, decomposers, wide.

	<i>Verb</i>	<i>Noun</i>	<i>Adjective</i>	<i>Adverb</i>
<i>1</i>	e.g.	bacterium		
<i>2</i>				
<i>3</i>				
<i>4</i>				
<i>5</i>				
<i>6</i>				
<i>7</i>				

III. Put the verb in a proper form.

1. Bacteria (is, was, were) the oldest, most abundant, and simplest organisms.
2. Bacteria and viruses both (have, has, had, will have) reputation as being agents of diseases.
3. Most disease producing bacteria (use, used, will use) their host food.
4. Bacteria (live, lives, lived) practically everywhere, even in ground water where they (was, were, will be) once thought to be absent.
5. Usually this (happens, happened, will happen) when eating contaminated food or drinking contaminated water.
6. Many genera (causes, cause, caused, will cause) diseases in animals, including humans.
7. Certain bacteria such as the bacteria that (causes, caused, will cause) staphylococcal food poisoning, tetanus or cholera (produce, produces, will produce) toxins or poisons.
8. Bacteria within a population (increase, increased, will increase) rapidly when growth conditions are favourable.
9. Bacteria (have, has, had) a cell structure different from other organism.

IV. Pick out from the sentences Participle I and Participle II, define their function.

1. For these reasons bacteria are classified as a separate kingdom of organisms.
2. They are also used to produce certain foods such as yogurt, sauerkraut, cheese, pickles etc.

3. Some bacteria are found attached to body cells.
4. Usually this happens when eating contaminated food or drinking contaminated water.
5. Bacteria present in the air and may be inhaled.
6. With resources limited, the entire population can not be maintained.
7. This process is called binary fission.
8. These organisms are not grouped into phyla but into four divisions.
9. Bacteria are usually found adhering to the particles of dust.

V. Translate into Russian.

1. Bacteria are widely spread in nature, being found nearly everywhere.
2. The numbers vary from one place to another, depending upon the environmental conditions.
3. Bacteria are found in the atmosphere, being carried there by air currents.
4. Their number varies considerably, depending upon the source of the water.

VI. Give Russian equivalents.

Nitrogen compounds, air contamination, growth conditions, tissue damage, food poisoning, muscle spasm, water temperature, ground water, garden soil, surface layers, cell wall, plant poison, ice surface.

VII. Fill in prepositions.

(on, after, of, in, as, to, for, under, into, through)

1. They were largely responsible ... creating the properties ... the atmosphere and the soil.
2. The cell is bounded ... a membrane encased ... a cell wall.
3. Bacteria and viruses both have reputation ... being agents ... diseases.
4. Sometimes bacteria enter the body ... broken skin ... a result ... an injury or injection ... a contaminated needle.
5. Others live more than a quarter ... a mile ... the surface ... the ice ... Antarctica.
6. Still there are other bacteria capable ... dividing only ... high pressures.
7. ... entering the body bacteria attach ... body cells and cause various types ... tissue damage.
8. The breakdown products can be taken ... the bacteria and metabolized.

VIII. Complete the sentences according to your knowledge.

1. Most waters contain large numbers of ...
2. The air over the ocean far removed from the shore is practically free from ...
3. The more dust particles are suspended in the air, the greater will be the extent of bacterial ...
4. Water polluted with sewage may contain thousands or even millions of ... per cubic centimeter.
5. Occasionally some bacterial species penetrate the broken skin and intestinal wall, resulting in ...

6. As much as one-fourth of the dry weight of the intestinal contents of man is composed of ... cells.
7. The souring of milk is the result of ... action.
8. ... as a group are not alike in their morphological picture.
9. ... can move due to the presence of organs of locomotion known as flagella.

IX. Read the text below and find in this text the answers to the questions.

1. What are the major shapes of bacteria?
2. Can bacteria be seen with the naked eye?
3. Can bacteria be seen under the microscope?

Shape and Size of Bacteria

Bacterial cells exhibit three fundamental shapes: the spherical, the rod and the spiral forms. All bacteria exhibit pleomorphism in more or less degree. Some of the round or coccus forms are apparently perfect spheres; others are slightly elongated or ellipsoidal in shape. Spherical forms that grow normally in pairs (diplococci), fours (tetrads), or chains (streptococci) are usually slightly flattened at the adjacent surfaces.

Bacteria are considerably smaller than yeasts, molds, algae and protozoa. They vary greatly in size according to the species. Some bacteria are so small that they can not be easily seen with a powerful microscope. Some bacteria measure as large as 80 μ in length and others are as small as 0.1 μ . Regardless of their size, none are visible with the naked eye.

X. Read the passage. Divide it into paragraphs. Entitle the passage.

Bacteria are found in the soil, air, water, foods, in decaying organic matter of all kinds. The common occurrence of a species in a certain environment is spoken of as a natural flora of that particular environment. Changes in the environmental conditions produce changes in the bacterial flora. A rich garden soil contains more organisms than a poor uncultivated soil. The great majority of soil organisms are found in the surface layers. Bacteria are found in the air. Organisms do not grow and multiply in air because conditions are not favourable. There is no such a thing as a normal atmospheric flora. Most waters contain large numbers of bacterial organisms. Some bacterial species are constantly present and constitute the natural flora of the water. Usually fewer bacterial species occur in sea water than in the soil.

XI. Read for comprehension. Render the text.

Bacterial Reproduction

Reproduction among bacteria is asexual. One cell divides into two with no exchange of genetic material among cells. This process is called binary fission. Genetic material replicates and divides before fission. The bacterium also grows in size and manufactures sufficient ribosomes, membranes and macromolecules for two

cells before dividing. When the cell reaches an appropriate size and the synthesis of cellular components is complete, binary fission begins.

Most bacteria reproduce every one to three hours. Some bacteria take a great deal longer. Under favourable conditions bacteria could produce a population of billions in little more than a day. Many cells compete for food and other growth factors they need to survive. With resources limited, the entire population can not be maintained, and cells begin to die. Eventually, if the growth requirements of the bacterial population are no longer met, the population may begin to die as rapidly as it once grew.

XII. Explain the meaning of the word “pathogen”.

XIII. Put questions to these answers.

1. The kingdom of bacteria, Monera, is divided into four divisions, which are further subdivided into sections, orders, families, genera and species.
2. Scientists have learned ways to use disease-causing bacteria in the productive ways in the genetic engineering of plants.
3. Yes, they are. Many animal and plant diseases are caused by bacteria.
4. No, they are not. Most plant diseases are not caused by bacteria, they are caused by fungi.
5. Binary fission is a type of asexual reproduction in which one cell divides into two with no exchange of genetic material among cells.
6. Decomposers are organisms such as bacteria and fungi that obtain their energy by breaking down organic material in dead organisms and contribute to the recycling of nutrients to the environment.

XIV. Answer the following questions.

1. What organism are the oldest and most abundant?
2. Can bacteria produce diseases in humans and animals?
3. Is the role of bacteria to be only pathogens?
4. What functions of bacteria do you know?
5. How do bacteria reproduce?
6. How can bacteria enter the body?
7. Where can bacteria be found?
8. Are bacteria present in tap water that we use?
9. What about the size of bacteria?
10. What shapes can bacteria have?
11. How often do bacteria reproduce?
12. In what case does the bacterial population decrease?

XV. Translate into English.

1. Клеточная структура бактерий отличается от клеточной структуры других организмов.
2. Бактерии находятся повсюду.

3. Бактерии бывают вредными и полезными.
4. Бактерии и вирусы считаются патогенами.
5. Большинство бактерий воспроизводятся каждые 1-3 часа.
6. При благоприятных условиях бактерии размножаются в больших количествах.
7. Какие полезные свойства бактерий вы знаете?
8. Тебе известно, что бактерии по размерам гораздо больше, чем вирусы?
9. Многие болезни животных, растений, человека вызываются бактериями или вирусами.
10. Мы изучаем патогенные микроорганизмы, чтобы предупреждать и лечить болезни.
11. В горном воздухе содержится мало бактерий.
12. Свежий воздух и вода – наши лучшие друзья.

UNIT 8

VIRUSES

Vocabulary

1. to invade – вторгаться, заселять
2. invasion – инвазия, проникновение в организм хозяина
3. invasive – инвазионный
4. invasiveness – заразительность, инвазионность
5. acid – кислота
6. to infect – заражать, инфицировать
7. infection – инфекция, инфицирование
8. infectious – инфекционный, заразный
9. coat – оболочка
10. obligate – обязательный, облигатный
11. essential – существенный, основной, незаменимый (аминокислота)
12. to exist – существовать
13. to regard – рассматривать
14. interact – взаимодействовать
15. to assume – предполагать, брать на себя
16. to rely (on, upon) – полагаться
17. pattern – образец, паттерн, тип, способ
18. to disrupt – нарушать
19. lytic cycle – литический цикл
20. lysogenic cycle – лизогенный цикл
21. to destroy – разрушать
22. to purify – очищать

Text

MICROORGANISMS LACKING CELLS – VIRUSES

Viruses are infectious agents traditionally considered as microorganisms. They enter living organisms and cause diseases. Although viruses invade living things and cause cells to make more viruses, viruses themselves are not living. They do not have a cellular structure, which is the basis of all life. Viruses are protein – coated nucleic acids that replicate within living things. They have a genetic molecule, which may be DNA or RNA, and a protein coat. Although the viral genetic molecule is capable of directing viral reproduction (one of life's characteristics), viruses do not have the cellular support structures and metabolic machinery necessary to perform life functions. They do not transform energy, carry out metabolism, or actively respond to their environment, all of which are essential characteristics of living systems. They are nonliving obligate parasites, which means that viruses can not reproduce outside of a living system. They must exist in association with other organisms.

Viruses were discovered at the end of the nineteenth century. For many years after their discovery, viruses were regarded as primitive forms of life, perhaps the ancestors of bacteria. Today scientists know that viruses are not living organisms. Viruses infect primarily plants, animals and bacteria. A specific virus can only infect a certain species. Some viruses however can infect more than one species. Each virus has its own unique shape but all contain the same basic parts.

Viruses are made up of a nucleic acid core surrounded by a protein covering called a capsid. Some viruses have an additional covering or envelope which is rich in protein, lipids and carbohydrate molecules. On their own, viruses are inanimate objects that passively interact with their environment and are unable to replicate themselves. Within a living cell, the viral nucleic acid assumes control of the metabolic activities of that cell. Viruses rely entirely on the metabolic activities of living cells to provide energy and materials for their replication.

Viruses must enter a cell and use the cell's enzymes and ribosomes to make more viruses. This process of viral multiplication within cell is called replication. Various patterns of viral replication exist. In the lytic cycle a virus enters a cell and causes to produce viral nucleic acid and protein coats. When viruses are able to enter (infect) living cells, the viral nucleic acid molecule has the capability of directing the replication of the complete virus. In the lysogenic cycle, viruses enter into a long-term relationship with the cell they infect, their nucleic acid replicating as the cell multiply.

Some viruses can seriously disrupt the normal functioning of the cell, transforming them into rapidly growing invasive cells that destroy body tissue.

Learning Activities

I. Guess the meaning.

Infectious, to infect, protein, to direct, machinery, to transform, actively,

characteristics, to control, cycle, to direct, metabolic, ribosomes, energy, multiplication.

II. Separate adjectives from adverbs. Complete the chart.

Infectious, traditionally, nucleic, cellular, genetic, viral, capable, metabolic, actively, primitive, primarily, essential, specific, basic, additional, passively, unable, metabolic, entirely, lysogenic, seriously, normal, rapidly, invasive, lytic, viral, specific.

	Adjective	Adverb

III. Give Russian equivalents.

Protein coat, cellular support structures, life functions, cell reproduction, carbohydrate molecules, viral nucleic acid molecule, virus replication.

IV. Supply nouns to the following verbs.

- | | |
|---------------|----------------|
| to infect - | to reproduce - |
| to live - | to shape - |
| to invade - | to interact - |
| to cause - | to perform - |
| to base - | to multiply - |
| to direct - | to control - |
| to support - | to replicate - |
| to discover - | to enter - |

V. Transform the Present Simple into the Present Progressive. Make sentences of your own.

e.g. *the organisms live – the organisms are living .*

1. Viruses invade –
2. Cells make more viruses –
3. A protein covering surrounds –
4. The virus infects the plant –
5. Protein coats the nucleus –
6. A capsid covers a core –
7. A cell replicates –
8. Cells destroy body tissue –

VI. Turn active into passive.

e.g. Viruses invade cells.	Cells are invaded by viruses.
----------------------------	-------------------------------

1. A coat covers the nucleus.
2. Viruses do not transform energy.
3. Damaging cells destroy body tissues.
4. Viruses do not carry out metabolism.
5. Scientists regarded viruses as primitive forms of life.
6. Scientists discovered viruses at the end of the nineteenth century.
7. Viruses use cell enzymes and ribosomes.

VII. Translate into Russian.

1. Viruses are infectious agents traditionally considered microorganisms.
2. Viruses do not have the cellular support structures and metabolic machinery necessary to perform life functions.
3. Viruses are made up of a nucleic acid core surrounded by a protein covering called a capsid.
4. In the lysogenic cycle, viruses enter into a long-term relationship with the cell they infect, their nucleic acid replicating as the cell multiply.
5. The scientists discovered that the infectious agents passed through the filters they used.
6. Some viruses can disrupt the normal functioning of the cell they infect.

VIII. Make sentences negative and interrogative.

1. Various patterns of viral replication exist.
2. The largest viruses are visible with a light microscope.
3. This pattern of viral replication is called a lytic cycle.
4. Viruses enter living organisms and cause diseases.

IX. True or false?

1. Viruses do not have a cellular structure, which is the basis of life.
2. Viruses are noncellular infectious agents capable of causing certain diseases.
3. Bacteria occur in many habitats, play important ecological roles and can not produce diseases.
4. Viruses can be seen with naked eye.
5. Because viruses are not living things they are not included into five kingdoms of life.
6. Antibiotics also work against viruses.
7. Viruses are a little different from bacteria.
8. Viruses are not living organisms because they are not cells.

X. Check if the statements are correct.

Viral replication

The lytic cycle	During a lytic cycle viral nucleic acid enters a cell and causes it to burst, releasing new virus.
The lysogenic cycle	In the lysogenic cycle the virus is integrated into the host cell, and its nucleic acid is replicated as the host cell multiplies.

XI. Complete the sentences according to your knowledge.

1. Viruses are protein-coated nucleic acids that replicate within
2. Viruses primarily infect plants, animals and replicating within their cells.
3. Viruses were discovered at the end of ... century.
4. Viruses have the same basic parts: a nucleic acid ... (DNA or RNA) and a protein ... called a capsid.
5. Although viruses invade living things and cause cells to make more viruses, the viruses themselves are not ...

XII. Read the following text for comprehension. Answer the questions. Entitle the passage.

1. How were viruses discovered?
2. The nature of viruses became evident in 1930s, did not it?
3. With the development of what were scientists able to see the virus?

At the end of the nineteenth century, several groups of European scientists working independently, first realized that viruses existed. As they filtered fluids derived from plants with tobacco mosaic disease and cattle with foot-and-mouth disease, the scientists discovered that the infectious agents passed through the filters they used, which were designed to hold back bacteria. These agents were not bacteria – they were too small.

The scientists also discovered that the disease causing agents could multiply only within living cells. For a long time viruses were regarded as very primitive living things. True nature of viruses became evident in 1930s after the ground breaking work of an American Scientist Wendell Stanley.

Stanley prepared an extract of tobacco mosaic virus (TMV), purified it, and studied its chemical composition. His conclusion: TVM was a protein – and he was partially right. Scientists later discovered that TVM also contains ribonucleic acid (RNA). With the development of the electron microscope, scientists were able to see the virus that Stanley purified.

Notes:

tobacco mosaic disease – мозаичная болезнь табака

foot-and-mouth disease – ящур

XIII. Answer the questions.

1. What are viruses?
2. What is the structure of a generalized virus?
3. What do scientists mean when they say that viruses are not alive?
4. Are viruses included into the five kingdoms of living things?
5. What is larger, a virus or a bacterium?
6. How can viruses be recognized?
7. What agents are infective, viruses or bacteria?
8. How do viruses replicate?

9. Are antibiotics helpful against viruses?
10. What did Wendell Stanley purify and study?

XIV. Translate into English.

1. Вирусы могут вторгаться в организм и вызывать болезни.
2. У вирусов отсутствует клеточная структура.
3. Вирусы были открыты в конце девятнадцатого века.
4. Сегодня ученые знают, что вирусы не являются живыми организмами.
5. Вирусы поражают, главным образом, растения, животных, бактерии.
6. Вирусы могут серьезно нарушить функционирование клетки.
7. Вирусы могут размножаться только внутри живой клетки.
8. После создания электронного микроскопа ученые смогли увидеть вирусы.
9. Самый крупный вирус по размеру меньше самой маленькой бактерии.

UNIT 9

FUNGI, ALGAE, PROTOZOA

Vocabulary

1. to disseminate – рассеивать, распространять
2. dissemination – рассеивание, расселение
3. to obtain – получать
4. filament – нить, волокно
5. yeasts – дрожжи
6. vascular – сосудистый
7. locomotion – передвижение
8. to involve – вовлекать
9. flagellum / pl. flagella – жгутик
10. flagellate – жгутиковый
11. whiplike – жгутоподобный
12. hypha / pl. hyphae – гифа
13. predominance – преобладание
14. weed – водоросль, сорняк
15. to penetrate – проникать
16. starch – крахмал
17. current – поток, течение
18. proliferation – пролиферация, быстрое разрастание, быстрое размножение
19. medium / pl. media – среда
20. motility – подвижность, способность к движению
21. to migrate – мигрировать, перемещаться
22. mold – плесень, плесневой грибок
23. spore – спора
24. to propel – продвигать вперед, толкать
25. moisture – влага, сырость
26. moist – сырой, влажный

Text

FUNGI, ALGAE, PROTOZOA

Protists are a varied group of eukaryotic organisms. Many are single celled, though some include multicellular or colonial forms. Within this kingdom are animallike, plantlike and funguslike organisms. The animallike protists are called protozoa. The plantlike protists are the algae.

Although many protists are single celled, these organisms are incredibly different from procaryotic single celled organisms, the bacteria. The single celled protists are much larger than bacteria, having approximately 1000 times the volume, and they contain typical eukaryotic cellular organelles. This increases their organization to a level much more complex than that of bacteria. **Fungi, algae** and **protozoa** are microorganisms with eukaryotic cells. The cells of these organisms are structurally similar to those of plants and animals, which are multicellular organisms with eukaryotic cells and differentiated tissues.

Fungi are multicellular eukaryotic organisms that obtain their nutrition from organic compounds. Fungi are essential in the production of certain foods, they also cause certain diseases. Their cells are usually surrounded by protective cell walls composed of chitin or other polysaccharides. They produce spores, which are specialized cells involved in production, dissemination, and survival. Some, called yeasts, are unicellular. Other, called molds or filamentous fungi, form multicellular filaments called hyphae.

Algae are widely distributed in the oceans and lakes of the world, floating on or near the surface of the water no longer than the sun's rays can reach. Algae are photosynthetic eukaryotic microorganisms, they contain chlorophyll and carry out photosynthesis. However, algae lack true stems, roots, leaves and vascular tissue (an internal water-carrying system). Many are unicellular but some form multicellular filaments and other multicellular forms.

Some organisms that traditionally have been considered algae have been reclassified based on their cellular structure and organization. The blue-green algae are now considered cyanobacteria because their cells are prokaryotic. Also, the brown and red algae are now considered plants because they are multicellular organisms that exhibit tissue differentiation. **Protozoa** are unicellular, nonphotosynthetic, eukaryotic microorganisms. Various groups of protozoa exhibit different strategies of locomotion. Some, such *Amoeba*, can change their cell shape, extending the cell so that it migrates along, whereas others, such as *Paramecium*, are propelled by numerous beating structures called cilia, hairlike extensions. Flagellates are an interesting group of protozoa, they all have at least one flagellum (a long, whiplike organelle of motility) some have many flagella and some have thousands.

Notes: Carrageen – карраген, красная водоросль

Learning Activities

I. Guess the meaning.

Chitin, polysaccharides, photosynthetic, mitosis, animallike, plantlike, funguslike, gluelike, to migrate, chloroplast, cellulose, violet, absorbing, ecologically, economically, coral reefs, agar, cosmetics, stabilizer, thickener, pudding, ingredient, gelatin.

II. Give Russian equivalents.

Tissue differentiation, food production, shore line, coral reefs, pigment predominance, calcium deposits, land plants, tree trunk, laboratory media, ice cream stabilizer, cell shape, protozoa group.

III. Supply several versions of translation for the following:

animallike –
plantlike –
funguslike –
humanlike –
whiplike –

IV. Define the forms of the verbs. Translate the sentences into Russian.

1. Some organisms that traditionally have been considered algae have been reclassified based on their cellular structure and organization.
2. The blue-green algae are now considered cyanobacteria because their cells are prokaryotic.
3. Also, the brown and red algae are now considered plants because they are multicellular organisms that exhibit tissue differentiation.
4. This enables some of the red algae to grow at greatest depth than other algae and inhabit areas in which most algae can not exist.
5. Agar is used to make gelatin capsules.

V. Fill in the gaps with prepositions.

(both ... and..., for, by, in, to, of from)

1. The red algae produce substances that make them interesting ecologically ... economically.
2. This increases their organization ... a level much more complex than that ... bacteria.
3. ... this reasons scientists think the green algae were ancestors ... the plant kingdom.
4. Their cells are usually surrounded ... protective cell walls composed ... chitin or other polysaccharides.
5. Their colour comes... types and amount ... photosynthetic pigments present ... their chloroplasts.

6. The corallin algae, ... example, deposit calcium carbonate (limestone) ... their cell walls.

VI. Translate the sentences. State the function of the infinitive.

1. Agar is used to make gelatin capsules.
2. To do this fungi secrete enzymes onto a food source to break it down and then absorb the breakdown products.
3. This enables some of the red algae to grow at greatest depth than other algae and inhabit areas in which most algae can not exist.
4. The Sargasso sea is an area of ocean in the Mid-Atlantic, east of Bermuda, with unusual water and current patterns that cause it to be quite calm.
5. This calmness allows floating species of the Sargasso weed to proliferate and dominate the area.

VII. Translate the sentences in a written form.

1. The animallike protists are called protozoa.
2. Their cells are usually surrounded by protective cell walls composed of chitin or other polysaccharides.
3. Also, the brown and red algae are now considered plants because they are multicellular organisms that exhibit tissue differentiation.
4. They are composed of slender filaments that may form cottony masses.
5. Many antibiotics (drugs that act against bacteria) are produced by fungi.

VIII. Make the sentences interrogative.

1. Green algae show many similarities to land plants.
2. For this reasons scientists think the green algae were ancestors to the plant kingdom.
3. The cells of these organisms are structurally similar to those of plants and animals.
4. They produce spores, which are specialized cells involved in production, dissemination, and survival.
5. Some fungi cause serious diseases of plants and animals, including humans.
6. The cells of these organisms are structurally similar to those of plants and animals.

IX. Make up a plan of the text: "Fungi, Algae, Protozoa". Render the text according to your plan.

X. Read the passage. Subdivide it into paragraphs. Entitle the passage.

Fungi are a separate kingdom of mostly multicellular eukaryotic organisms that are saprophytic; that is they feed on dead or decaying organic materials. Some fungi are parasites and feed off living organisms in the same way. Most fungi are multicellular. They are composed of slender filaments that may form cottony masses or that may be packet together to form complex structures, such as mushrooms. The slender filaments of fungi are hardly visible to the naked eye. The growth of fungal hyphae may be very rapid when food and water are abundant and the temperature is

optimum. A mass of hyphae is called a mycelium (pl. mycelia). Many fungi are harmful because their mycelia grow into and decay, rot, and spoil foods. In addition some fungi cause serious diseases of plants and animals, including humans. Many antibiotics (drugs that act against bacteria) are produced by fungi. Yeasts that are single celled fungi, are also useful in the production of foods, such as bread, beer, wine, cheese and soy sauce.

XI. Render the text.

XII. Read the extract. Supply your title. Answer the questions below.

Amebas appear as soft shapeless masses of cytoplasm. Within the cytoplasm lie a nucleus and other eukaryotic organelles. The ameba's cytoplasm continually flows, pushing out certain parts of the cell while retracting others. These cytoplasmic extensions are called pseudopods and are a means of both locomotion and food procurement. Amebas reproduce by binary fission: the nucleus reproduced by mitosis and then the cell splits in two. Amebas are abundant throughout the world in fresh water and in salt water. Many species are parasites of animals including humans. They can cause diseases such as amebic dysentery and infection of the digestive system. Certain groups of ameba secrete shells that cover and protect their cells.

Questions.

What protozoa is described?

1. What does the word "shapeless" mean?
2. How do amebas reproduce?
4. Can they cause diseases in animals, and in humans?

Notes:

pseudopod – ложноножка, псевдоподия

food procurement – добыча пищи

XIII. Read the following for comprehension. Write out the most interesting data and share them with your groupmates.

Brown Algae

The brown algae are the dominant algae of the rocky northern shores of the world. The types of brown algae that grow attached to rocks at the shore line are known as rockweed. One type of rockweed is also called sargasso weed and gave the Sargasso Sea its name. The Sargasso Sea is an area of ocean in the Mid-Atlantic, east of Bermuda, with unusual water and current patterns that cause it to be quite calm. This calmness allows floating species of the Sargasso weed to proliferate and dominate the area.

Green Algae

The green algae or Chlorophyta (green plants), are an extremely varied phylum of protists. In fact more than 7000 species exist. Of these species, most are aquatic, but some are semiterrestrial. Semiterrestrial algae live in moist places on land, such as on tree trunks, on snow or in the soil. These algae are primarily unicellular microscopic forms, but some are multicellular. Green algae show many similarities to land plants: they store food as starch, they have a similar chloroplast structure, many genera have cell walls composed of cellulose and their chloroplasts contain chlorophyll *a* and *b*. For this reasons scientists think the green algae were ancestors to the plant kingdom.

Red Algae

Almost all red algae are multicellular and most of their species are marine. Their colour comes from types and amount of photosynthetic pigments present in their chloroplasts. Many species have a predominance of red pigments in addition to chlorophyll. Some red algae have a predominance of other pigments so that they look purple, or greenish black. The red pigment, however, is especially efficient in absorbing the green, violet and blue light that penetrates into the deepest water. This enables some of the red algae to grow at greatest depth than other algae and inhabit areas in which most algae can not exist.

The red algae produce substances that make them interesting both ecologically and economically. The corallin algae, for example, deposit calcium carbonate (limestone) in their cell walls. Along with coral animals, these red algae play a major role in the formation of coral reefs. Also all red algae have gluelike substances in their cell walls: agar and carrageenan. Agar is used to make gelatin capsules. It is also a main ingredient in the laboratory media on which bacteria, fungi and other organisms are often grow. Carrageenan is used mainly as a stabilizer and thickener in dairy products, such as ice cream, puddings, whipped cream etc., as a stabilizer in paints and cosmetics. Some of the red algae are used in food in certain parts of the world, such as Japan.

XIV. Answer the questions.

1. What organisms have a more complex structure protists or bacteria?
2. What is larger, single celled protists or bacteria?
3. What foods do you know to be produced with the help of fungi?
4. Where can fungi be found?
5. What are yeasts?
6. Where are algae distributed?
7. What type of organisms are protozoa?
8. Can protozoa cause diseases?
9. How do protozoa move?
10. From what kind of algae is agar produced?
11. The red algae produce substances that make them interesting both ecologically and economically, don't they?
12. Do scientists think the green algae to be ancestors to the plant or animal kingdom?

XV. Translate into English.

1. Некоторые грибы вызывают серьезные болезни у животных, растений и человека.
2. Большинство грибов являются многоклеточными.
3. Многие антибиотики производятся грибами.
4. Дрожжи – это одноклеточные грибы.
5. Дрожжи используются в производстве продуктов питания, таких как хлеб, пиво, сыр, соевый соус и другие.
6. Бурые водоросли преобладают на скалистых северных берегах.
7. Зеленые водоросли имеют много сходства с наземными растениями.
8. Красные водоросли производят вещества, которые делают их интересными как экологически, так и экономически.
9. Красные водоросли играют большую роль в формировании коралловых рифов.
10. Некоторые водоросли используются в пищу.

UNIT 10

ANIMALS

Vocabulary

1. backbone – позвоночник, позвоночный столб, спинной хребет
2. tetrapod – четвероногое животное
3. vertebral column – позвоночный столб
4. skull – череп
5. chamber – камера
6. gills – жабры
7. larva – личинка, гусеница
8. larval – личиночный
9. scale – чешуя, чешуйка
10. ectothermic – холоднокровные
11. endothermic – эндотермные, теплокровные
12. to alter – изменять, вносить изменения
13. wing – крыло
14. mammal – млекопитающее
15. feather – перо
16. down – пух, пушок
17. female – самка
18. male – самец
19. adult – взрослый
20. insulation – изоляция
21. cavity – полость
22. ape – обезьяна

Text

ANIMALS

Animals are a diverse group of eukaryotic multicellular, heterotrophic organisms. This diverse group is often divided into two subgroups: the invertebrates and the vertebrates. The invertebrates are animals without backbones. The vertebrates are animals with a backbone that surrounds and protects the dorsal nerve cord.

Three classes of vertebrates are fish; four are tetrapods. In addition to having vertebral column, vertebrates have distinct heads with skulls that houses their brains. They have closed circulatory systems and a heart to pump the blood. Most vertebrates have kidneys and endocrine glands. Vertebrates make a diverse group consisting of animals adapted to life in the sea, on land and in the air.

The vast majority of fishes are bony fishes. Along with having bony internal skeletons these fishes have thin bony platelike scales. Fishes have two chambered hearts that pump blood to the gills. From the gills the blood moves to the rest of the body.

The amphibians live both in water and on land. The young of frogs and toads undergo change from larval to adult forms during development. The amphibians have a three chambered heart.

Reptiles are better adapted to life on land than the amphibians, because of their dry scaly skin that retards water loss and their shelled eggs. Fishes amphibians and reptiles are ectothermic animals, they regulate their body temperature by taking in heat from the environment. Ectothermic animals are often called “cold blooded”, though they often maintain body temperatures much warmer than their surroundings.

Birds are winged vertebrates that are covered with feathers and are adapted to flight. They lay eggs like the reptiles but have a four chambered heart like the mammals. Birds like mammals and unlike reptiles, amphibians and fishes are endothermic, that is they regulate body temperature internally. Several types of feathers form the body covering of birds, including contour feathers, and down feathers. Birds can alter the area and shape of their wings by altering the position of their feathers. Feathers provide birds with waterproof coats and play an important role in insulating birds against temperature changes.

There are about 4500 species of living mammals, including humans. Mammals are endothermic vertebrates. Mammals have hair and their females secrete milk from mammary glands to feed the young. Mammary glands are functional in female mammals and are present but non-functional in males. The milk that they produce contains water, carbohydrates, fat, protein, minerals and antibodies. Mammals have a four chambered heart with circulation to the lungs and separate circulation to the body.

Like the plants, fungi and protists, animals are eukaryotic organisms having a distinct nucleus and a cellular structure different from the prokaryotic structure of bacteria. Also, like the plants, most fungi and some protists animals are multicellular. No single celled animals exist.

Animals are unable to make their own food. Therefore animals must eat plants, other organisms or organic matter for food. Some simple animals, such as the sponges take organic matter directly into their cells. Most animals digest food within a body cavity. The resulting molecules are then taken into the body cells to be broken down further by the chemical reactions of cellular respiration. The end product of cellular respiration is energy which is used to drive the activities of life, including growth, maintenance, reproduction and response to the external environment. As part of this response most animals are capable of movement to capture food or to protect themselves from injury.

Learning Activities

I. Guess the meaning.

Vertebrate, invertebrate, to pump, adapted, skeleton, countour, amphibians, to regulate, antibodies, separate, reaction, circulation, chemical reaction, mineral.

II. Give Russian equivalents.

Temperature changes, body protection, female mammals, body cavity, blood circulation, food digestion, cell respiration, end product, body cells, life maintenance.

III. Pick out the -ing forms from the text "Animals". State their form and function.

IV. Attribute the following words to a certain part of speech. Complete the chart.

Heterotrophic, invertebrates, vertebrates, vetebral, to house, to pump, platelike, internally, functional, container, ectothermic, nucleus, enable, capable, movement, respiration, external, environment, activity, chemical, reaction, directly, matter.

	<i>Noun</i>	<i>Verb</i>	<i>Adjective</i>	<i>Adverb</i>

V. Complete the sentences according to the text.

1. This diverse group of animals is often divided into two subgroups: ...
2. The vertebrates are animals with ...
3. In addition to having vertebral column, vertebrates have distinct ...
4. Fishes have two chambered ...
5. Reptiles are better adapted to life on land than ...
6. Birds are endothermic, that is they regulate body ...
7. Ectothermic animals are often called ...
8. Animals must eat plants, other organisms or organic matter for...

VI. Supply antonyms.

Vertebrate, organic, diverse, closed, adapted, functional, the end product, capable, simple, majority, external, unicellular, unlike, dry, directly.

VII. True or false?

1. Reptiles are endothermic animals.
2. The invertebrates are animals without backbones.
3. Birds can not alter the area and shape of their wings.
4. Mammary glands are functional in female mammals and are present but non-functional in males.
5. Ectothermic animals are often called “warm blooded”.
6. No single celled animals exist.
7. Animals unable to make their own food.
8. Mammals have a four chambered heart with circulation to the lungs and separate circulation to the body.

VIII. Change the Present Tense into the Past.

1. This diverse group is divided into two subgroups.
2. There are about 4500 species of living mammals, including humans.
3. Females secrete milk from mammary glands to feed the young.
4. The resulting molecules are then taken into the body cells to be broken down further by the chemical reactions of cellular respiration.
5. The end product of cellular respiration is energy which is used to drive the activities of life.
6. The milk that they produce contains water, carbohydrates, fat, protein, minerals and antibodies.

IX. Fill in prepositions.

(of with, without, on, in, from, down, for)

1. Animals are a diverse group ...eukaryotic multicellular, heterotrophic organisms.
2. The invertebrates are animals ... backbones.
3. Vertebrates make a diverse group consisting ...animals adapted ...life ... the sea, ... land and ... the air.
4. The resulting molecules are then taken ...the body cells to be broken... further ...the chemical reactions ... cellular respiration.
5. Mammals have a four chambered heart .. circulation ... the lungs and separate circulation ... the body.
6. Feathers provide birds ... waterproof coats and play an important role ...insulating birds... temperature changes.

X. Complete the sentences according to your knowledge.

1. ... are a diverse group of eukaryotic multicellular, heterotrophic organisms.
2. ... classes of vertebrates are fish; ... are tetrapods.
3. surrounds and protects the dorsal nerve cord.
4. There are about 4500 species of living mammals, including humans.
5. provide birds with waterproof coats and play an important role in insulating birds against temperature changes.
6. The vast majority of ... are bony

7. Some simple animals, such as ...take organic matter directly into their cells.
8. ... have hair and their females secrete milk from mammary glands to feed the young.

XI. Read the text for comprehension. Render the text.

Amphibians

The word “amphibian” means two lives and refers both to the aquatic and terrestrial existence of this class of animals. Amphibians depend on water during their early stages of development. Many amphibians live in moist places like swamps and in tropical areas even when they are mature, which lessens the loss of water through their skin. Most frogs and toads fertilize their eggs externally. Most salamanders use the internal fertilization but are still oviparous (lay their eggs).

Because amphibian eggs have no shells or membranes to keep them from drying out, amphibians lay their eggs directly in water or in moist places. Some amphibians protect their eggs by incubating them in their mouths, on their backs, or even in their stomachs. A few amphibian species ovoviviparous and incubate their eggs within their reproductive organs until they hatch, and a few are viviparous.

Notes: oviparous – яйцекладущий
ovoviviparous – яйцеживородящий
viviparous – живородящий

XII. Read the text. Write down the names of animals into your vocabulary, supply translation. Learn these words.

Reptiles

The three major orders of reptiles are the crocodiles and alligators, the turtles and tortoises, and the lizards and snakes. Reptiles have dry skins covered with scales that help retard water loss. As a result reptiles can live in a wider variety of environments on land than amphibians can, but the crocodiles, alligators and turtles are aquatic organisms.

Reptiles are ectothermic. Interestingly, fishes, certain lizards, invertebrates and plants produce their own internal antifreeze – chemical compounds that lower the freezing temperature of the body fluids of the organism. Along with such physiological adaptations, ectothermic animals protect themselves against the cold in behavioral ways. Frogs help protect themselves against freezing by spending the winter buried in the soil or in the mud at the bottom of ponds.

Ectothermic animals also protect themselves from high heat by burrowing under rocks or remaining in shady, somewhat cooler areas. Reptiles often bask in the sun, which raises their body temperature, and their metabolic rate. When cold-blooded animals are cold, the metabolic rate slows down, and they are unable to hunt for food or move about very quickly.

Answer the question: How do reptiles protect themselves from cold or heat?

XIII. Read the passage, suggest your title. Subdivide this passage into paragraphs. Make up a plan of this passage.

Marsupials are mammals in which the young are born early in their development and are retained in a pouch. After birth the embryos crawl to the pouch and nurse there until they are mature. The kangaroo and koala are familiar examples of marsupials. In placental mammals, the young develop to maturity within the mother. Placental mammals are extraordinarily diverse. The primates are the order that includes monkeys, apes, and humans. Mammals are warm-blooded and the most important distinction between mammals and other vertebrates is that all mammals and only mammals produce milk to feed their young. Only mammals possess true hair. The teeth of mammals are typically differentiated and specialized. Certainly, the most important single factor which gives mammals their superiority over other animals is the development of their brain. The ability to maintain the complex activities of the cerebral cortex in the higher mammals and to store memories is very largely dependent on the ability to maintain a constant body temperature.

XIV. Supply Russian equivalents. Consult a dictionary if necessary.

maturity –	
marsupial –	cerebral cortex –
placental –	brain –
embryo –	sweat gland –

XV. Answer the questions.

1. How do animals differ from the other kingdoms of living things?
2. Into what subgroups are animals subdivided?
3. What animals possess the vertebral column?
4. What characteristics differentiate mammals from other vertebrates?
5. Are birds ectothermic or endothermic animals?
6. How do reptiles protect themselves against cold or heat?
7. What are the three subclasses of mammals?
8. Where do amphibians live?
9. Where do amphibians lay their eggs to?
10. What marsupial animals do you know?
11. What order are monkeys, apes, and humans attributed to?
12. What is the highest live kingdom?
13. Do scientists continue to discover any new species of living things?

XVI. Translate into English.

1. Животные – это большая группа многоклеточных организмов.
2. Животные бывают позвоночные и беспозвоночные.
3. Амфибии живут как в воде, так и на суше.

4. Рептилии лучше приспособлены для жизни на суше, чем амфибии.
5. Птицы откладывают яйца.
6. Птицы могут изменять площадь и форму крыла.
7. Млекопитающие – теплокровные животные.
8. Животные не могут продуцировать пищу для себя.
9. Каких сумчатых животных вы знаете?
10. К рептилиям относятся крокодилы, аллигаторы, черепахи, ящерицы, змеи.
11. Млекопитающие кормят дитенышей молоком.

UNIT 11

INFECTION

Vocabulary

1. infectious disease – заразное заболевание, инфекционная болезнь
2. noninfectious disease – неинфекционное заболевание, незаразная болезнь
3. incubation period – инкубационный период
4. appearance – внешний вид, проявление, признак
5. to establish – устанавливать(ся), распространяться (о болезни)
6. entrance – вход, доступ (to gain entrance – попасть, получить доступ)
7. pathogenicity – патогенность, болезнетворность
8. to isolate – выделять, изолировать
9. strain – штамм, род, порода
10. to retain – сохранять, удерживать
11. attenuated – ослабленный (в вирулентности)
12. generation – генерация, поколение
13. inflammation – воспаление
14. artificial – искусственный
15. bone marrow – костный мозг
16. spleen – селезенка
17. secondary – вторичный
18. abscess – абсцесс, гнойник
19. localize – локализовать, ограничивать распространение
20. bacteriemia – бактериемия (наличие бактерий в крови)
21. septicemia – септицемия
22. focus /pl. foci – очаг (болезни), фокус (оптический)
23. spread – распространение
24. incidence – заболеваемость, встречаемость (о болезни)
25. examine – осматривать, исследовать
26. prevention – предупреждение, профилактика
27. epidemiologist – эпидемиолог
28. etiology – причины болезней,
29. transmission – передача, перенос
30. public health – здравоохранение
31. safety – безопасность

Text

INFECTION

The term **infection** may be defined as the entrance, growth and multiplication of organisms in the body, resulting in the development of a disease process.

Contamination. The terms infection and contamination are not synonyms, and should be distinguished from each other. A contaminated object is one that contains bacteria, especially those capable of producing diseases. The hands, for instance, may be contaminated with disease bacteria without being infected.

Bacteria are found in various parts of the body. Their presence does not necessarily mean that a disease process has been established. They are normally present on the skin, in the mouth and in the nasal passages, in the upper respiratory tract, in the intestinal tract.

The incubation period of the disease may be defined as the interval of time between the entrance of a disease organism into a host and the first appearance of symptoms. This period may be a few hours, several days, often weeks and even months.

Pathogenicity. A pathogenic organism is one capable of producing a disease. Thousands of bacterial species have been isolated but only a few of these are capable of producing diseases in humans. Some are pathogenic for humans but not for animals. Some species produce diseases in animals but not in humans. The ability of an organism to invade and produce a disease process depends upon the species concerned. It is necessary to name the host in order the term pathogenic may be used correctly.

Virulence. Virulence may be defined as the degree of invasiveness of the pathogenic organism. Different strains of the same species may show great variability in their invasive power. Also the same strain kept under different conditions may show great differences in disease producing ability. Transfer from natural to artificial culture media or other unfavourable environmental conditions also reduce the virulence of a pathogenic species. Some organisms retain their virulence even cultivated on culture media for many generations. A strain that has been greatly reduced in virulence is said to be attenuated.

Number of organisms. The number of organisms plays an important part in determining whether or not an infection will occur. A small number of virulent pathogenic organisms may be easily attacked and destroyed, whereas a large number may not be completely eliminated by the defense mechanisms of the host.

Path of infection. Bacteria gain entrance to the body in various ways. Some enter through the broken skin (occasionally through the unbroken skin), some by way of the respiratory passages, others, by way of alimentary tract. The site of the entry determines whether or not pathogenic bacteria are capable of producing an infection. After bacteria invade the tissue, they may attack the host in a variety of ways.

The organisms may produce a local inflammation or may localize in the liver, bone marrow, spleen, lymph glands etc., giving rise to secondary abscesses or secondary foci of infection. Sometimes organisms invade the blood stream, producing bacteriemia or septicemia (blood poisoning).

Animals and humans possess several defense mechanisms for destroying invading bacteria. If these mechanisms are strong and active they will usually defend the hosts against the disease organisms. On the other hand, if they are below normal an infection may take place.

Learning Activities

I. *Guess the meaning.*

Term, multiplication, object, nasal passage, respiratory tract, interval, symptoms, to name, correctly, alimentary tract, to destroy, mechanism.

II. *Read the sentences. Attribute the words in bold type to a certain part of speech. Complete the chart.*

1. The **term infection** may be **defined** as the **entrance, growth and multiplication of organisms** in the **body**.
2. A contaminated **object** is one that **contains bacteria, especially those capable of producing diseases**.
3. **Their presence** does not **necessarily mean** that a disease process **has been established**.
4. **Some** are **pathogenic** for **humans** but not for **animals**.
5. **Virulence** may be defined as the degree of **invasiveness** of the **pathogenic organism**.
6. **Transfer** from **natural** to **artificial culture media** or other **unfavourable environmental conditions** also **reduce** the **virulence** of a **pathogenic species**.

Noun	Verb	Adjective	Adverb	Pronoun

III. *Supply nouns to the following adjectives.*

Infectious..., bacterial..., various..., upper..., pathogenic..., different..., unfavourable..., small..., respiratory..., very important ..., local..., secondary.....

IV. *Fill in prepositions.*

(in, on, of, from, to)

1. The terms infection and contamination are not synonyms, and should be distinguished ... each other.
2. A contaminated object is one that contains bacteria, especially those capable ... producing diseases.
3. They are normally present ...the skin, ...the mouth and... the nasal passages, ...the upper respiratory tract, ...the intestinal tract.
4. The incubation period ... the disease may be defined ... the interval of time between the entrance ... a disease organism ...a host and the first appearance ... symptoms.

5. Some species produce diseases ... animals but not ... humans.
6. Some pathogens enter... the broken skin (occasionally ... the unbroken skin), some ... way ... the respiratory passages, others, ... way ... alimentary tract.
7. Some bacteria invade the tissue, they may attack the host ... a variety ... ways.

V. State the forms of the verbs. Translate the sentences in writing.

1. Bacteria are found in various parts of the body.
2. A disease process has been established.
3. Thousands of bacterial species have been isolated.
4. Some species produce diseases in animals but not in humans.
5. Bacteria invade the tissue.
6. A strain that has been greatly reduced in virulence is attenuated.

VI. Translate the following sentences in writing.

1. The hands for instance, may be contaminated with disease bacteria without being infected.
2. Their presence does not necessarily mean that a disease process has been established.
3. Thousands of bacterial species have been isolated but only a few of these are capable of producing diseases in humans.
4. It is necessary to name the host in order the term pathogenic may be used correctly.
5. Different strains of the same species may show great variability in their invasive power.
6. A strain that has been greatly reduced in virulence is said to be attenuated.
7. The number of organisms plays a very important part in determining whether or not an infection will occur.
8. The site of the entry determines whether or not pathogenic bacteria are capable of producing an infection.
9. If these mechanisms are strong and active they will usually defend the hosts against the disease organisms.
10. On the other hand, if they are below normal an infection may take place.

VII. Complete the sentences according to your knowledge.

1. The terms infection and contamination are ...
2. A contaminated object is one that ...
3. The incubation period of the disease may be defined as the interval of time between ... into a host and the first appearance of ...
4. ... of organisms plays a very important part in determining whether or not an infection will occur.
5. A small number of virulent pathogenic organisms may be easily attacked and
6. Animals and humans possess several defense mechanisms for destroying ...
7. Sometimes organisms invade the blood stream, producing blood

VIII. Read the passage. Say if the statements are true or false.

1. Pathogenicity refers to the qualitative ability of microorganism to produce diseases.
2. Virulence quantitatively describes the extent of a microorganism's ability to cause disease.
3. The term virulence is derived from the Greek "virulentia", meaning "poison".
4. The establishment of a microbially caused disease is a function of the virulence of the particular microorganism, the dosage (numbers) of that microorganism, and the resistance of the host individual.

Disease causing microorganisms (**pathogens**) possess properties, referred to as **virulence factors** that enhance their pathogenicity and allow them to colonize or to invade human tissues and disrupt normal body functions. **Pathogenicity** refers to the qualitative ability of a microorganism to cause disease; **virulence** quantitatively describes the extent of a microorganism's ability to cause disease. The term virulence is derived from the Latin virulentia, meaning poison. The establishment of a microbially caused disease is a function of the virulence of the particular microorganism, the dosage (numbers) of that microorganism, and the resistance of the host individual.

IX. Read the following for comprehension. Put five questions to this text in a written form. Render the text.

Pathogenesis of Infectious Diseases

Pathogenic microorganisms cause diseases because the growth of the pathogen in the body or toxins produced by the pathogens, disrupt normal body functions. Pathogens have properties that contribute to their potential for causing diseases. Virulence depends on the ability of the pathogens to invade body tissues and to produce toxins. Pathogenicity (the ability to cause disease), however is not a property of the microorganism alone; the simple presence of an organism does not equal disease. The invasion or infection of the body by a microorganism, even by a pathogen that typically causes disease, results in disease only when the infecting microorganism disrupts normal body functions. In some cases, infections with potentially pathogenic microorganisms do not lead to disease because their ability to affect body functions adversely is not fully expressed. Many healthy individuals are carriers of potentially pathogenic microorganisms, that is, they are infected with the microorganisms but will not or have not developed a disease as the result of the infection.

X. Explain the following:

1. Infection is ...
2. Contamination is ...
3. Pathogenicity is ...
4. Virulence is ...

XI. Read the passage. Express the general idea in a written form.

Control of Microbial Growth

There are many situations in which the presence or growth of microorganisms is undesirable or even harmful to animal or plant populations. The nature of the environment in which the organisms reside may influence the way of their control.

Exposure to high temperatures, ionizing radiation and various chemicals are routinely employed to kill microorganisms. Low temperatures, high solute concentrations and desiccation are employed to prevent microbial growth. Killing and limiting growth of microorganisms is especially important in preserving and maintaining of the safety of foods. It is also a key to modern medical practice and the use of antimicrobics to treat infectious diseases in animals and humans.

XII. Read and translate the following text in a written form.

Epidemiology

Epidemiology is a field of science concerned with the circumstances under which diseases occur. This science examines factors involved in the incidence, spread, prevention and control of infectious and noninfectious diseases. Contemporary epidemiologists consider the etiology of disease as the cause of disease. For infectious disease, this means identifying the pathogen responsible for the disease. Epidemiologists also examine the factors involved in the transmission of infectious agents. They identify the origin and mode of transmission of a disease and assess the microbiological safety of various substances, such as food and water, involved in this transmission.

The effect of the disease on a population can be measured by the death or mortality rate it produces. The incidence of the disease or morbidity rate is usually much higher than the mortality rate. Many more individuals become ill than die of a disease.

Notes:

mortality rate – уровень смертности

morbidity rate – заболеваемости

XIII. Answer the questions.

1. What initiates the disease process in the body?
2. Is there any difference between infection and contamination?
3. Can your hands be contaminated without being infected?
4. What is a pathogenic organism?
5. Is the number of pathogenic organism in the body of any importance for the infection to occur?
6. What paths of infection do you know?
7. What mechanism does the body possess to struggle the infection?
8. Does infection occur every time when pathogenic organisms get entrance into the body?
9. What does epidemiology deal with?

XIV. Translate into English.

1. Болезнь может быть результатом инфекции.
2. Контаминирование – это наличие патогенных микроорганизмов, но еще не болезнь.
3. Инкубационный период может длиться долго.
4. Некоторые организмы патогенны для животных, но не для человека.
5. Различные штаммы одного вида патогенов различаются по вирулентности.
6. Защитный механизм хозяина может полностью уничтожить патогенные организмы.
7. Штамм с редуцированной вирулентностью считается ослабленным.
8. Бактерии попадают в организм различными путями.
9. Если защитные механизмы ослаблены, может возникнуть инфекция.
10. Многие здоровые животные являются носителями опасных микроорганизмов.

UNIT 12

NUTRIENTS

Vocabulary

1. autotrophic – автотрофный
2. ingestion – прием внутрь, проглатывание, поедание
3. sufficient – достаточный
4. consume – потреблять
5. bulk – основной объем основная масса
6. to obtain – получать, добывать
7. source – ресурс, источник
8. to compare – сравнивать
9. to refer (to) – ссылаться (на)
10. to add – добавлять
11. to break down – разрушать, расщеплять.
12. fatty acid – жирная кислота
13. saturated fatty acids – насыщенные жирные кислоты
14. unsaturated fatty acids – ненасыщенные жирные кислоты
15. essential amino acids - незаменимые аминокислоты
16. chemical compound – химическое соединение
17. peptide bonds – пептидные связи
18. chain – цепочка, цепь
19. to manufacture – производить
20. to require – требовать
21. to join – соединять. присоединять
22. diet – рацион, диета
23. trace elements – микроэлементы
24. solvent – растворитель
25. fiber – клетчатка

Text

NUTRIENTS

A **nutrient** is a substance used in an organism metabolism which must be taken in from its environment. Methods for nutrient intake vary. Animals and protists have an internal digestive system, but plants digest nutrients externally before ingesting them. Organic nutrients include **carbohydrates, fats, proteins** (or their building blocks, **amino acids**), and **vitamins**. Inorganic chemical compounds such as **minerals, water and oxygen** may also be considered nutrients. A nutrient is essential to an organism if it cannot be synthesized by the organism in sufficient quantities and must be obtained from an external source. Nutrients needed in relatively large quantities are called macronutrients and those needed in relatively small quantities are called micronutrients.

The chemical elements animals consume in the largest quantities are carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur.

- The classes of chemical compounds necessary in the largest quantities and which provide bulk energy are carbohydrates, proteins, and fats. Water and atmospheric oxygen also must be consumed in large quantities, but are not always considered "food" or "nutrients".
- Calcium, salt (sodium chloride), magnesium, and potassium (along with phosphorus and sulfur) are sometimes added to the list of macronutrients because they are required in relatively large quantities compared to other vitamins and minerals. They are sometimes referred to as the macrominerals.

The remaining vitamins, minerals, or elements, are called micronutrients because they are required in relatively small quantities.

Substances that provide energy

- Carbohydrates are compounds made up of sugars. Carbohydrates are classified by their number of sugar units: monosaccharides (such as glucose and fructose), disaccharides (such as sucrose and lactose), oligosaccharides, and polysaccharides (such as starch, glycogen, and cellulose).
- Proteins are organic compounds that consist of the amino acids joined by peptide bonds. The body cannot manufacture some of the amino acids (termed essential amino acids); the diet must supply these. In nutrition, proteins are broken down through digestion by proteases back into free amino acids.
- Fats consist of a glycerin molecule with three fatty acids attached. Fatty acids are unbranched hydrocarbon chains, connected by single bonds alone (saturated fatty acids) or by both double and single bonds (unsaturated fatty acids). Fats are needed to keep cell membranes functioning properly, to insulate body organs against shock, to keep body temperature stable, and to maintain healthy skin and hair. The body does not manufacture certain fatty acids (termed essential fatty acids) and the diet must supply these.

Substances that support metabolism

Dietary minerals are generally trace elements, salts, or ions such as copper and iron. Some of these minerals are essential to animal metabolism.

- Vitamins are organic compounds essential to the body. They usually act as coenzymes or cofactors for various proteins in the body. Vitamins provide animals with ability to fight stresses, diseases, to maintain good health. They are important for the growth, production and reproduction.
- Water is the most abundant compound in the world. Water is an essential nutrient and is the solvent in which all the chemical reactions of life take place. Water is needed for breakdown of nutrients, for movement of feed and for milk production. Animals must have frequent intakes of water to remain alive.

Learning Activities

I. Guess the meaning.

Method, blocks, vitamin, mineral, monosaccharides, glucose, fructose, lactose, disaccharides, oligosaccharides polysaccharides, glycogen, cellulose, glycerin, ions, salt, coenzymes, chemical, reaction, shock, hydrocarbon, categorize.

II. Give Russian equivalents.

Organic compounds, glycerin molecule, nutrient intake, sufficient quantity, external source, hydrocarbon chain, animal metabolism, peptide bonds.

III. Give antonyms for the following:

Unable, harmful, internal, unsaturated, inorganic, unstable, nonessential, improperly, uncertain, unusual, dysfunction, insufficient, decrease, unimportant.

IV. Supply the correct form of the verb.

1. Animals and protists ... an internal digestive system. (*have, has, had, have been*)
2. Calcium, salt (sodium chloride), magnesium, and potassium (along with phosphorus and sulfur) ... sometimes... to the list of macronutrients. (*were, to be, am, is, are; added, add, to add, adding*)
3. Fats ...of a glycerin molecule with three fatty acids attached. (*consist, consisting, consists, will consist*)
4. Fats ...needed to keep cell membranes functioning properly. (*is, was, were, are*)
5. The body does not ... certain fatty acids. (*manufacture, manufactures, manufacturing, had manufactured*)
6. The diet must ... essential nutrients. (*supply, to supply, supplied, supplying*)
7. They usually ...as coenzymes or cofactors for various proteins in the body. (*are acting, act, acts, acted*)

V. Match the words with their description.

1	A nutrient is ...	a glycerin molecule with three fatty acids attached.
2	Proteins are...	a substance used in an organism's metabolism which must be taken in from its environment.
3	Carbohydrates are...	organic compounds that consist of the amino acids joined by peptide bonds.
4	Fats consist of	an essential nutrient and is the solvent in which all the chemical reactions of life take place.
5	Water is	compounds made up of sugars.

VI. Supply prepositions.

1. Carbohydrates are classified their number of sugar units.
2. Proteins consist of the amino acids joined ... peptide bonds.
3. ... nutrition, proteins are broken down through digestion.
4. Oxygen and water are also essential ... human survival, but are generally not considered "food" when consumed in isolation.
5. Non-essential nutrients can still have a significant impact ... animal health.

VII. Put the words in order to make sentences.

1. Organic, include, carbohydrates, nutrients, fats, proteins, and vitamins.
2. Inorganic, nutrients chemical compounds, such as minerals, may also be considered, water and oxygen.
3. The body, amino acids, can not manufacture, all.
4. Are essential, oxygen, and water, for animal, survival.
5. Some, elements, trace, are toxic, when, in a large amount, given.
6. All, vitamins, animals, require.
7. Common, salt, easily, poison, may, poultry, are given, if, they, doses, too large.

VIII. Translate the following sentences into Russian in a written form.

1. Animals and protists have an internal digestive system, but plants digest nutrients externally before ingesting them.
2. Fatty acids are unbranched hydrocarbon chains, connected by single bonds alone (saturated fatty acids) or by both double and single bonds (unsaturated fatty acids).
3. Water is an essential nutrient and is the solvent in which all the chemical reactions of life take place.
4. Methods for nutrient intake vary.
5. Carbohydrates are classified by their number of sugar units: monosaccharides (such as glucose and fructose), disaccharides (such as sucrose and lactose), oligosaccharides, and polysaccharides (such as starch, glycogen, and cellulose).
6. Essential nutrients are to be synthesized internally (either at all, or in sufficient quantities), and so must be consumed by an organism from its environment.
7. For example, most dietary fiber is not absorbed by the human digestive tract, but is important in digestion and absorption of otherwise harmful substances.

IX. True or false according to your knowledge?

1. Body processes do not require the use of energy.
2. Metabolism means all the chemical and physical processes that take place in the body.
3. Vitamins are considered macronutrients. They are essential for the development of normal body processes.
4. Nutrients are transported by the nervous system.
5. Young and lactating animals need less protein than the others.
6. Water is needed for breakdown of nutrients, for movement of feed and for milk production.
7. Sodium chloride is the most abundant compound in the world.
8. Animals must have frequent intakes of water to remain alive.

X. Read the following passage. Express briefly the main idea of it. Put to this passage 5 questions of your own.

Essential and Non-essential nutrients

Nutrients are frequently categorized as essential or non-essential. Essential nutrients are to be synthesized internally (either at all, or in sufficient quantities), and so must be consumed by an organism from its environment.

For humans, these include essential fatty acids, essential amino acids, vitamins, and certain dietary minerals. Oxygen and water are also essential for human survival, but are generally not considered "food" when consumed in isolation.

Humans can derive energy from a wide variety of fats, carbohydrates, proteins, and ethanol, and can synthesize other needed amino acids from the essential nutrients.

Non-essential nutrients can still have a significant impact on health, whether beneficial or toxic. For example, most dietary fiber is not absorbed by the human digestive tract, but is important in digestion and absorption of otherwise harmful substances. Interest has recently increased in phytochemicals, which include many nonessential nutrients which may have health benefits.

XI. Give English equivalents.

Питательные вещества, пища, корма, принимать пищу, органические питательные вещества, неорганические питательные вещества, потреблять, в большом количестве, высокого качества, класс химических соединений, сахара, протеины, жиры, белки, углеводы, вода, микроэлементы, незаменимые аминокислоты, расщеплять, переваривать, клетчатка, жирная кислота, производство молока.

XII. Translate into English.

1. У животных есть пищеварительная система.
2. Вода не имеет питательных веществ, но является растворителем.
3. Витамины очень полезны, они нужны в небольших количествах.
4. В больших дозах обычная соль может быть вредна.
5. Животные получают протеины из пищи.
6. Организм животного не может вырабатывать некоторые аминокислоты, они называются «незаменимые аминокислоты».
7. Органические питательные вещества включают углеводы, жиры, белки и витамины.
8. Вода – самое распространенное химическое соединение.
9. Животные не могут долго жить без воды.
10. Правильное питание – основа хорошего здоровья человека и животных.

VOCABULARY

A

abdomen брюшная полость; живот
abdominal cavity брюшная полость
abdominal wall стенка живота
abomasum сычуг, четвертый желудок жвачных
abscess абсцесс, гнойник
absorption всасывание, абсорбция
abundant обильный, изобилующий
access (to) доступ
accumulate накапливаться; наслаиваться
accuracy точность, правильность
acetic acid уксусная кислота
acid кислота; кислый, кислотный
acidity кислотность
acquire a disease заболеть
acute острый (болезнь)
adaptation приспособление; приспособляемость
addition прибавление, дополнение
adequate адекватный; достаточный
adhere (to) прилипнуть, приставать
adherent вязкий, клейкий, плотно прилегающий
adipose tissue жировая ткань
adjacent смежный, соседний
administer управлять; назначать (лекарство); вводить (лекарство)
advantage преимущество
aerobic аэробный
affect воздействовать; заболеть; поражать (о болезни)
agency возбудитель; фактор, сила
agent действующая сила; фактор
ailing больной; болезненный
ailment болезнь, недомогание, нездоровье
air current воздушное течение, поток
airtight воздухонепроницаемый
albumen белок (яйца); белковое вещество, альбумин
alcohol алкоголь, спирт (винный)
alga (pl. algae) водоросль
alimentary tract пищеварительный тракт
alkaline щелочной
alkalinity щелочность
aloe (pl. aloes) алоэ; сабур (слабительное)
alveolus (pl. alveoli) альвеола, ячея
amount количество
amides амиды
amino acid аминокислота
ammonia аммиак
ammonium аммиачные соли
anaemia малокровие, анемия
anaerobic анаэробный
anatomy анатомия

anaesthesia обезболивание, анестезия
anaesthetic обезболивающий; наркотическое средство
anaesthetic condition состояние обезболивания; наркотическое состояние, наркоз
ancestor предок, прародитель
ancestry происхождение, предок
animal breeding разведение сельскохозяйственных животных, животноводство
animal housing стойловое содержание
animal medicine ветеринария
animal sanitation зоогигиена, ветеринарная санитария
animal surgery ветеринарная хирургия
animal-to-animal transmissible передающийся от одного животного другому (о болезни)
anthrax сибирская язва
anus задний проход
aorta аорта
ape обезьяна (человекообразная)
apparent видимый; очевидный, явный;
appetite аппетит
application применение
apply применять; употреблять (лекарство); вводить (лекарство)
appropriate подходящий, соответствующий
aquatic life водные организмы
arrange приводить в порядок, располагать, классифицировать
artificial искусственный
artificial immunization искусственная иммунизация
artificial insemination искусственное осеменение
asepsis асептика
aseptic асептический
ash зола
ash constituents зольные вещества
assemble собирать(ся); объединяться
atmospheric атмосферный, воздушный
atrium предсердие, атриум
attack атаковать, нападать; поражать (о болезни)
attenuated ослабленный (в вирулентности)
autopsy вскрытие трупа, аутопсия
autotrophic автотрофный
average среднее число; средний; в среднем равняться
avian strain (of tuberculosis) птичий штамм (туберкулеза)
avirulent авирулентный
axis (pl. axes) ось
axon аксон

В

bacillus (*pl. bacilli*) бацилла, палочка
backbone позвоночник, позвоночный столб, спинной хребет
bacon type of pig свинья беконного типа
bacteriemia бактериемия, наличие бактерий в крови
bacteriology бактериология
bacterium (*pl. bacteria*) бактерия
barn амбар; сарай; коровник
basement membrane базальная мембрана
beef говядина
beef extract мясной экстракт; мясной бульон
beet sugar свекловичный сахар, сахароза
belly брюхо, живот
benefit польза; выгода; **be of benefit** способствовать
bile желчь
binominal system система классификации по роду и виду
biological value биологическая ценность
bladder мочевого пузыря
blood кровь
blood poisoning заражение крови, септицемия
blood serum кровяная сыворотка
bloodstream кровообращение, кровоток
blood vessel кровеносный сосуд
bone кость
bone marrow костный мозг
bone tissue костная ткань
boron бор
break down разрушать; разлагать
breakdown разложение; распад
breast грудь; грудинка
breastbone грудная кость
breed порода
breed (bred, bred) разводить; спаривать
breeder животновод
breeding разведение (животных); выведение
breeding-stock племенной скот
bronchi (*pl.*) бронхи
bronchiole бронхиола

С

caecum (*pl. caeca*) слепая кишка
calcium кальций
capillary капилляр
capture захватывать
carbohydrate углевод
carbon углерод
carbon dioxide углекислота, углекислый газ
carcass (мясная) туша; труп
carnivorous плотоядный
carrier бациллоноситель; носитель

патогенных микробов
cartilage хрящ
case случай, случай в медицинской практике
catalyst катализатор
catching заразный, заразительный (о болезни)
cattle strain (of tuberculosis) бычий штамм (туберкулеза)
caudal хвостовой
cause причина; вызывать, быть причиной
causative factor возбудитель
cavity полость
cell клетка
cell membrane оболочка клетки
cereals хлебные злаки, зерновые
cervical vertebrae шейные позвонки
chain цепь
chamber камера
cheek щека
chemical composition химический состав
chemical compound химическое соединение
chest грудь; грудная клетка
chew жевать; жвачка
chlorine хлор
chronic хронический
ciliated снабженный ресничками
circuit кругооборот
circulation кровообращение
classificatory system система классификации
cloven-hoofed (animals) парнокопытные
coating слой
cobalt кобальт
Cocci / coccus (*pl.*)кокк, шарообразный микроорганизм
colon ободочная кишка
colostrum молозиво
columnar призматический; цилиндрический
communicable disease заразная болезнь, инфекционное заболевание
compare (with) сравнивать
comparison сравнение
compartment отделение; перегородка
complex комплексный, составной, сложный
component составная часть, составной элемент
compose составлять
composition состав
concentrate концентрат, концентрированный корм
concentration концентрация
conclusion заключение; результат
concrete бетон

condition условие; состояние, положение; кондиция, упитанность; состояние здоровья
conformation телосложение; внешние стати
conjunction соединение, связь; in
connective tissue соединительная ткань
consume потреблять
consumption потребление
contagious disease контагиозная болезнь, заразное заболевание
contain содержать, вмещать
container контейнер, вместительность
contaminate загрязнять; заражать
contamination загрязнение; заражение
content содержание, доля, сущность
contract сжимать(ся); сокращать(ся); заражать(ся)
contractile сократительный; сокращающийся
copper медь
cork пробка
cough кашель
cranium (pl. crania) череп
criterion (pl. criteria) критерий
crop сельскохозяйственная культура, урожай
cross-bred гибридный, смешанный
crude сырой
crude protein сырой протеин
culling отбор; выбраковка
culture культура, выращивание бактерий
curative treatment медикаментозное лечение
cylindrical цилиндрический
cytological цитологический
cytology цитология, учение о клетке
cytoplasm цитоплазма

D

dairy breed молочная порода
dairy cow молочная корова
damage повреждение, урон, ущерб
death rate показатель, процент смертности; смертность
debris остатки
decay гнить; разлагаться
decline (in) ухудшение; упадок; спадать; уменьшаться
decompose разлагаться; гнить
decomposer деструктор, редуцент (организм, разлагающий органические вещества)
defense mechanism защитный механизм
definite определенный, точный
deficiency disease болезнь недостатка (какого-либо вещества в пище, в корме)

dendrite дендрит
dense connective tissue плотная соединительная ткань
designate обозначать
deviation отступление (от нормы)
diagnosis (pl. diagnoses) распознавание болезни, диагноз
diagnostic диагностический
diarrhea диарея, понос
diet диета; пища; рацион
differentiate дифференцировать, различать
diffusion рассеивание, диффузия
digestive tract пищеварительный тракт
digit палец
digital bones кости пальца
dilute разводить, разбавлять
diplococcus (pl. diplococci) диплококк
disadvantage недостаток; отрицательная сторона
discover узнавать, обнаруживать, открывать
disease болезнь, заболевание
disinfection обеззараживание, дезинфекция
dissolve растворять(ся)
distinguish различать, распознавать
disturbance расстройство
domesticated домашний, одомашненный
domestication приручение (животных)
dormant stage состояние покоя
dosage дозировка; доза
dose доза; порция, доля; дозировать
drug лекарство
dry matter сухое вещество
dual purpose двойного направления; комбинированный
duct проток, канал
duodenum двенадцатиперстная кишка
duplicate удваивать; размножаться

E

early-maturing скороспелый
ectothermic холоднокровный
efficiency эффективность, действенность
efficient эффективный, действенный
elaborate вырабатывать; развивать
elbow локоть
eliminate устранять; уничтожать, ликвидировать; выделять
elongated продолговатый, вытянутый
embryo эмбрион, зародыш
endoplasmic reticulum эндоплазматическая сеть
endothelium эндотелий
endothermic эндотермный, теплокровный
engulf поглощать, пожирать
ensure обеспечивать, гарантировать

enteritis воспаление кишок, энтерит
entrance вход; доступ; *gain entrance* получить доступ
envelope оболочка
enzyme фермент, энзим
epidemic эпидемический; эпидемия
epidemiologist эпидемиолог
epidermis эпидерма, эпидермис
epithelial tissue эпителиальная ткань
epithelium эпителий
epizootic эпизоотический; эпизоотия
eradication искоренение; уничтожение, ликвидация
erythrocyte эритроцит, (красное) кровяное тельце
essential существенный; необходимый;
evaluate оценивать
examine осматривать, исследовать
examination исследование; осмотр
excess излишек, избыток
excessive чрезмерный
excitability возбудимость
excitable возбудимый
excite возбуждать
excitement возбуждение, волнение
excretion выделение
excretory wastes продукты выделения
exhibit показывать, обнаруживать, проявляться
expiration выдыхание; окончание, истечение (срока)
expose (to) выставлять; подвергать воздействию (солнца)
exposure подвергание воздействию (температуры, солнца и т.п.)
exterior внешняя среда
external внешний; наружный

F

facial bone кость лица
faeces фекалии, каловые массы
family семья, семейство; (*биол.*) семейство
fat жир; жирный, тучный
fatal смертельный
fatness жирность; упитанность
fat-soluble жирорастворимый
fatten жиреть; откармливать
fatty acid жирная кислота
feature характерная черта, свойство, особенность
feed (fed, fed) питать(ся), кормить (ей);
feedback обратная связь
feeding кормление; питание
feeding stuff корма; кормовые вещества
feeding value кормовая ценность
female самка, матка; женского пола

ferment вызывать брожение, сбраживать, ферментировать
fermentation брожение, ферментация
fertilization удобрение (почвы), оплодотворение, опыление
fertility плодородие
fiber волокно, нить
filamentous волокнистый; нитевидный
film пленка
fission деление клетки
flagellum (pl. flagella) жгутик
flea блоха
fluid жидкость, жидкий, текучий
fluid tissue жидкая ткань
focus (pl. foci) очаг болезни, фокус

G

gain прирост
weight gain суточный привес
gall bladder желчный пузырь
ganglion ганглий (нервный) узел
generation поколение
gene ген
generation генерация, поколение, род, потомство
genesis возникновение, происхождение
genital генитальный, половой
genom(e) геном
genus (pl. genera) род
gill жабра
gilt подсвинок, молодая свинья
gland железа
glandule желёзка
gnat комар, кровососущее насекомое
grain зерно, хлебный злак, зернышко
ground water подземные воды
grasp схватывать, захватывать
grass трава, злак, злаковые травы
growth рост, развитие, произрастание

H

heat нагревать(ся), согревать; теплота, жар, температура
heifer телка, нетель
helical спиральный, спиралевидный
herbage травы, травяной покров
herbivorous травоядный
herd стадо
hereditary наследственный
heredity наследственность
hog-raising farm свиноводческая ферма
hoof копыто
hormone гормон
horn рог
hornless безрогий. комолый
host хозяин (паразита), макроорганизм
human strain (of tuberculosis) человеческий

штамм (туберкулеза)

Hydrogen водород

hygiene гигиена

I

identification определение, установление

ileum подвздошная кишка

immune иммунный

immune serum (pl. sera) иммунная сыворотка

immunization иммунизация

immunize иммунизировать

improve улучшать; улучшать породу, разводить

improvement улучшение; улучшение породы, разведение породы

inanimate неживой

incubation инкубационный период; выращивание (бактерий)

indicate показывать; указывать; служить признаком; означать

indication признак, симптом

individual индивид, индивидуальный

induce вызывать; обуславливать

inevitable неизбежный, неминуемый

infant младенец, ребенок

infantile paralysis детский паралич

infect заражать, инфицировать

infection заражение, инфекция; зараза; заразительность

infectious disease заразное заболевание, инфекционная болезнь

infestation заражение паразитами, инвазия; загрязнение

inflammation воспаление

ingesta содержимое рубца

ingestion прием внутрь, проглатывание, поедание

ingredient составная часть, ингредиент

inhale вдыхать

inherent врожденный

inhibit препятствовать; задерживать(ся)

initial начальный; первоначальный

initiate положить начало; вызывать; побуждать

injection инъекция, впрыскивание

injure вредить; повреждать

injury повреждение

inoculation искусственное заражение; прививка

inorganic неорганический

inorganic salt неорганическая соль

insoluble нерастворимый

insufficient недостаточный; неудовлетворительный

insulate изолировать, отделять

insulation отделение, (термо)изоляция

intake прием внутрь

integrate соединяться; объединяться

integument кожа, наружный покров

interaction взаимодействие, совместное действие

intercellular межклеточный

intestinal parasite кишечный паразит

intoxication отравление, интоксикация

invade вторгаться; поражать болезнью; инвазировать, заселять

invasiveness заразительность, инвазионность

invertebrate беспозвоночный;

беспозвоночное животное

invisible невидимый

involuntary непроизвольный

involve заключать в себе; впутывать, вовлекать; **be involved** поражаться (болезнью)

involvement вовлечение; поражение

iodine йод

iron железо

irradiate облучать

irritability возбудимость; раздражимость

isotonic изотонический, имеющий одинаковое осмотическое давление

J

jab толчок; укол

jaw челюсть

jejunum тощая кишка

jeopardize подвергать опасности, рисковать

Jersey (английская) джерсейская порода молочного скота

joint соединенный; общий; сустав

K

kidney почка; почечный

kidney stones почечные камни

knee колено; запястье

L

laboratory animal лабораторное животное, подопытное животное

lack недостаток, отсутствие чего-либо

lactation лактация

large intestine толстая кишка

locomotion передвижение

lower lip нижняя губа

lubricate смазывать

lumbar vertebrae поясничные позвонки

lungs лёгкие

lymph лимфа

lymphatic лимфатический

lymph node лимфатический узел

lymphocyte лимфоцит

lythic cycle литический цикл
lysogenic cycle лизогенный цикл

M

macroscopic макроскопический, видимый простым глазом
magnesium магний
magnitude величина; степень; сила
maintain поддерживать; содержать; сохранять
maintenance поддержание (жизни); сохранение; содержание (животных)
mammal млекопитающее животное
mammary gland молочная железа
mammary system система молочных желез
mammary tissue ткань молочной железы
management управление; содержание и уход (за животными)
mandatory slaughter принудительный убой (животных)
manifest обнаруживать; обнаруживаться
manure навоз
manure disposal уборка навоза
marrow костный мозг
mating спаривание, случка
matter материя, вещество
mature зрелый, спелый; созреть
maturity зрелость
mean средний
meat extract мясной бульон
medical treatment врачебное, медикаментозное лечение
medicine медицина; лекарство, медикамент
medium (pl. media) среда; питательная среда; средний, умеренный
Merino меринос (порода овец)
metabolism обмен веществ, метаболизм
microbiology микробиология
microdissection рассечение под микроскопом
micron микрон
milker доярка, дояр; молочная корова
milk flow удой молока
milk sugar молочный сахар, лактоза
milk vein молочный сосуд, молочная вена
milk-yield удой молока; удоилвость, молочная продуктивность
mitochondria митохондрия
mixture смесь
mobility подвижность
mold плесень; плесневой грибок
molecule молекула
molybdenum молибден
motility подвижность, способность к самопроизвольному движению
moult линька

movement движение
mucosa слизистая оболочка
multiply увеличиваться; размножаться
muscle мышца, мускул
muscular мышечный; мускульный, мускулистый
muscular tissue мышечная ткань
mutton баранина

N

nail ноготь, коготь; гвоздь
naked eye невооруженный глаз
nasal cavity носовая полость
natural flora обыкновенная (микро)флора
necessity необходимость
neck шея
necrosis (pl. necroses) некроз, омертвление
nematode круглый червь, нематода
nerve fibre нервное волокно
nerve tube нервная трубка
neural arch невральная дужка, дуга позвонка
neuron нервная клетка, нейрон
nickel никель
nitrogen азот
nitrogenous азотный, азотсодержащий
node узел
non-communicable disease болезнь, не передающаяся путем контакта
non-infectious disease незаразная болезнь, незаразное заболевание
nonliving неживой
nourish питать
nuclear ядерный
nuclear membrane ядерная оболочка
nucleus (pl. nuclei) ядро
nutrient питательное вещество
nutrient solution питательный раствор
nutrition питание; кормление

O

observance соблюдение
observe наблюдать
obtain получать, добывать, приобретать
occasion случай; вызывать; причинять
occur случаться, происходить, встречаться
occurrence встречаемость, наличие; распространение
odour запах, аромат
oesophagus пищевод
offal потери при убое; субпродукты
offspring потомок
ointment мазь
omasum книжка (третий желудок у жвачных)
omnivorous всеядный
onset начало; вспышка, проявление

(болезни)

oral cavity ротовая полость

orbital cavity глазная впадина

order (биол.) отряд

origin происхождение

originate происходить

oscillatory movement колебательное движение

osmosis осмос

outbreak взрыв; вспышка (эпидемии)

oxidation окисление

oxide of zinc окись цинка

oxide of zinc ointment цинковая мазь

oxidize окисляться

oxygen кислород

P

pain боль; страдание

pancreas поджелудочная железа, панкреас

pancreatic juice сок поджелудочной железы

parasite паразит

parasitic disease паразитарная болезнь

pasture пастбище; пасти(сь)

path of infection путь инфекции

pathogenic патогенный, болезнетворный

pathogenicity патогенность,

болезнетворность

pathological патологический, болезненный

patient пациент, больной

pedigree родословная; поколение предков; происхождение

pelvic girdle тазовый пояс

pen загон

penetrate проникать внутрь, проходить сквозь

percentage процент, процентное отношение

perform исполнять, выполнять, совершать

performance исполнение, выполнение

per head на каждого; на животное

permeable проницаемый

phagocyte фагоцит

phagocytosis фагоцитоз

pharynx глотка

phosphorus фосфор

physiochemical физико-химический

physiology физиология

piglet поросёнок

pig sty свиарня; свиарник

pneumonia воспаление лёгких

poison яд; отравлять

pollution загрязнение

pork свинина

potassium калий

poultry домашняя птица

pregnant беременная

prevention предотвращение,

предохранение; профилактика

preventive предотвращающий,

профилактический

processing обработка; стерилизация продукта

produce производить; продуцировать; вызывать

progeny потомок; потомство, приплод

prohibit запрещать

prone (to) склонный (к чему-либо)

propel приводить в движение

protein протеин, белок

protoplasm протоплазма

protozoa (мн.) простейшие, простозоа

pseudostratified ciliated epithelium

многорядный мерцательный эпителий

pulse пульс, биение

pulverized aloes порошок алоэ

pure-bred чистопородный; чистопородное животное

Q

quarantine карантин, изоляция; держать в карантине, изолировать

quarter помещение

R

rabbit кролик

race раса; порода

raw material(s) сырьё

reagent реактив

reception приём, принятие; восприятие

receptor рецептор

recover поправляться, выздоравливать;

recovery выздоровление; восстановление

rectum (pl. recta) прямая кишка

recumbency лежачее положение

reduction снижение, понижение,

уменьшение; вправление (кости)

reproduce размножаться

reproduction размножение

reservoir of infection источник, очаг инфекции, резервуар

resemble походить, иметь сходство

residues остатки

resorption поглощение; всасывание

respiration дыхание

respiratory дыхательный

respiratory passages дыхательные пути

retard замедлять, задерживать

respond отвечать, реагировать

retention удерживание, сохранение; задержание

reticular tissue ретикулярная ткань

reticulum сетка, преджелудок (жвачных)

rumen рубец (первый отдел желудка жвачных)
ruminant жвачное животное
rib ребро
ricketts рахит
roundworm круглый червь

S

sacral крестцовый
safety безопасность
saliva слюна
salivary gland слюнная железа
sanitary санитарный
sanitation улучшение санитарных условий, санация; санитария
sauerkraut кислая капуста
secretion секреция, выделение
secretory секреторный
semipermeable полупроницаемый
semifluid полужидкий
septicemia септицемия, гнилокровие
shed сарай; навес
shell скорлупа, шелуха; раковина
shoulder плечо; лопатка, передняя ножка; лопаточная часть
sign признак; симптом
significance важность; значение
silage силос, силосованный корм
silica кремний
simple cuboidal epithelium однослойный кубический эпителий
simple protein простой белок
simple squamous epithelium однослойный плоский эпителий
skeleton скелет
skull череп
slaughter убой (скота); забивать (животных)
small intestine тонкая кишка
smallpox оспа
smear мазок
smooth muscle гладкая мышца
sneeze чиханье; чихать
sodium натрий
sodium chloride хлористый натрий, поваренная соль
solid твердый
soluble растворимый
solution раствор
somatic телесный, соматический
sow свиноматка
species биол.вид, виды; род, порода, разновидность
specimen образец; экземпляр; представитель
spherical сферический

spleen селезёнка
spoiled испорченный
spring прорасти; давать побеги; бить ключом; ключ, родник, источник
sporadic disease спорадическое заболевание, единичное заболевание
spore спора
spread распространение; распространять(ся)
squamous чешуйчатый
stable стойло, конюшня
stain краска, цвет; красить, окрашивать
starch крахмал
sternum грудная кость
stimulus (pl. stimuli) возбудитель, побудитель, стимул
storage хранение
strain штамм; род, порода; линия;
stratified squamous epithelium многослойный плоский эпителий
straw солома; соломина
streptococcus (pl. streptococci) стрептококк
striated полосатый

T

teat сосок
temple висок
terrestrial земной, сухопутный
tetanus столбняк
thigh бедро; бедренная кость
thoracic cavity грудная полость
thoracic vertebra грудной позвонок
thorax грудная клетка
throat горло
tincture настойка, тинктура
tincture of iodine настойка йода
tissue ткань
toe палец на ноге; копыто (передняя часть копыта)
toxic ядовитый, токсический
toxin токсин, ядовитый продукт бактерий
trace mineral микроэлемент
trachea трахея
transfer переносить; передавать
transmissible передающийся
transmit передавать, переносить
transparent прозрачный
traumatic pericarditis травматический перикардит
true stomach собственный желудок, железистый желудок
trunk туловище
tuberculosis of cattle туберкулёз крупного рогатого скота
tubular трубчатый
tumor опухоль

turtle черепаха
type тип, вид

U

udder вымя
ultimate первичный, основной
ultraviolet rays ультрафиолетовые лучи
undergo (underwent, undergone)
испытывать, подвергаться
unicellular одноклеточный
urea мочеви́на
ureter мочеточник
urine моча
urogenital мочеполовой

V

vaccinate вакцинировать, делать прививку
vaccination вакцинация, прививка
vasomotor вазомоторный
vegetal растительный
vegetative nervous system вегетативная нервная система
vena вена
venous венозный
ventral вентральный, брюшной
ventricle желудочек
vertebra (pl. vertebrae) позвонок
vertebral column позвоночник, позвоночный столб
vertebrate позвоночное животное
veterinarian ветеринарный работник, ветеринарный врач
veterinary medicine (science) ветеринарная медицина
veterinary surgeon ветеринарный врач; хирург
veterinary surgery ветеринарная хирургия; ветеринария
vigorous сильный, энергичный
vinegar уксус
virulence вирулентность, ядовитость
virus вирус
viscera внутренности
visceral висцеральный, внутренностный, относящийся к внутренностям

visible видимый
vital жизненный, жизнеспособный, витальный
vitamin deficiency авитаминоз
volume объём
voluntary произвольный
vomiting рвотная масса; рвота

W

waste потеря; терять
waste products выделения, отбросы, отходы
water-soluble водорастворимый
wax воск
weed сорная трава
whip-like жгутикообразный; нитеобразный
wholesome полезный, здоровый
withers загривок; холка
withstand (withstood, withstood) противостоять; устоять; выдерживать
witness свидетельствовать; служить доказательством
wool шерсть
wrist запястье

X

X-ray рентгеновы лучи; просвечивать, исследовать рентгеновыми лучами
X-ray therapy рентгенотерапия

Y

yeast дрожжи; дрожжевой грибок
yellow maize жёлтая кукуруза
yield производить, давать (урожай); урожай
yolk желток

Z

zinc цинк
zoo зоопарк
zoology зоология
zygote зигота
zoonosis (pl. zoonoses) зоонозная болезнь, зооноз

References

Список использованной литературы

1. Английский язык / English : учебное пособие для студентов высших учебных заведений по специальностям «Ветеринарная медицина», «Зоотехния» / А. И. Картунова [и др.]. – Минск : ИВЦ Минфина, 2008. – 368 с.
2. Англо-русский биологический словарь : около 70000 терминов / О. И. Чибисова [и др.]. – 7-е изд., стер. – Москва : Руссо, 2000. – 736 с.
3. Болотина, А. Ю. Англо-русский и русско-английский медицинский словарь / А. Ю. Болотина, Е. О. Якушева. – 3-е изд. – Москва : Руссо, 2001. – 544 с.
4. Дроздова, Т. Ю. English Grammar. Reference and Practice : учебное пособие / Т. Ю. Дроздова, А. И. Берестова, В. Г. Маилова. – 11-е изд., испр. – Санкт-Петербург : Антология, 2012. – 464 с.
5. Словарь ветеринарных терминов на 4-х языках : около 13000 терминов / ред. Г. Ильхман [и др.]. – Москва : Аст : Астрель, 2003. – 414 с.
6. English for Environmental Science / E. Korshuk. – Uppsala : The Baltic University Press, 2003. – 165 p.
7. Maclin, Alice. Reference Guide to English : A Handbook of English as a Second Language / Alice Maclin. – Washington, D.C. : USIA, 1994. – 405 p.
8. Textbook of Veterinary Internal Medicine / Stephen J. Ettinger, Edward C. Feldman. – USA : W.B. Saunders Company, 2004. – 2 vol.
9. The Merck Veterinary Manual / Robert S. Porter, Justin L. Kaplan. – 19 edition. – Rahway: Merck & Co., Inc, 2011. – 1677 p.

Table of Contents

<i>Unit 1</i>	<i>Living and Nonliving Matter</i>	4
<i>Unit 2</i>	<i>Protoplasm</i>	10
<i>Unit 3</i>	<i>Cell</i>	16
<i>Unit 4</i>	<i>Tissues</i>	20
<i>Unit 5</i>	<i>Organs and Organ Systems</i>	26
<i>Unit 6</i>	<i>Classification of Organisms</i>	32
<i>Unit 7</i>	<i>Bacteria</i>	38
<i>Unit 8</i>	<i>Viruses</i>	44
<i>Unit 9</i>	<i>Fungi, Algae, Protozoa</i>	49
<i>Unit 10</i>	<i>Animals</i>	55
<i>Unit 11</i>	<i>Infection</i>	61
<i>Unit 12</i>	<i>Nutrients</i>	67
	<i>Vocabulary</i>	73
	<i>References</i>	83

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