

their personal qualities, creates a comfortable environment for international cooperation in the student team.

We plan to organize a similar assessment at Bashkir State Medical University and invite to participate as responders students from different countries, including Asian and African, and to compare the results. West Kazakhstan Marat Ospanov Medical University and Bashkir State Medical University are academic partners for many years, we conduct the programs of academic mobility, do academic visits and continue cooperation in different fields. The new study will be an essential one since the problems mentioned by students from India studying in Aktobe look similar to the problems of students studying in Ufa.

Conclusion: teaching foreign students provides adaptation to a new educational environment, cultural environment, which contributes to their intellectual, personal, and professional development and self-realization.

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### **BIOCHEMISTRY OLYMPIAD FOR FOREIGN STUDENTS AS A FACTOR OF IMPROVING THE QUALITY OF EDUCATION**

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The article presents the experience of organizing and conducting the biochemistry Olympiad for foreign students at a medical university. The features and importance of the Olympiad for foreign students in the formation of general professional and professional competencies, as well as for the adaptation of students to the new conditions of life and learning are shown.

Keywords: Biochemistry Olympiad, foreign students, general professional and professional competencies.

The process of preparing medical students for their future professional activities is most effective if they are involved in various forms of educational and research activities. One of the forms of effective extracurricular work of students is a subject Olympiad.

The subject Olympiad is not just a competition of students in performing certain tasks, it is a pedagogical event designed to improve the educational process and enhance the interest of students in a particular academic discipline. The Olympiad should encourage students to work independently with additional literature, reference books. As one of the forms of educational activity it has a positive impact on the development of personal characteristics of students. Participating in the Olympiads, they strive for self-development and self-actualization, they form skills of planning and self-control [3].

At the Department of Biological Chemistry of Federal State Budgetary Educational Institution of Higher Education «Bashkir State Medical University» of the Ministry of Healthcare of Russian Federation the organization of Olympiads of different levels (universi-

ty, interregional and all-Russian) in biochemistry among medical students has become an annual tradition. The Olympiad in biochemistry is an event held with the aim of improving the quality of education of medical students, exchange of experience and knowledge between them [2].

The main aims of the Olympiad are popularization of knowledge in the field of biological chemistry and increasing interest in the fundamental disciplines of medical education, modern trends in the development of biological chemistry and related disciplines, such as molecular biology, physical and chemical biology, genomics, proteomics, molecular pharmacology, biotechnology, etc.

Objectives of the Olympiad:

- promotion of knowledge and formation of skills in the use of basic sciences, in particular biochemistry, in scientific and practical medical activities;
- assessment of knowledge of biological chemistry, its significance and possibilities of its use in the development of modern medicine [2].

The beginning of teaching biochemistry to students from foreign countries led to the organization of biochemistry Olympiads in English for foreign students at the Department. It was caused by the annually growing number of international students, their interest in the Olympiad movement realized at the Department, their desire to show their knowledge, abilities, skills and creative potential in competitive activities, and undoubtedly, the need to implement the objectives and achieve the goal of the Biochemistry Olympiad among this contingent of students.

The formation of the Olympiad movement at the Department had certain stages. At first, there was a classical competition for the performance of tasks within the curriculum of the subject of biochemistry, studied by students of medical and pediatric faculties in the medical school. The assignments in this competition are done in writing. The works are coded according to the mottos chosen by the students and only after checking the works, ranking according to the points of the participants, the envelopes signed with the mottos are opened and the names of the students are revealed.

With the beginning of organization of Interregional Olympiads among students of medical and pediatric faculties of educational institutions of higher medical education of Ural, Western Siberia and Volga region and then All-Russian Olympiads among students of medical and classical universities 2 more contests were included into the Olympiad program. Contest 2 "The best situational task": participants should present their own situational tasks (problem) with answers and an index of used literature. The situational task should be written in the text editor Microsoft Word and be accompanied by multimedia presentation in Microsoft Office PowerPoint 2003. Contest 3 "The best essay": the participants of the competition present an essay on a topical problem of biochemistry in the volume of 3-5 pages. A presentation is prepared for the competition program. The essay should express the author's individual impressions and considerations on a particular issue or subject. The title of the essay reflects the problem statement. The content of the essay includes an introduction, the main part, and a conclusion. The introduction usually gives a brief answer to the question posed; it should outline the composition of the answer. The main part should include 2-4 arguments, which logically develop the author's thoughts with the help of examples, show understanding, and the ability to construct the proofs in an unconventional way. In biochemistry it is necessary to use formulas, schemes, drawings. In the conclusion it is possible to show the connection of the considered question with others or its importance for medicine, to express conjectures, doubts [2].

It should be taken into account that for international students, studying at a Russian university involves difficulties in adapting to unfamiliar living and studying conditions [1]. Therefore, at the first stages of the development of the Olympiad movement among foreign students, it was decided to test the classical form of the Olympiad in the form of a competition of tasks. The tasks were prepared, including theoretical questions on knowledge of the sub-

ject, and creative situational tasks, having clinical and diagnostic significance, and therefore, related to the future professional activity of the students. The participants receive a form with 10 tasks which are the same for all participants. The following is an example of tasks of the Biochemistry Olympiad of BSMU for foreign students 2022 (Table 1).

Table 1

<b>Tasks of the Biochemistry Olympiad of BSMU for foreign students 2022</b>	
BIOCHEMISTRY OLYMPIAD-2022	
	Task
	Radioactive glucose labeled by carbon isotope $^{14}\text{C}$ in positions 3 and 4 is incubated with cell-free liver tissue homogenate. In which positions the newly forming lactate will contain carbon $^{14}\text{C}$ ?
	Name the tissues or organs of human body that most actively carry out the following reactions: <ul style="list-style-type: none"> <li>a. 7-dehydrocholesterol <math>\rightarrow</math> cholecalciferol</li> <li>b. 25-hydroxycholecalciferol <math>\rightarrow</math> <math>1,25(\text{OH})_2\text{D}_3</math></li> <li>c. Cholesterol <math>\rightarrow</math> cholic acid</li> <li>d. Cholic acid <math>\rightarrow</math> lithocholic acid</li> <li>e. Acetyl-CoA <math>\rightarrow</math> <math>\beta</math>-hydroxybutyrate</li> <li>f. Testosterone <math>\rightarrow</math> estradiol</li> <li>g. Cholesterol <math>\rightarrow</math> aldosterone</li> <li>h. Proopiomelanocortin <math>\rightarrow</math> ACTH (adrenocorticotrophic hormone)</li> <li>i. Acetoacetate <math>\rightarrow</math> <math>\text{CO}_2</math></li> <li>j. Guanidinoacetate <math>\rightarrow</math> creatine</li> <li>k. Glycerol <math>\rightarrow</math> glucose</li> <li>l. Synthesis of erythropoietin</li> <li>m. Tyrosine <math>\rightarrow</math> dopachrome</li> <li>n. Tyrosine <math>\rightarrow</math> monoiodotyrosine</li> <li>o. Tryptophan <math>\rightarrow</math> melatonin</li> </ul>
	A 67-years-old man presented to the emergency department with a one-week history of angina and shortness of breath. He complained that his face and extremities had a «blue color». His medical history included chronic stable angina treated with nitroglycerin. Blood obtained for analysis was chocolate-colored. What is the most likely diagnosis?
	A patient who is scheduled for abdominal surgery in two weeks, was prescribed a course of vitamin K. What is the purpose of the vitamin administration? Describe the molecular mechanism of vitamin K action.
	In long-term exercises the major energy fuel used by skeletal muscles are fatty acids. Compare efficiency of ATP output in oxidation of 1 mole of tripalmitate (tripalmitoyl glycerol) and aerobic oxidation of 1 mole of glucose.
	A 70-years-old man was admitted to the emergency room with a 12-hour history of chest pain. Preliminary diagnosis is myocardial infarction. What lab tests can support the diagnosis?
	Define $\text{P}_i/\text{O}$ coefficient if isocitrate is added to isolated mitochondria as a substrate of respiration. Under what conditions will the value of the coefficient decrease?
	Concerned parents brought a 5-year-old boy to the doctor. Physical examination revealed loose skin, hypermobile joints and vascular problems. Which molecular defects can cause the described symptoms?
	A teenager, concerning about his weight, attempts to maintain a fat-free diet for a period of several weeks. What types of lipids to be the most deficient in his ability to synthesize?
0	Patient's urine starts to darken when left standing. What compound can cause darkening of urine? In what disease it can be observed?

As we can see from the set of tasks, only tasks 1, 2, 5 and 7 are theoretical, and task 2 is designed to evaluate the knowledge of different sections of biochemistry; most tasks (3, 4, 6, 8, 9, 10) describe a clinical situation, to solve which knowledge of biochemistry and its connection with other medical disciplines are used, that allows to evaluate fully the level of general professional and professional competencies, formed in the process of studying biochemistry.

Thus, for example, when teaching biochemistry to students studying in specialty 31.05.01 General Medicine the general professional competence GPC-5 (Ability to evaluate morphofunctional and physiological states and pathological processes in the human body to solve professional problems) and the professional competence PC-5 (Ability to collect and analyze the patient's complaints, his history, the results of the examination, laboratory, instrumental, pathological-anatomical and other studies in order to recognize the state or establish the presence or absence of the disease) are partially formed.

This form of Olympiad for foreign students has been implemented for several years and has shown good results. The participants of the Olympiad presented a high level of theoretical knowledge in biochemistry and the ability to apply it in solving situational problems. Participation in the Olympiad makes a significant contribution to the formation of the most important universal, general professional and professional competencies in the students, promotes the interest in the fundamental disciplines as a fundamental basis for the study of clinical medicine, as well as the development of their creative potential. Among other things, the Olympiads among foreign students contribute to their adaptation, intercultural and interpersonal communication in the new environment.

The results of the Olympiads, as well as the annual participation of foreign students in the conference of students and young scientists with research papers in the field of biochemistry under the guidance of faculty members of the Department create the possibility to implement in the near future creative contests "The best situational task" and "The best essay" in the framework of the Olympiad among foreign students at the Department of Biological Chemistry of BSMU.

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### **REALIZATION OF COMPETENCES AT THE PRESENT STAGE OF TEACHING NORMAL PHYSIOLOGY TO FOREIGN STUDENTS**

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**Abstract:** In connection with the need for qualitative mastering of competence by foreign students, at the Department of Normal Physiology Bashkir State Medical University, it