ISSN 2181-3187

NEW CLINICAL TRENDS IN MODERN BIOCHEMISTRY
(Literary review)

Khodzhieva Dilrabo Kamilzhonovna
Department of general education and fundamental sciences
Bukhara Innovative Medical Institute, Bukhara, Uzbekistan

Modern biochemistry is a field of scientific research that reveals the secrets of living organisms and their functioning.

One of the key areas in biochemistry is the study of the structure and function of proteins. Scientists are interested in amino acids and peptides, which are the main building blocks of proteins, and are also developing new methods for their synthesis and analysis. Enzymes are also an object of interest for biochemists. Research in this field is aimed at studying the mechanisms of catalysis and regulation of enzymatic reactions, which play an important role in the life processes of organisms.

The study of metabolic pathways and their regulation is another important area in biochemistry. Scientists are investigating the processes of assimilation and dissimilation of various substances in the body to understand how the body regulates its metabolic processes. The analysis of the structure and function of nucleic acids is also an important aspect of biochemical research. The genetic code and mechanisms of replication, transcription and translation are key aspects of the study of nucleic acids.

Lipids and carbohydrates also attract the attention of biochemists because of their role in cell membranes and signaling pathways. Research in this area is aimed at understanding the relationships between various biochemical processes and their role in cellular function.

Finally, biochemists also carry out research on the interaction of biochemical processes with the environment, including through the study of the role of biochemistry in environmental processes and the development of methods for biochemical environmental control. This helps biochemists understand the interaction of living organisms with their environment and provides opportunities to develop ways to control and manage the environmental situation.

The directions mentioned above form the basis of modern biochemistry and help expand our scientific knowledge base about living organisms and their internal processes. These studies contribute to improving our understanding of living matter.

Biochemistry was formed as an independent science about 100 years ago, but people used biochemical processes in ancient times, unaware, of course, of their true essence. In the most remote times, the technology of such industries based on biochemical processes as baking, cheese making, winemaking, and leather dressing was already known. The need to fight diseases forced us to think about the

ISSN 2181-3187

transformations of substances in the body, to look for explanations for the healing properties of medicinal plants. The use of plants for food, for the manufacture of paints and fabrics also led to attempts to understand the properties of substances of plant origin.[5,7]

Since the end of the twentieth century, methods of molecular and cellular biology have been increasingly used in biochemistry, especially artificial expression and gene knockout in model cells and whole organisms. Determining the structure of the entire human genomic DNA revealed approximately as many previously unknown genes and their unexplored products as were already known by the beginning of the 21st century thanks to half a century of efforts by the scientific community. It turned out that traditional chemical analysis and purification of enzymes from biomass make it possible to obtain only those proteins that are present in relatively large quantities in living matter.[1] Currently, the main problems solved by biochemistry are the relationship between structure and biological function, information transfer routes, spatial and temporal distribution of biomolecules in cells and throughout the body, the problem of deciphering the mechanisms of evolution as a biochemical process. [5] Main sections of biochemistry: [2]

• Static biochemistry – the study of the chemical nature and properties of cell components.

• Dynamic biochemistry – the study of metabolism.

• Private (functional) biochemistry – the study of the functioning of individual organs and tissues by methods of biochemistry. Modern biology is a complex science characterized by the interpenetration of ideas and methods of various biological disciplines, as well as other sciences, primarily physics, chemistry and mathematics. There are three main directions of development of modern biology. [8]

Classical biology. It is represented by naturalist scientists who study the diversity of wildlife. They objectively observe and analyze everything that happens in wildlife, study living organisms and classify them. It is wrong to think that in classical biology all the discoveries have already been made. In the second half of the 20th century, not only many new species were described, but also large taxa were discovered, up to kingdoms (Pogonophores) and even super-kingdoms (Archaebacteria, or Archaea). These discoveries forced scientists to take a fresh look at the entire history of the development of wildlife, For real naturalist scientists, nature is a value in itself. Every corner of our planet is unique to them. That is why they are always among those who acutely feel the danger to the nature around us and actively advocate for its protection. All sections of classical biology explain the properties of the studied objects mainly by the structure of these objects and the properties of their constituent components, including chemical or physical ones. The active use by biologists of the achievements of physics, chemistry, and cybernetics often led to the impossibility of clearly separating biology from other sciences, unambiguously determining where one science ends and another begins. As a result, in recent decades, within the framework of classical science, in addition to the traditional sections of biology (botany, zoology, anatomy, physiology, etc.), a number of more modern sections have been formed at the so-called "junction": biochemistry, biophysics, molecular biology, genetic engineering, etc. General biology studies the patterns of existence of living bodies that are common to all branches of biology, both traditional and more modern. The most important concept of general biology is "life". It is so closely interrelated with the concept of "organism" that they are defined through each other.

For thousands of years, philosophers have been arguing about which came first: the egg or the chicken? From the point of view of science, it is more important to establish who (what) preceded the appearance of both of them. The answer to this question will allow us to unambiguously resolve this dispute and simultaneously find out who, what, how and even when it appeared, except for the chicken and egg. Evolutionary biology deals with such issues — the field that studies the origin of species from common ancestors, the principles of inheritance of traits and their changes — in short, everything that has led to the existing diversity of biological forms. The founder of the theory of natural selection, Charles Darwin (1809-1882), began as an ordinary naturalist: he traveled, observed, described and collected living organisms. Subsequently, he summarized this material and the result of his work was a theory explaining the diversity of life on our planet, which made him a famous scientist. The study of the evolution of living organisms is actively continued by evolutionary scientists to this day, and the synthesis of evolutionary theory and genetics led to the creation of the so-called synthetic theory of evolution. Thanks to the use of advanced physicochemical methods, important discoveries have also been made about the origin of life on our planet. New discoveries have made it possible to supplement the theory of anthropogenesis (human origin). Research in this direction is ongoing.

Physico-chemical biology is a new rapidly developing field of biology, important both theoretically and practically. The discoveries made in this direction will help solve many global problems facing humanity (food production, search for new energy sources, environmental protection, etc.). At the junction of biochemistry, biology and physics in the 1950s, a new science emerged - biophysics. The purpose of this science is to explain a number of biological phenomena from the point of view of physics. Biophysicists, considering a complex biological phenomenon, make an attempt to divide it into several more elementary, understandable acts – stages of this phenomenon and then investigate their physical properties. Biophysics methods have explained the mechanisms of muscle contraction, nerve impulse conduction, and acts of enzymatic catalysis; models of many self-oscillatory processes observed in biology have been proposed, and the secrets of photosynthesis have been explained.

Biophysicists can be found today in any biological laboratory, starting with the ecological and ending with the laboratory of molecular genetics. The specificity of biophysical knowledge is the ability to operate with concepts of all levels of biology and biochemistry. Biophysics and biochemistry have fulfilled the long-held dream of biologists to combine knowledge about the structure and functions of the body as a whole. However, neither biochemistry nor biophysics can answer the basic question of biology: how does living matter differ from inanimate matter and what is the impetus for the origin of life.

Literature:

1. Halimova, Y. S. (2023). Morphofunctional Aspects of Internal Organs in Chronic Alcoholism. AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI, 2(5), 83-87.

2. Togaydullaeva, D. D. (2022). ARTERIAL GIPERTONIYA BOR BEMORLARDA KOMORBIDLIK UCHRASHI. TA'LIM VA RIVOJLANISH TAHLILI ONLAYN ILMIY JURNALI, 2(11), 32-35.

3. Togaydullaeva, D. D. (2022). Erkaklarda yurak ishemik kasalligining kechishida metabolik sindrom komponentlarining ta'siri. Fan, ta'lim, madaniyat va innovatsiya, 1(4), 29-34.

4. Dilmurodovna, T. D. (2023). MORPHOLOGICAL ASPECTS OF THE THYROID GLAND IN VARIOUS FORMS OF ITS PATHOLOGY. American Journal of Pediatric Medicine and Health Sciences (2993-2149), 1(8), 428-431.

5. Dilmurodovna, T. D. (2023). Morphological Signs of the Inflammatory Process in the Pancreas in Type I and Ii Diabetes Mellitus. EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION, 3(11), 24-27.

6. Dilmurodovna, T. D. (2023). КЛИНИКО-МОРФОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ТЕЧЕНИЕ ВОСПАЛИТЕЛЬНОГО ПРОЦЕССА В ПОДЖЕЛУДОЧНОЙ ЖЕЛЕЗЕ ПРИ САХАРНОМ ДИАБЕТЕ I И II ТИПА. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 33(1), 173-177.

7. Khafiza, J., & Dildora, T. (2023). Frequency of Comorbid Pathology among Non-Organized Population. Research Journal of Trauma and Disability Studies, 2(4), 260-266.

8. Dilmurodovna, T. D. (2023). Clinical and Diagnostic Features of the Formation of Arterial Hypertension in Young People. EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION, 3(12), 41-46.

9. Dilmurodovna, T. D. (2024). DIABETES MELLITUS IN CENTRAL ASIA: PROBLEMS AND SOLUTIONS. Лучшие интеллектуальные исследования, 12(4), 204-213.

10. Тогайдуллаева, Д. Д. (2024). ОБЩИЕ ОСОБЕННОСТИ ТЕЧЕНИЕ САХАРНОГО ДИАБЕТА В СРЕДНЕЙ АЗИИ. Лучшие интеллектуальные исследования, 12(4), 193-204.

11. Tog'aydullaeva, D. D. (2024). GIPERTENZIYA BOR BEMORLARDA MODDALAR ALMASINUVINING BUZULISHI BILAN KELISHI. Лучшие интеллектуальные исследования, 14(4), 130-137.

12. Dilmurodovna, T. D. (2024). FACTORS CAUSING ESSENTIAL HYPERTENSION AND COURSE OF THE DISEASE. Лучшие интеллектуальные исследования, 14(4), 138-145.

13. Shokirov, B. S. (2021). Halimova Yu. S. Antibiotic-induced rat gut microbiota dysbiosis and salmonella resistance Society and innovations.

14. Нарзулаева, У. Р., Самиева, Г. У., & Насирова, Ш. Ш. (2021). ИССИҚ ИҚЛИМДА КЕЧУВЧИ ГИПЕРТОНИЯ КАСАЛЛИГИНИНГ БОШЛАНҒИЧ БОСҚИЧЛАРИДА ГЕМОРЕОЛОГИК БУЗИЛИШЛАР. ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ, 6(1).

15. Нарзулаева, У., Самиева, Г., Лапасова, З., & Таирова, С. (2023). Значение диеты в лечении артериальной гипертензии . Журнал биомедицины и практики, 1(3/2), 111–116. https://doi.org/10.26739/2181-9300-2021-3-98

16. Narzulaeva Umida Rakhmatulloevna, Samieva Gulnoza Utkurovna, & Ismatova Marguba Shaukatovna (2020). SPECIFICITY OF THE CLINICAL COURSE OF THE INITIAL STAGES OF HYPERTENSION IN ARID ZONES OF UZBEKISTAN AND NON-DRUG APPROACHES TO TREATMENT. Кронос, (4 (43)), 15-17.

17. Umida Raxmatulloevna Narzulaeva, & Mohigul Abdurasulovna Bekkulova (2023). Arterial gipertenziya etiologiyasida dislipidemiyaning xavf omili sifatidagi roli. Science and Education, 4 (2), 415-419.

18. Narzulaeva, U. R., & Samieva, G. U. (2021). Nasirova ShSh. Hemoreological Disorders in The Early Stages Of Hypertension In Hot Climates. Journal of Biomedicine and Practice, 6(1), 221-225.

19. Dilsora Nuriddinovna Juraeva, Umida Rakhmatulloevna Narzulaeva, & Kurbonova Gulbahor Aslamovna. (2022). GENDER DIFFERENCES IN THE PARACLINICAL FEATURES OF THE COURSE OF TRIGEMINAL NEURALGIA. World Bulletin of Public Health, 8, 186-190. Retrieved from https://www.scholarexpress.net/index.php/wbph/article/view/751

20. Toxirovna, E. G. (2024). GIPERPROLAKTINEMIYA KLINIK BELGILARI VA BEPUSHTLIKKA SABAB BO'LUVCHI OMILLAR. Лучшие интеллектуальные исследования, 14(4), 168-175.

ISSN 2181-3187

21. Toxirovna, E. G. (2024). QANDLI DIABET 2-TUR VA O'LIMNI KELTIRIB CHIQARUVCHI SABABLAR. Лучшие интеллектуальные исследования, 14(4), 86-93.

22. Халимова, Ю. С., & Шокиров, Б. С. (2021). Репродуктивность и жизнеспособность потомства самок крыс при различной длительности воздействия этанола. In Актуальные вопросы современной медицинской науки и здравоохранения: Материалы VI Международной научно-практической конференции молодых учёных и студентов, посвященной году науки и технологий,(Екатеринбург, 8-9 апреля 2021): в 3-х т.. Федеральное государственное бюджетное образовательное учреждение высшего образования «Уральский государственный медицинский университет» Министерства здравоохранения Российской Федерации.

23. Khalimova, Y. S. BS Shokirov Morphological changes of internal organs in chronic alcoholism. Middle European scientific bulletin, 12-2021.

24. Шокиров, Б. С., & Халимова, Ю. С. (2022). ДИСБИОЗ ВЫЗВАННЫЙ АНИБИОТИКАМИ КИШЕЧНОЙ МИКРОБИОТЫ КРЫС И УСТОЙЧИВОСТЬ К САЛМОНЕЛЛАМ. Scientific progress, 3(2), 766-772.

25. Salokhiddinovna, X. Y. (2023). Clinical Features of the Course of Vitamin D Deficiency in Women of Reproductive Age. EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION, 3(11), 28-31.

26. Шокиров, Б., & Халимова, Ю. (2021). Антибиотик-индуцированный дисбиоз микробиоты кишечника крыс и резистентность к сальмонеллам. Общество и инновации, 2(4/S), 93-100.

27. Salokhiddinovna, X. Y. (2023). MORPHOLOGICAL CHANGES IN PATHOLOGICAL FORMS OF ERYTHROCYTES. EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE, 3(11), 20-24.

28. Saloxiddinovna, X. Y. (2023). ERITROTSITLAR PATOLOGIK SHAKLLARINING MORFOLOGIK O'ZGARISHLARI. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 33(1), 167-172.

29. Шокиров, Б., & Халимова, Ю. (2021). Antibiotic-induced rat gut microbiota dysbiosis and salmonella resistance. Общество и инновации, 2(4/S), 93-100.

30. Шокиров, Б. С., & Халимова, Ю. С. (2021). Пищеварительная функция кишечника после коррекции экспериментального дисбактериоза у крыс бифидобактериями. In Актуальные вопросы современной медицинской науки и здравоохранения: Материалы VI Международной научно-практической конференции молодых учёных и студентов, посвященной году науки и технологий,(Екатеринбург, 8-9 апреля 2021): в 3-х т.. Федеральное государственное бюджетное образовательное учреждение высшего образования

ISSN 2181-3187

«Уральский государственный медицинский университет» Министерства здравоохранения Российской Федерации.

31. Salokhiddinovna, X. Y. (2023). Anemia of Chronic Diseases. Research Journal of Trauma and Disability Studies, 2(12), 364-372.

32. Salokhiddinovna, X. Y. (2023). MALLORY WEISS SYNDROME IN DIFFUSE LIVER LESIONS. Journal of Science in Medicine and Life, 1(4), 11-15.

33. Salohiddinovna, X. Y. (2023). SURUNKALI KASALLIKLARDA UCHRAYDIGAN ANEMIYALAR MORFO-FUNKSIONAL XUSUSIYATLARI. Ta'lim innovatsiyasi va integratsiyasi, 10(3), 180-188.

34. Халимова, Ю. С. (2024). КЛИНИКО-МОРФОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ВИТАМИНА D В ФОРМИРОВАНИЕ ПРОТИВОИНФЕКЦИОННОГО ИММУНИТА. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 36(3), 86-94.

35. Saloxiddinovna, X. Y. (2024). CLINICAL FEATURES OF VITAMIN D EFFECTS ON BONE METABOLISM. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 36(5), 90-99.

36. Saloxiddinovna, X. Y. (2024). CLINICAL AND MORPHOLOGICAL ASPECTS OF AUTOIMMUNE THYROIDITIS. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 36(5), 100-108.

37. Saloxiddinovna, X. Y. (2024). MORPHOFUNCTIONAL FEATURES BLOOD MORPHOLOGY IN AGE-RELATED CHANGES. Лучшие интеллектуальные исследования, 14(4), 146-158.

38. Saloxiddinovna, X. Y. (2024). CLINICAL MORPHOLOGICAL CRITERIA OF LEUKOCYTES. Лучшие интеллектуальные исследования, 14(4), 159-167.