



THE ROLE OF ORGANIC CHEMISTRY IN MEDICINE: MODERN CLINICAL RELEVANCE AND INNOVATIVE DIRECTIONS

Eshkoraev Samariddin

PhD student in the field of technology of organic substances and materials based on them,
Termez State University of Engineering and Agrotechnology

samariddineshqorayev@gmail.com

<https://orcid.org/0009-0001-7068-1564>

ABSTRACT

Organic chemistry is one of the fundamental scientific bases of modern medicine because most therapeutic agents, diagnostic probes, antiseptics, anesthetics, vitamins, hormones, and many biomaterials are organic compounds or are designed through organic-chemical principles. The relevance of this topic has increased in recent years because medicine now requires safer drugs, targeted delivery systems, rapid diagnostics, antimicrobial innovation, and personalized pharmacotherapy. The World Health Organization lists hundreds of essential medicines, and many of them are small organic molecules or organic-derived therapeutic agents used in daily clinical practice [1]. At the same time, the U.S. Food and Drug Administration approved 50 novel drugs in 2024, showing that chemical innovation remains a major driver of medical progress [2]. This article analyzes the role of organic chemistry in medicine through a narrative review of scientific and regulatory sources. The article focuses on drug discovery, structure-activity relationships, stereochemistry, pharmacokinetics, formulation, antimicrobial resistance, and precision medicine. The findings show that organic chemistry is not an isolated theoretical discipline; it is a practical language through which disease mechanisms are translated into molecular solutions. The article concludes that medical education should strengthen the integration of organic chemistry with pharmacology, biochemistry, toxicology, and clinical thinking.

Keywords: organic chemistry, medicine, medicinal chemistry, drug discovery, stereochemistry, pharmacology, antibiotics, precision medicine.

АННОТАЦИЯ

Органическая химия является одной из фундаментальных научных основ современной медицины, поскольку большинство терапевтических средств, диагностических зондов, антисептиков, анестетиков, витаминов, гормонов и многих биоматериалов представляют собой органические соединения или создаются на основе органико-химических принципов. Актуальность этой темы возросла в последние годы, поскольку медицина теперь нуждается в более безопасных лекарствах, системах адресной доставки, быстрой диагностике, антимикробных инновациях и персонализированной фармакотерапии. Всемирная организация здравоохранения перечисляет сотни основных лекарственных средств, и многие из них представляют собой небольшие органические молекулы или органические производные терапевтических средств, используемых в повседневной клинической практике [1]. В то же время Управление по санитарному надзору за качеством пищевых продуктов и медикаментов США одобрило 50 новых лекарств в 2024 году, что показывает, что химические инновации остаются основным двигателем прогресса в медицине [2]. В данной статье анализируется роль органической химии в медицине посредством обзорного исследования научных и нормативных источников. Статья фокусируется на разработке лекарств, взаимосвязи структуры и активности, стереохимии, фармакокинетики, рецептуре, антимикробной резистентности и прецизионной медицине. Результаты исследования показывают, что органическая химия — это не изолированная теоретическая дисциплина; это практический язык, посредством которого механизмы заболеваний переводятся в



молекулярные решения. В заключение статьи делается вывод о необходимости усиления интеграции органической химии с фармакологией, биохимией, токсикологией и клиническим мышлением в медицинском образовании.

Ключевые слова: органическая химия, медицина, медицинская химия, разработка лекарств, стереохимия, фармакология, антибиотики, прецизионная медицина.

INTRODUCTION

Organic chemistry studies the structure, properties, reactions, and synthesis of carbon-containing compounds. In medicine, this discipline is not limited to laboratory theory; it directly influences how diseases are diagnosed, prevented, and treated. A tablet, injection, antiseptic solution, local anesthetic, contrast agent, hormone preparation, or anticancer drug reaches the patient only after its molecular structure, functional groups, solubility, stability, metabolism, and toxicity have been scientifically evaluated. Therefore, the medical importance of organic chemistry lies in its ability to connect molecular structure with biological function.

The current relevance of organic chemistry in medicine is especially strong for three reasons. First, chronic diseases, cancer, viral infections, autoimmune conditions, and metabolic disorders require new molecules that can act selectively on specific biological targets. Second, antimicrobial resistance has become a serious global threat; WHO estimates that bacterial antimicrobial resistance was directly responsible for 1.27 million deaths in 2019 and was associated with 4.95 million deaths [7]. Third, personalized medicine increasingly requires understanding why one patient responds well to a drug while another experiences toxicity or therapeutic failure. These problems cannot be solved only by clinical observation; they require molecular reasoning.

Historically, medicine advanced whenever chemical knowledge became more precise. The development of aspirin, sulfonamides, penicillin derivatives, local anesthetics, corticosteroids, anticancer agents, antiretrovirals, and modern targeted therapies demonstrates that the clinic depends on molecular design. Organic chemistry provides methods for modifying a lead compound, improving bioavailability, reducing toxicity, increasing selectivity, protecting unstable groups, and controlling stereochemical purity. In this sense, the organic chemist and the clinician work on the same problem at different levels: one studies molecular behavior, and the other observes therapeutic outcomes in the human body.

A weak approach would be to describe organic chemistry merely as the chemistry of carbon compounds. That definition is correct but insufficient for medicine. The stronger explanation is that organic chemistry supplies the structural logic of pharmacology. Functional groups determine hydrogen bonding, acidity, basicity, lipophilicity, receptor binding, membrane penetration, and metabolic transformation. Even a small change in a methyl group, halogen atom, hydroxyl group, amide linkage, or stereocenter can change a drug from active to inactive, from safe to toxic, or from short-acting to long-acting. Therefore, future medical specialists need organic chemistry not only to pass examinations but also to understand drug action, drug interactions, and rational therapy.

MATERIAL AND METHODS

This article was prepared as a narrative analytical review. The material consisted of scientific articles, regulatory documents, and international health reports related to organic chemistry, medicinal chemistry, small-molecule drug discovery, stereochemistry, essential medicines, and antimicrobial resistance. Priority was given to reliable sources such as the World Health Organization, the U.S. Food and Drug Administration, PubMed-indexed articles, and peer-reviewed reviews in pharmaceutical and medicinal chemistry.

The review included sources that explain the relationship between organic molecular structure and medical application. The main inclusion criteria were: relevance to medicine, connection with

organic or medicinal chemistry, discussion of drug design or pharmacological properties, and availability of scientific or institutional credibility. The main exclusion criteria were: purely industrial chemical texts without medical significance, non-scientific web materials, and sources that discussed clinical treatment without explaining molecular or pharmacological mechanisms.

The analysis was conducted through thematic grouping. First, sources were reviewed for the role of organic chemistry in drug discovery and essential medicines. Second, the importance of stereochemistry and structure-activity relationships was examined. Third, the role of organic compounds in diagnostics, formulation, targeted therapy, and antimicrobial innovation was evaluated. Finally, the implications for medical education and clinical practice were synthesized. This method does not generate original laboratory data, but it allows a systematic interpretation of how organic chemistry supports modern medicine.

RESULTS

The analysis shows that organic chemistry plays several major roles in medicine. These roles are not separate; they form a continuous chain from molecular discovery to clinical application. Organic chemistry begins with the identification or design of a compound, continues through optimization and formulation, and ends with safe administration to the patient. The following table summarizes the principal medical functions of organic chemistry.

Medical direction	Organic-chemical contribution	Clinical significance
Drug discovery	Synthesis and optimization of lead molecules and functional groups.	New therapies for infections, cancer, pain, inflammation and chronic diseases.
Stereochemistry	Control of enantiomers, racemates and three-dimensional recognition.	Better efficacy and lower risk when stereoisomers differ biologically.
Pharmacokinetics	Adjustment of solubility, ionization, lipophilicity and metabolism.	Improved absorption, distribution, dose frequency and safety.
Diagnostics	Development of dyes, probes, tracers and bioorthogonal tools.	Earlier and more accurate molecular detection of disease.
Antimicrobial innovation	Creation and modification of antibacterial, antiviral and antifungal molecules.	Response to resistance and emerging infectious threats.

One important result of the review is that small organic molecules remain highly relevant despite the rapid development of biologics, gene-based therapies, and cellular technologies. Small molecules are usually easier to manufacture, chemically modify, formulate, and administer orally than many large biological products. A review on small-molecule drug discovery notes that new technologies, including artificial intelligence and innovative modalities, have renewed interest in this field rather than replacing it [4]. This means organic chemistry remains central to both classical and future medicine.

Another result is that stereochemistry is no longer a secondary detail. Biological systems are chiral: enzymes, receptors, transporters, DNA, and proteins recognize three-dimensional structure. As a result, two enantiomers of the same compound may differ in potency, pharmacokinetics, or



safety. FDA guidance on stereoisomeric drugs emphasizes that stereoisomers require appropriate identification, characterization, separation, and measurement during development [5]. Modern medicinal chemistry therefore treats chirality as a clinical safety issue, not merely a structural feature.

The review also demonstrates that organic chemistry is essential in solving pharmacokinetic problems. A compound may bind strongly to a biological target but still fail as a medicine because it is insoluble, unstable, rapidly metabolized, unable to cross membranes, or toxic to healthy cells. Organic modification can improve these properties through salt formation, esterification, amide formation, prodrug design, halogen substitution, heterocycle introduction, or adjustment of hydrogen-bond donors and acceptors. Thus, the success of a medicine depends not only on biological activity but also on chemical suitability for the human body.

A further result concerns public health. Antimicrobial resistance increases the need for new antibacterial and antifungal molecules, better diagnostics, and rational use of existing drugs. WHO surveillance reports continue to emphasize the global scale of antimicrobial resistance and the need for effective, safe, and accessible medicines [8]. Organic chemistry contributes by developing new antimicrobial scaffolds, modifying existing antibiotics to overcome resistance mechanisms, and improving drug delivery to infected tissues.

DISCUSSION

The findings confirm that organic chemistry is a medical foundation rather than a peripheral basic science. In clinical education, students often separate chemistry from patient care, but this separation is artificial. Every prescription has a molecular explanation. The effect of a drug depends on its structure, ionization, solubility, receptor affinity, metabolic stability, and interaction with biological macromolecules. Without this knowledge, the clinician may memorize drug names but fail to understand why a drug works, why it fails, or why it causes adverse effects.

A practical example is analgesic and anti-inflammatory therapy. Organic functional groups influence acidity, protein binding, gastric irritation, enzyme inhibition, and duration of action. Another example is antibiotic therapy: beta-lactam rings, macrolide lactones, quinolone cores, sulfonamide groups, and aminoglycoside structures all determine antibacterial activity and resistance patterns. In oncology, aromatic heterocycles, kinase inhibitor scaffolds, alkylating groups, and targeted molecular designs demonstrate how precise organic structure can interfere with abnormal cellular signaling. These examples show that clinical medicine is applied molecular science.

The relationship between organic chemistry and pharmacology is especially visible in structure-activity relationships. A lead compound rarely becomes a drug without modification. Medicinal chemists systematically change parts of the molecule to improve target affinity, selectivity, safety, and pharmacokinetic behavior. This process requires knowledge of electron distribution, steric effects, resonance, inductive effects, hydrogen bonding, aromaticity, hydrophobicity, and acid-base properties. Therefore, organic chemistry is the grammar of drug design. Pharmacology describes the biological sentence; organic chemistry explains the molecular words.

The importance of chirality deserves special attention. In medicine, the wrong stereochemical form may be less active, inactive, or harmful. Modern drug development therefore requires analytical methods that can distinguish stereoisomers and manufacturing methods that can control stereochemical purity. This is particularly relevant for drugs acting on receptors or enzymes with highly specific binding pockets. A medical specialist does not need to perform all synthetic procedures, but understanding stereochemistry helps explain differences in efficacy, dosing, and adverse reactions.

Organic chemistry also contributes to safer and more effective drug delivery. Many active molecules have poor water solubility, low permeability, or rapid degradation. Chemical strategies



such as prodrugs, polymer conjugates, lipid-based carriers, and pH-sensitive linkers can help deliver active compounds to the right tissue at the right concentration. In targeted cancer therapy, for example, the linker between a cytotoxic molecule and a carrier can determine whether the drug is released in the tumor microenvironment or damages normal tissue. This shows that organic chemistry affects not only the drug itself but also the route and precision of delivery.

In diagnostics, organic chemistry supports fluorescent probes, dyes, radiotracers, molecular sensors, contrast agents, and bioorthogonal reactions. These tools allow clinicians and researchers to visualize biological processes that cannot be seen by ordinary examination. The movement from symptom-based medicine toward molecular medicine depends on such chemical tools. Diagnosis becomes more accurate when disease can be detected at the level of receptors, enzymes, metabolites, or cellular markers.

There are also important risks and limitations. Organic chemistry can create powerful molecules, but a powerful molecule is not automatically a safe medicine. Toxic metabolites, reactive intermediates, environmental persistence, drug-drug interactions, and manufacturing impurities can all create harm. This is why organic chemistry must be integrated with toxicology, pharmacovigilance, regulatory control, and ethical clinical testing. The strongest medical use of organic chemistry is not uncontrolled synthesis of new compounds; it is disciplined molecular design supported by evidence, safety testing, and responsible clinical application.

For medical education, the implication is clear: organic chemistry should be taught with clinical context. Students need examples from real medicines, not only abstract reactions. Topics such as functional groups, isomerism, acids and bases, aromatic compounds, heterocycles, carbohydrates, lipids, amino acids, and polymers should be linked to anesthesia, antibiotics, hormones, vitamins, antiseptics, chemotherapy, diagnostic agents, and biomaterials. This integration would make the subject more understandable and more useful for future doctors, dentists, pharmacists, and biomedical researchers.

CONCLUSION

Organic chemistry plays a decisive role in modern medicine because it explains how molecular structure becomes therapeutic function. Its medical importance is seen in drug discovery, stereochemistry, pharmacokinetics, diagnostics, antimicrobial development, formulation, and personalized therapy. The review shows that many current medical challenges, including antimicrobial resistance, chronic disease treatment, cancer therapy, and patient-specific drug response, require strong organic-chemical understanding.

The main conclusion is that organic chemistry should not be treated as a detached preclinical subject. It is a practical foundation for rational pharmacotherapy and molecular medicine. A clinically oriented understanding of organic chemistry helps future specialists evaluate medicines more critically, understand adverse effects more deeply, and appreciate why small structural changes can produce major therapeutic differences. The future of medicine will depend not only on new technologies but also on the ability to design, analyze, and use organic molecules responsibly.

ACKNOWLEDGEMENT

The author expresses sincere gratitude to the scientific supervisor and the academic staff of Termiz University of Economics and Service for methodological support, scientific guidance, and encouragement during the preparation of this article. The author also acknowledges the importance of international scientific databases and public health institutions that provide reliable information for medical and pharmaceutical research.



REFERENCES

1. World Health Organization. Essential medicines. WHO Fact Sheet. 2026. Available from: <https://www.who.int/news-room/fact-sheets/detail/essential-medicines>
2. U.S. Food and Drug Administration. Novel Drug Approvals for 2024. FDA Center for Drug Evaluation and Research. 2025. Available from: <https://www.fda.gov/drugs/novel-drug-approvals-fda/novel-drug-approvals-2024>
3. MacCoss M., Baillie T.A. Organic Chemistry in Drug Discovery. Science. 2004;303(5665):1810-1813.
4. Southey M.W.Y., et al. Introduction to small molecule drug discovery and preclinical development. Frontiers in Drug Discovery. 2023;3:1314077.
5. U.S. Food and Drug Administration. Development of New Stereoisomeric Drugs: Guidance for Industry. FDA. 1992. Available from: <https://www.fda.gov/regulatory-information/search-fda-guidance-documents/development-new-stereoisomeric-drugs>
6. McVicker R.U., et al. Chirality of New Drug Approvals (2013-2022): Trends and Perspectives. Journal of Medicinal Chemistry. 2024.
7. World Health Organization. Antimicrobial resistance. WHO Fact Sheet. 2023. Available from: <https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>
8. World Health Organization. Global antibiotic resistance surveillance report 2025. Geneva: World Health Organization; 2025.
9. European Molecular Biology Laboratory, European Bioinformatics Institute. ChEMBL: bioactive molecules with drug-like properties. Available from: <https://www.ebi.ac.uk/chembl/>
10. Niazi S.K. Artificial Intelligence in Small-Molecule Drug Discovery. 2025. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC12472608/>
11. Nomozov, A. K., Ch, E. S., Jumaeva, Z. E., Todjiev, J. N., Eshkoraev, S. S., & Umirqulova, F. A. (2024). Experimental and Theoretical Studies of Salsola oppositifolia Extract as a Novel Eco-Friendly Corrosion Inhibitor for Carbon Steel in 3% NaCl. International Journal of Engineering Trends and Technology, 72(9), 312-320.
12. Munira, X., Samariddin, E., Hilola, A., Jahongir, A., Murodjon, J. R., & Shahzoda, M. (2024). THE PROCESS OF CRUSHING AND MIXING SYLVINITE ORES. Universum: технические науки, 10(12 (129)), 32-37.
13. O'G'Li, E. S. S., & Axmedov, O. (2024). MAHALLIY XOMASHYOLAR ASOSIDA POLIFOSFATLI FILTRLAR OLISH VA OQOVA SUVLARNI TOZALASHDA QO'LLASH. Строительство и образование, 3(4), 140-147.
14. Eshkoraev, S. (2024). REVOLUTIONIZING EDUCATION: HARNESSING INNOVATIVE TECHNOLOGIES IN TEACHING CHEMICAL TECHNOLOGY. Multidisciplinary Journal of Science and Technology, 4(3), 69-81.
15. Nomozov, A., Beknazarov, K., & Eshkoraev, S. (2024). SYNTHESIS AND INVESTIGATION OF CHARACTERISTICS OF CORROSION INHIBITOR IKMM-1 ST20 STEEL IN 1 M HCl SOLUTION. Multidisciplinary Journal of Science and Technology, 4(2), 179-192.
16. Abdulhamidova, H., Eshkoraev, S., & Javgashev, Y. (2022). TECHNOLOGY OF SILICATE BRICK PRODUCTION. Solution of social problems in management and economy, 1(4), 8-11.
17. Абдулхамидова, Х., & Эшкораев, С. (2022). НОВЫЕ ЦЕМЕНТНЫЕ ТЕХНОЛОГИИ. Theoretical aspects in the formation of pedagogical sciences, 1(4), 28-31.



18. Davronovna, K. M., Sadridinovich, E. S., Ismatullayevich, R. Z. B., & Yigitali Jo'ra o'g, J. (2022). Dependence of Karst Processes on Physico-Chemical Properties of Salts. American Journal of Social and Humanitarian Research, 3(9), 25-28.
19. Shaymanova, R. S., & Urazov, M. K. (2022). Improvement of drilling fluid for construction of wells. Multidisciplinary J. Sci. Technol, 2(2), 12-14.
20. Choriyeva, M. S., & Eshkoraev, S. S. (2022). The interaction of energy with climate change. ISJ Theor. Appl. Sci, 4(108), 60-63.
21. Шайманова, Р., & Шайманова, Н. (2023). Виды клея, используемые при производстве ДСП. Research Focus, 2(1), 210-213.
22. Sadridin o'g'li, E. S., Soatmurodovna, S. R. N., & Soatmurod o'g'li, A. A. IONITLAR (SORBENTLAR) YORDAMIDA ERITMADAN OLTINNI SORBSIYALASH USULIDA AJRATIB OLISH.
23. Eshqorayev, S., Abdulhamidova, H., & Abdulhamidov, J. (2022). SEMENT KLINKER TO'PLAMLARINI ISHLAB CHIQRISH: CaO-SiO₂-Al₂O₃-SO₃-CaCl₂-MgO. Eurasian Journal of Academic Research, 2(12), 955-958.
24. Eshqorayev, S. S., & Ro'zimurodov, B. I. (2022). AHOLI YASHASH XONADONLARIDA IS GAZIDAN HIMOYALOVCHI FILTRLAR TAYYORLASH. Eurasian Journal of Medical and Natural Sciences, 2(6), 209-212.
25. Eshqorayev, S. S., Ro'zimurodov, B. I., & Choriyeva, M. S. (2022). YOSHLARNI ILM-FAN VA INNOVATSIYALARGA QIZIQTIRISHNING NOAN'ANAVIY USULI. Eurasian Journal of Academic Research, 2(6), 308-310.
26. Eshkoraev, S., Abdulhamidova, H., & Javgashev, Y. (2022). INGREDIENT OF PORTLAND CEMENT. International Bulletin of Applied Science and Technology, 2(9), 21-23.
27. Xaydarova, M. D., Eshqorayev, S. S., & Ro'Zimurodov, B. I. (2022). Kaliy ma'danlarining dunyo bo'yicha uchrashi. Science and Education, 3(6), 149-151.
28. Uralov, N. B., Turaev, H. K., Eshkarayev, S. C., & Eshqorayev, S. S. (2021). Analysis of graphene properties, production and application. ISJ Theoretical & Applied Science, 11 (103), 726-728.
29. Akhatov, A. A., Eshkoraev, S. C., Normurodova, K. D., & Eshkoraev, S. S. (2021). Study of the influence of graphene nanofillers on the properties of composites based on polypropylene. ISJ Theoretical & Applied Science, 10 (102), 816-818.
30. Эшкареев, С. Ч., Тураев, Х. Х., & Бабамуратов, Б. Э. (2021). РАДИОЛОГИЧЕСКАЯ ОЦЕНКА РАДИОНУКЛИДОВ В ПОЧВАХ ЮЖНЫХ РЕГИОНОВ РЕСПУБЛИКИ УЗБЕКИСТАН. In ИННОВАЦИОННОЕ РАЗВИТИЕ НАУКИ И ОБРАЗОВАНИЯ (pp. 290-319).
31. Эшкареев, С. Ч., Тураев, Х. Х., & Эшкареев, С. С. (2021). ВЛИЯНИЕ ГЕКСАХЛОРИЦИКЛОГЕКСАНА НА ПОВЫШЕНИЕ РАДИОАКТИВНОСТИ В ПОЧВАХ СУРХАНДАРЬИНСКОЙ ОБЛАСТИ РЕСПУБЛИКИ УЗБЕКИСТАН. In СОВРЕМЕННАЯ ХИМИЧЕСКАЯ ФИЗИКА НА СТЫКЕ ФИЗИКИ, ХИМИИ И БИОЛОГИИ (pp. 399-400).
32. М.Ж. Абдуллаева. (2025). ЭФФЕКТИВНОСТЬ НЕЙРОПСИХОЛОГИЧЕСКИХ УПРАЖНЕНИЙ В ЛОГОКОРРЕКЦИОННОЙ РАБОТЕ С ДЕТЬМИ С РАССТРОЙСТВАМИ АУТИСТИЧЕСКОГО СПЕКТРА. ОБРАЗОВАНИЕ И НАУКА В XXI ВЕКЕ, 64-1 (том 2). <https://mpcareer-google.ru/index.php/journal/article/view/2939>
33. Ж.А. Бекманова, & М.Ж. Абдуллаева (2025). НОВЫЕ ВЕКТОРЫ В РАБОТЕ С ДЕТЬМИ С РАССТРОЙСТВАМИ АУТИСТИЧЕСКОГО СПЕКТРА. Inter education & global study, 3 (6), 472-480.



34. М.Ж. Абдуллаева, & Ж.А. Бекманова (2025). ИСПОЛЬЗОВАНИЕ ЦИФРОВЫХ ТЕХНОЛОГИЙ В ДЕФЕКТОЛОГИИ ДЛЯ РАЗВИТИЯ ДЕТЕЙ С АУТИЗМОМ. *Inter education & global study*, 3 (4 (1)), 327-333.
35. Ж.А. Бекманова, & М.А. Сапарбаева (2025). ИГРОВЫЕ МЕТОДЫ НЕЙРОМОТОРНОЙ КОРРЕКЦИИ. *Inter education & global study*, 3 (6), 481-491.
36. Абдуллаева, М. Ж., & Бекманова, Ж. А. (2024). Методики арт-терапии в логопедической работе с детьми с задержкой речевого развития. *Научный редактор*, 4.
37. Абдуллаева, М. Ж., & Бекманова, Ж. А. (2024). ПРИМЕНЕНИЕ АРТ-ПЕДАГОГИЧЕСКИХ ТЕХНОЛОГИЙ В ЛОГОПЕДИЧЕСКОЙ ПРАКТИКЕ ДЛЯ ДЕТЕЙ С АУТИЗМОМ. *IN SITU*, (7), 65-67.
38. Лялина, О. А., & Абдуллаева, М. Ж. (2022). МЕТОД СОЗДАНИЯ КОНЦЕПЦИИ ЭРГОНОМИЧНОГО ПРОСТРАНСТВА НА ОСНОВЕ ЦЕННОСТЕЙ. In XI Конгресс молодых ученых (pp. 393-400).
39. Абдуллаева, М. Ж., & Лялина, О. А. (2022). ОСОБЕННОСТИ МАРКЕТИНГОВОГО ПРОЕКТИРОВАНИЯ И ПРОДВИЖЕНИЯ АРТ-ПРОСТРАНСТВ НА РАЗНЫХ ЭТАПАХ ИХ ЖИЗНЕННОГО ЦИКЛА. In XI Конгресс молодых ученых (pp. 106-109).