Автор: ПОГОРЕЛОВА ЛЮДМИЛА ПАВЛОВНА
Предмет: Биология
Класс: 10 класс
Раздел: Дыхание
Тема: Structure and functions of ATP

Цели обучения (ссылка на учебную программу):	10.1.4.1 describe the structure and function of ATP
Цели урока:	Students should be able to: Investigate and understand the chemical and biochemical principles essential for life
Языковые цели:	Are defined for non-language subjects. Define language objectives, including examples of vocabulary and phrases. Subject-specific vocabulary & terminology: English Transcription Russian Macroergic bonds [makroergik] [bɒndz] Макроэргические связи Nucleotide ['nju:klɪətaɪd] Нуклеотид Adenine ['ædənin] Аденин Nitrogen base ['naitrodʒen 'beis] Азотистое основание Pentose ['pentəʊz] Пентоза Ribose ['raibɒʊz] Рибоза Phosphate group ['fɒsfeɪt gru:p] Фосфатная группа Adenosine mono-phosphate [ə'dɛnə(ʊ)si:n] [mono'fɒsfeɪt] Аденозинмонофосфат Adenosine diphosphate [ə'dɛnə(ʊ)si:n] [dɪ'fɒsfeɪt] Аденозиндифосфат Adenosine triphosphate [ə'dɛnə(ʊ)si:n] [trɪ'fɒsfeɪt] Аденозинтрифосфат Storage ['stɔ:rɪdʒ] Хранилище To carry out [tu: 'kærɪ aʊt] Выполнять To convert [tu: 'kɒnvɜ:t] Превращать To terminate [tu: 'tɜ:mɪnɪt] Завершать Subject-specific terminology: ATP is immediate source of energy because..... Thanks to .....ATP can carry energy As ATD splits.....energy..... Useful sets of phrases for dialogue and writing: ATP/ consist of/are made of... are involved in... physically separate... play a role in...
Ожидаемый результат:	Students can Investigate and understand the chemical and biochemical principles essential for life
Критерии успеха:	Student achieves if She\He: Describes and explains structure and function of ATP in relation to its functions Understands the role of ATP in biochemical processes of living organisms
Привитие ценностей:	The development of skills in pairs and group mutual respect and cooperation Respect Collaboration Openness Kazakhstan's patriotism and civic responsibility Work and creativity Lifelong learning
Навыки использования ИКТ:	Ability to use proper key words in searching for websites and resources to aid in understanding of learning goals
Межпредметная связь:	Horizontal curricular links with Chemistry: chemical reactions

Предыдущие знания:	The effect of physical exercises on respiration – Grade 8. Respiration as a process of gas exchange between the body and the environment – Grade 8. The processes of anaerobic and aerobic respiration, word equation of chemical reactions of the respiration process, the relation between muscle fatigue and the processes of anaerobic and aerobic respiration – Grade 9.

Ход урока

Этапы урока	**Запланированная деятельность на уроке**	**Ресурсы**
Начало урока (3 min)	Introduction Teacher asks Students. Brainstorm: Why do we need energy for living organisms? Answers attach to the board: movement, respiration, sensitive, growth, reproduction, excretion, nutrition How cell uses energy stored in food? Your cells require energy to carry out many different processes (active transport across the membrane, protein synthesis, and cell division). The fuel for these functions comes from a molecule called adenosine triphosphate (ATP). ATP stores energy until a cell needs it. When a cell requires energy, it breaks part of the ATP molecule apart which releases energy. Our topic is Structure and functions of ATP. Aim (purpose) of lesson You will be able to describe the structure and functions of ATP.	
Середина урока (22 min)	Terminology Teacher explain how pronounce new terms of lesson. Teacher asks Students to repeat all together after him/her, Teacher must give clear pronunciation of terms. Do this 2 times, and try to ask individual Students to pronounce terms Students listen to teacher, repeat words 2 times, some students pronounce words individually. Work with text Structure of ATP ATP consists of adenosine and three phosphate groups. Adenosine is a combination of adenine and ribose sugar. Adenosine can be combined with one, two or three phosphate groups to give, in turn, adenosine monophosphate (AMP), adenosine diphosphate (ADP) or adenosine triphosphate (ATP). Function of ATP Energy cannot be produced and destroyed, it is converted from one state to another. When or-ganic molecules are broken down by series of reactions. They release chemical potential energy, which is used to synthesize ATP. The phosphate bonds of ATP are extremely en-ergetic or macroergic bonds. They are known as high energy bonds. When a phosphate group is removed from ATP, adenosine diphosphate (ADP) is formed and 7.3 kcal of energy is released. Removal of a second phosphate produces adenosine monophosphate (AMP), and 7.3 kcal of energy is released again. Removal of the last phosphate, leaving adenosine, releases only 2 kcal of energy. Worksheet 1 Students read text one by one, translate sentences Activity Teacher gives instructions. Show ATP structure on the board. Students divide into groups and create a dynamic model of ATP. Ask the group to build a model of ATP, and then break them down into adenosine diphosphate (ADP) and adenosine monophosphate (AMP), then re-connect. Students do this task in groups, when they finish the job they go to the Board and defend their poster Play Doh, cardboard, colored paper, or sets for molecules construction (for chemistry lessons) Paper, markers Physical minute Make a circle, now we play with balloon. You must throw the balloon to your friends and name the term (in Russian, in English) – they must translate. I start – we will continuous …	

Этапы урока	Запланированная деятельность на уроке	Ресурсы
Конец урока (14 min)	Task + Checkpoint Fill the blanks with word from the text Answer the questions Worksheet 2 Teacher gives instructions and controls Students do this task and check each other Hometask You are given the cyclic change of ATP and ADP. Worksheet Put number 1 or 2 to the following processes in the table Processes 1 or 2 1 Photosynthesis 2 Formation of glycogen in a liver cell 3 Active transport of molecules 4 The breakdown of fats 5 Contraction of a muscle	
Рефлексия (1min)	Reflection What did you learn today in the lesson? What remains incomprehensible? Students answer	