METHODS OF CREATING AND PREPARING ELECTRONIC RESOURCES FOR BIOORGANIC CHEMISTRY

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Abstract: *the article describes the ways of creating and preparing for the use of electronic resources in the field of bioorganic chemistry. Visualization of tautomerism, conformational isomerism, protein biosynthesis, DNA and RNA structures with the help of animation in the subject "Bioorganic Chemistry" increases the interest in the lesson. Proteins hold a special place in the biological and chemical sciences. While students visualize conformational isomerism based on theoretical data, they reinforce their knowledge by visualizing the process in an electronic textbook.*
Keywords: *bioorganic chemistry, electronic resources, chemistry, biology, higher education.*

СПОСОБЫ СОЗДАНИЯ И ПОДГОТОВКИ ЭЛЕКТРОННЫХ РЕСУРСОВ ПО БИООРГАНИЧЕСКОЙ ХИМИИ

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Аннотация: *в статье описаны способы создания и подготовки к использованию электронных ресурсов в области биоорганической химии. Визуализация таутомерии, конформационной изомерии, биосинтеза белков, структур ДНК и РНК с помощью анимации по предмету «Биоорганическая химия» повышает интерес к уроку. Белки занимают особое место в биологических и химических науках. В то время как студенты визуализируют конформационную изомерию на основе теоретических данных, они подкрепляют свои знания, визуализируя процесс в электронном учебнике.*
Ключевые слова: *биоорганическая химия, электронные ресурсы, химия, биология, высшее образование.*

Resolutions of the President of the Republic of Uzbekistan Sh.M.Mirziyoev dated August 12, 2020 "On measures to improve the quality of continuing education and scientific efficiency in the field of chemistry and biology" (PQ-4805) are dedicated to the development of chemistry and biology [1]. In particular, for the effective teaching of chemistry, our main goal of educators is to identify, discover and develop the talents of young people through education and upbringing. The introduction of competency-based education in the teaching of chemistry, the ability of students to apply their knowledge in practice, the development of independent learning skills using information and communication technologies [2].

When teaching chemistry in a higher education institution, students must first form a chemical outlook. It is necessary to have mastered the methods of collecting, processing and using information on the acquired knowledge, to form the ability to make independent decisions based on their own opinion. It is natural that it is more difficult for a teacher to teach chemistry, especially bioorganic chemistry, to the student's mind, to imagine the reactions of life processes. That is why a chemistry teacher must be a well-formed specialist, keep pace with the times and apply new modern e-learning technologies with pedagogical skills. Only then will the quality of education increase.

The use of a combination of e-learning tools and educational technologies in the development of creative abilities of students has its own advantages, teaches them logical thinking, scientific and creative approach to science, simplifies the study of topics, serves as an important factor in shaping the scientific worldview. has a positive attitude towards science and the profession as a result of strenuous mental activity that affects emotions.

Today, in the educational practice of our country, as in the world's leading universities, the main attention is paid to the use of e-learning technologies and the creation of open e-courses. E-learning as a technology - the use of new multimedia technologies and the Internet to improve the quality of teaching through the facilitation of resources, remote exchange and access to collaboration; e-learning in terms of targeting communication - the implementation of educational communication using modern means of communication and the implementation of an innovative approach to the educational process. This approach involves creating an interactive open environment with an educational focus using a variety of digital technology resources. (Figure 1.)

Fig. 1. Home page of an electronic textbook on bioorganic chemistry

Undoubtedly the greatest invention invented by mankind, is a book. What achievements and milestones mankind has achieved over the centuries

At the heart of this, of course, is a love of books and a passion for reading. The e-book, e-textbook, teaching materials of the subject allow the student to use interactive methods, psychological and pedagogical aspects, modern information technology, audio and video animations.

Visualization of tautomerism, conformational isomerism, protein biosynthesis, DNA and RNA structures through animation in the subject of "Bioorganic Chemistry" increases the interest in the lesson. Proteins have a special place in the biological and chemical sciences. Proteins are the material basis of life processes. The main processes that take place in living cells - metabolism, division and reproduction - depend on cell proteins. First of all, it should be noted that simple proteins are composed of □-amino acids. Since all natural □-amino acids (except glycine) have an asymmetric carbon atom, they can be in two different optically active forms. While these conformational isomerisms are imagined by students from theoretical data, in an e-textbook they visualize the process and reinforce their knowledge (Figure 2.)

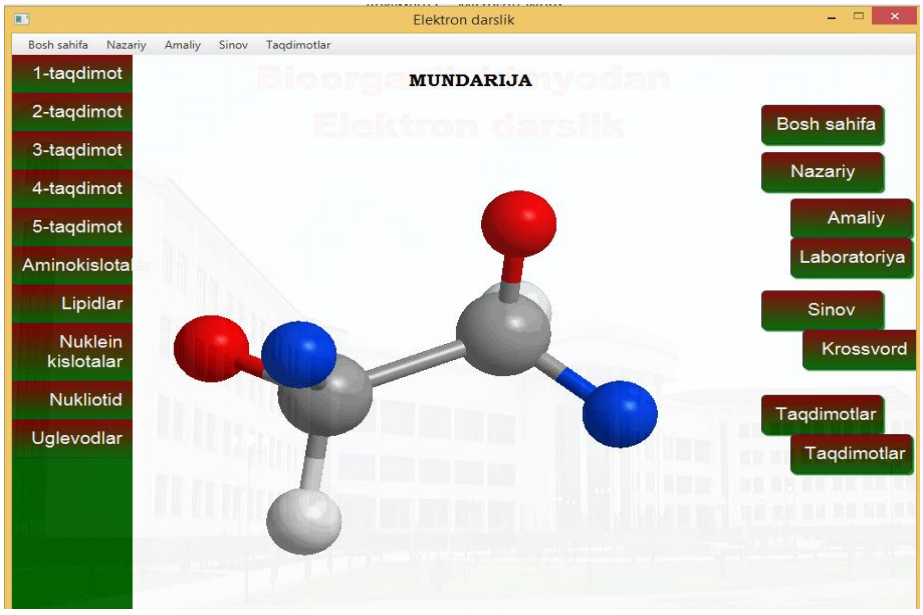

Fig. 2. Contents of an electronic textbook on bioorganic chemistry

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