Curriculum vitae: Mikhail Akimov

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Education

2005–2008	Russia, Moscow	Shemyakin-Ovchinnikov institute of bioorganic chemistry, RAS	PhD, Biochemistry
2007–2007	Russia, Puschino	Leica Microscopy Workshop "Frontiers of Modern microscopy. Confocal and Fluorescence Microscopy, EM Specimen Preparation"	certificate
2000–2005	Russia, Moscow	Lomonosov Moscow state university, biological faculty, bioorganic chemistry department	honors degree (specialist)

IBCh positions

2016–to date	Senior research fellow	

IBCh memberships

	Trade union committee

Scientific interests

gerontology, evolution theory, theoretical biology, neurochemistry, lipid biology, oncology

Titles

	Doctor of Philosophy (Chemistry)

Grants and projects

2027–to date	-Рецепторные механизмы повышения чувствительности протоковой аденокарциномы поджелудочной железы к гемцитабину под действием ацилдофаминов
2023–2024	-Взаимодействие противоположно направленных сигналов эндогенных биоактивных липидов лизофосфатидилинозита, анандамида и 2-арахидоноилглицерина в процессах регуляции пролиферации и смерти клеток рака молочной железы

Publications

1. Yuriev DY, Barabanshchikov IV, Strukova VA, Tkachenko SV, Pakhomov AA, Deev SM, **Akimov MG**, Ternovaya ND, Sherstyanykh GD, Sazonova VA, Kalinkina VA, Ulasevich SA, Oshchepkov MS (2026). 1,8-Naphthalimide-Based Fluorescent Bisphosphonates: Molecular Design, Spectral-Luminescent Properties, and Osteotropic Targeted Delivery Systems. *Russ. J. Bioorganic Chem.* 52 (2), 54, 10.1134/S1068162025605105

2. **Akimov MG**, Gretskaya NM, Bezuglov VV (2025). Nonclassical Cannabinoid Receptors: Modern Concepts of Signal Transmission Functions and Mechanisms. *Russ. J. Bioorganic Chem.* 51 (5), 1879–1908, 10.1134/S1068162025602502
3. Zhdanov V, Kaplin D, **Akimov M**, Antonov A, Gasanov M, Malchenko V (2025). Ensemble Machine Learning Models for Rice and Wheat Yield Prediction: A Comparative Study Across Districts in India's Kharif and Rabi Seasons. *J INDIAN SOC REMOT* 53 (11), 3901–3915, 10.1007/s12524-025-02186-z
4. Oshchepkov M, Kovalenko L, Kalistratova A, Sherstyanykh G, Gorbacheva E, Antonov A, Khadour N, **Akimov M** (2025). Anti-Proliferative Activity of Ethylenediurea Derivatives with Alkyl and Oxygen-Containing Groups as Substituents. *Biomedicines* 13 (2), 316, 10.3390/biomedicines13020316
5. **Akimov MG**, Gretskaya NM, Gorbacheva EI, Khadour N, Sherstyanykh GD, Bezuglov VV (2025). Two-Step Cell Death Induction by the New 2-Arachidonoyl Glycerol Analog and Its Modulation by Lysophosphatidylinositol in Human Breast Cancer Cells. *Int J Mol Sci* 26 (2), 820, 10.3390/ijms26020820
6. **Akimov MG**, Gretskaya NM, Gorbacheva EI, Khadour N, Chernavskaya VS, Sherstyanykh GD, Kovaleko TF, Fomina-Ageeva EV, Bezuglov VV (2024). The Interaction of the Endocannabinoid Anandamide and Paracannabinoid Lysophosphatidylinositol during Cell Death Induction in Human Breast Cancer Cells. *Int J Mol Sci* 25 (4), 2271, 10.3390/ijms25042271
7. **Akimov MG**, Dudina PV, Vyunova TV, Kalueff AV, Gretskaya NM, Bezuglov VV (2024). Role of key endocannabinoids and their receptors in breast cancer. *Reviews on Clinical Pharmacology and Drug Therapy* 22 (1), 41–51, 10.17816/RCF623144
8. Gretskaya N, **Akimov M**, Andreev D, Zalygin A, Belitskaya E, Zinchenko G, Fomina-Ageeva E, Mikhalyov I, Vodovozova E, Bezuglov V (2023). Multicomponent Lipid Nanoparticles for RNA Transfection. *Pharmaceutics* 15 (4), , 10.3390/pharmaceutics15041289
9. **Akimov MG**, Gretskaya NM, Dudina PV, Sherstyanykh GD, Zinchenko GN, Serova OV, Degtyaryova KO, Deyev IE, Bezuglov VV (2023). The Mechanisms of GPR55 Receptor Functional Selectivity during Apoptosis and Proliferation Regulation in Cancer Cells. *Int J Mol Sci* 24 (6), , 10.3390/ijms24065524
10. Kovshova T, Mantrov S, Boiko S, Malinovskaya J, Merkulova M, Osipova N, Moiseeva N, **Akimov M**, Dudina P, Senchikhin I, Ermolenko Y, Gelperina S (2023). Co-delivery of Paclitaxel and Etoposide Prodrug by Human Serum Albumin and PLGA nanoparticles: synergistic cytotoxicity in brain tumor cells. *J Microencapsul* 40 (4), 1–48, 10.1080/02652048.2023.2188943
11. Kochetkov KA, Gorunova ON, Bystrova NA, Dudina PV, **Akimov MG** (2022). Synthesis and physiological activity of new imidazolidin-2-one bis-heterocyclic derivatives. *Russ Chem Bull* 71 (11), 2395–2403, 10.1007/s11172-022-3667-z
12. Oshchepkov M, Kovalenko L, Kalistratova A, Ivanova M, Sherstyanykh G, Dudina P, Antonov A, Cherkasova A, **Akimov M** (2022). Anti-Proliferative and Cytoprotective Activity of Aryl Carbamate and Aryl Urea Derivatives with Alkyl Groups and Chlorine as Substituents. *Molecules* 27 (11), , 10.3390/molecules27113616
13. Gamisonia AM, Yushina MN, Fedorovagogolina IA, **Akimov MG**, Eldarov CM, Pavlovich SV, Bezuglov VV, Gretskaya NM, Sukhikh GT, Bobrov MY (2021). N-Acyl Dopamines Induce Apoptosis in Endometrial Stromal Cells from Patients with Endometriosis. *Int J Mol Sci* 22 (19), , 10.3390/ijms221910648
14. **Akimov MG**, Fomina-Ageeva EV, Dudina PV, Andreeva LA, Myasoyedov NF, Bezuglov VV (2021). ACTH(6–9)PGP Peptide Protects SH-SY5Y Cells from H2O2, tert-Butyl Hydroperoxide, and Cyanide Cytotoxicity via Stimulation of Proliferation and Induction of Prosurvival-Related Genes. *Molecules* 26 (7), , 10.3390/molecules26071878
15. **Akimov MG**, Gamisonia AM, Dudina PV, Gretskaya NM, Gaydaryova AA, Kuznetsov AS, Zinchenko GN, Bezuglov VV (2021). GPR55 Receptor Activation by the N-Acyl Dopamine Family Lipids Induces Apoptosis in Cancer Cells via the Nitric Oxide Synthase (nNOS) Over-Stimulation. *Int J Mol Sci* 22 (2), 1–24, 10.3390/ijms22020622
16. Bandyopadhayaya S, **Akimov MG**, Verma R, Sharma A, Sharma D, Kundu GC, Gretskaya NM, Bezuglov VV, Mandal CC (2021). N-arachidonoyl dopamine inhibits epithelial-mesenchymal transition of breast cancer cells through ERK signaling and decreasing the cellular cholesterol. *J Biochem Mol Toxicol*

35 (4), e22693, 10.1002/jbt.22693
17. Shestakova KM, Moskaleva NE, Mesonzhnik NV, Kukharenko AV, Serkov IV, Lyubimov II, Fomina-Ageeva EV, Bezuglov VV, **Akimov MG**, Appolonova SA (2020). In Vivo Targeted Metabolomic Profiling of Prostanit, a Novel Anti-PAD NO-Donating Alprostadil-Based Drug. *Molecules* 25 (24), , 10.3390/molecules25245896
18. **Akimov MG**, Dudina PV, Gamisonia AM, Gretskaya NM, Zinchenko GN, Mandal CC, Bezuglov VV (2020). The Influence of the Cholesterol Level in Cells on Endovanilloid Cytotoxicity.*Dokl Biochem Biophys* 493 (1), 167–170, 10.1134/S1607672920040018
19. Gretskaya NM, Gamisonia AM, Dudina PV, Zakharov SS, Sherstyanykh G, Akasov R, Burov S, Serkov IV, **Akimov MG**, Bezuglov VV, Markvicheva E (2020). Novel bexarotene derivatives: Synthesis and cytotoxicity evaluation for glioma cells in 2D and 3D in vitro models. *Eur J Pharmacol* 883, 173346, 10.1016/j.ejphar.2020.173346
20. **Akimov MG**, Dudina PV, Fomina-Ageeva EV, Gretskaya NM, Bosaya AA, Rudakova EV, Makhaeva GF, Kagarlitsky GO, Eremin SA, Tsetlin VI, Bezuglov VV (2020). Neuroprotective and Antioxidant Activity of Arachidonoyl Choline, Its Bis-Quaternized Analogues and Other Acylcholines. *Dokl Biochem Biophys* 491 (1), 93–97, 10.1134/S1607672920020027
21. Kalistratova AV, Kovalenko LV, Oshchepkov MS, Gamisoniya AM, Gerasimova TS, Demidov YA, **Akimov MG** (2020). Synthesis of new compounds in the series of aryl-substituted ureas with cytotoxic and antioxidant activity. *MENDELEEV COMMUN* 30 (2), 153–155, 10.1016/j.mencom.2020.03.007
22. Sviridova LA, Protopopova PS, **Akimov MG**, Dudina MS, Melnikova EK, Kochetkov KA (2020). Synthesis of new physiologically active (2-oxoimidazolidin-5-yl)indoles. *MENDELEEV COMMUN* 30 (3), 347–349, 10.1016/j.mencom.2020.05.029
23. Prutkov AN, Chudinov MV, Matveev AV, Grebenkina LE, **Akimov MG**, Berezovskaya YV (2020). 5-alkylvinyl-1,2,4-triazole nucleosides: Synthesis and biological evaluation. *Nucleosides Nucleotides Nucleic Acids* 39 (7), 1–21, 10.1080/15257770.2020.1723624
24. **Akimov MG**, Kudryavtsev DS, Kryukova EV, Fomina-Ageeva EV, Zakharov SS, Gretskaya NM, Zinchenko GN, Serkov IV, Makhaeva GF, Boltneva NP, Kovaleva NV, Serebryakova OG, Lushchekina SV, Palikov VA, Palikova Y, Dyachenko IA, Kasheverov IE, Tsetlin VI, Bezuglov VV (2020). Arachidonoylcholine and Other Unsaturated Long-Chain Acylcholines Are Endogenous Modulators of the Acetylcholine Signaling System. *Biomolecules* 10 (2), , 10.3390/biom10020283
25. Lavrova AV, Gretskaya NM, **Akimov MG**, Bezuglov VV (2019). A Novel Fluorescent Analog of the Dopamine Reuptake Inhibitor GBR12909. *Russ. J. Bioorganic Chem.* 45 (5), 416–424, 10.1134/S1068162019040058
26. **Akimov MG**, Ashba AM, Fomina-Ageeva EV, Gretskaya NM, Myasoedov NF, Bezuglov VV (2019). Neuroprotective Action of Amidic Neurolipins in Models of Neurotoxicity on the Culture of Human Neural-Like Cells SH-SY5Y. *Dokl Biochem Biophys* 485 (1), 141–144, 10.1134/S1607672919020182
27. **(conference) Akimov M**, Loginova E, Musin M (2019). A graph-based approach for learner-tailored teaching of Korean grammar constructions. *IEEE Int Conf Data Min Workshops* 2018-November, 349–354, 10.1109/ICDMW.2018.00057
28. **(conference) Akimov M**, Ashba A, Gretskaya N, Bezuglov V (2018). N-acyl dopamines (NADA) require a certain cellular cholesterol level to induce cell death. *FEBS Open Bio* 8 (Supp.), 75–ShT.23–2.
29. **(book) Akimov MG**, Gretskaya NM, Bezuglov VV (2017). Endovanilloids as differentiation inducers for mammalian cells. 33, 197–208.
30. Shevchenko KV, Bezuglov VV, **Akimov MG**, Nagaev IY, Shevchenko VP, Myasoedov NF (2017). Synthesis of N-acyl derivatives of Pro-Gly-Pro-Leu peptide: Proteolytic stability in vitro and effects on mouse macrophage cells RAW264.7. *Dokl Biochem Biophys* 476 (1), 333–336, 10.1134/S1607672917050118
31. **Akimov MG**, Ashba AM, Gretskaya NM, Bezuglov VV (2017). N-acyl dopamines induce apoptosis in PC12 cell line via the GPR55 receptor activation. *Dokl Biochem Biophys* 474 (1), 155–158, 10.1134/S1607672917030012

32. Ashba AM, **Akimov MG**, Gretskaya NM, Bezuglov VV (2016). N-acyl dopamines induce cell death in PC12 cell line via induction of nitric oxide generation and oxidative stress. *Dokl Biochem Biophys* 467 (1), 81–84, 10.1134/S1607672916020010
33. Bezuglov VV, **Akimov MG**, Gretskaya NM, Surin AM, Pinelis VG, Shram SI, Vyunova TV, Shevchenko KV, Andreeva LA, Myasoedov NF (2015). The study of the neurotropic peptides role in cell responses regulation. 21, 151–170.
34. **Akimov MG**, Gretskaya NM, Sinitsyna IA, Efremova AS, Andreeva LA, Shram SI, Bezuglov VV, Myasoedov NF (2015). Synthesis of a new fluorescent analogue of proglyprol and study of the mechanisms of its transport into the cultured rat pheochromocytoma cells. *Dokl Biochem Biophys* 460 (1), 13–15, 10.1134/S1607672915010044
35. **Akimov MG**, Fomina-Ageeva EV, Bezuglov VV (2015). Optimization of the procedure of nitrogen oxide quantitation in mammalian cell culture media. *Russ. J. Bioorganic Chem.* 41 (1), 63–69, 10.1134/S1068162015010021
36. **Akimov MG**, Gretskaya NM, Zinchenko GN, Bezuglov VV (2015). Cytotoxicity of endogenous lipids N-acyl dopamines and their possible metabolic derivatives for human cancer cell lines of different histological origin. *Anticancer Res* 35 (5), 2657–2661.
37. Gretskaya NM, **Akimov MG**, Bezuglov VV (2014). A new fluorescent analogue for the studies of anandamide transport in cell cultures. *Russ. J. Bioorganic Chem.* 40 (2), 228–232, 10.1134/S1068162014020046
38. **Akimov MG**, Gretskaya NM, Karnoukhova VA, Serkov IV, Proshin AN, Shtratnikova VY, Bezuglov VV (2014). The effect of docosahexaenoic acid moiety on the cytotoxic activity of 1,2,4-thiadiazole derivatives. *Biochemistry (Moscow) Supplement Series B: Biomedical Chemistry* 8 (1), 43–46, 10.1134/S1990750814010028
39. Bezuglov VV, **Akimov MG**, Serkov IV (2013). Hybrid multifunctional ibuprofen drugs: New generation and novel possibilities. , 275–310.
40. **Akimov MG**, Bezuglov VV (2012). N-Acylated dopamines: A new life for the old dopamine. , 49–80.
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42. **Akimov MG**, Nazimov IV, Gretskaya NM, Deigin VI, Bezuglov VV (2010). Investigation of peptide stability upon hydrolysis by of fragments of the organs of the gastrointestinal tract of rats. *Russ. J. Bioorganic Chem.* 36 (6), 690–695, 10.1134/S1068162010060038
43. Ostroumova TV, Markova LN, **Akimov MG**, Gretskaya NM, Bezuglov VV (2010). Docosahexaenoyl dopamine in freshwater hydra: Effects on regeneration and metabolic changes. *RUSS J DEV BIOL* 41 (3), 164–167, 10.1134/S1062360410030045
44. Ostroumova TV, Markova LN, **Akimov MG**, Gretskaia NM, Bezuglov VV (2010). Docosahexaenoyl dopamine in freshwater hydra: effects on regeneration and metabolic changes. *Ontogenez* 41 (3), 199–203.
45. **Акимов МГ** (2009). Мембраны и рак. , .
46. **Akimov MG**, Nazimov IV, Gretskaya NM, Zinchenko GN, Bezuglov VV (2009). Sulfation of N-acyl dopamines in rat tissues. *Biochemistry (Mosc)* 74 (6), 681–685, 10.1134/S0006297909060133
47. Bezuglov VV, Gretskaya NM, Klinov DV, Bobrov MI, Shibanova ED, **Akimov MG**, Fomina-Ageeva EV, Zinchenko GN, Bairamashvili DI, Miroshnikov AI (2009). Nanocomplexes of recombinant proteins and polysialic acid: preparation, characteristics, and biological activity. *Bioorg Khim* 35 (3), 350–356.
48. Bezuglov VV, Gretskaya NM, Klinov DV, Bobrov MY, Shibanova ED, **Akimov MG**, Fomina-Ageeva EV, Zinchenko GN, Bairamashvili DI, Miroshnikov AI (2009). Nanocomplexes of recombinant proteins and polysialic acid: Preparation, characteristics, and biological activity. *Russ. J. Bioorganic Chem.* 35 (3), 320–325, 10.1134/S1068162009030066
49. Bezuglov VV, Gretskaia NM, Bobrov MI, **Akimov MG**, Fomina-Ageeva EV, Zinchenko GN, Bairamashvili DI, Miroshnikov AI (2009). Modification of recombinant proteins by covalent polysialation illustrated with the example of human insulin. *Bioorg Khim* 35 (2), 274–278.

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51. **Akimov MG**, Gretskaia NM, Shevchenko KV, Shevchenko VP, Miasoedov NF, Bobrov MI, Bezuglov VV (2008). New aspects of biosynthesis and metabolism of N-acyldopamines in rat tissues.*Bioorg Khim* 33 (6), 648–652.
52. Markova LN, Ostroumova TV, **Akimov MG**, Bezuglov VV (2008). N-arachidonoyl dopamine is a possible factor of the rate of tentacle formation in freshwater hydra regeneration. *RUSS J DEV BIOL* 39 (1), 59–63, 10.1007/s11174-008-1009-1
53. Markova LN, Ostroumova TV, **Akimov MG**, Bezuglov VV (2008). N-arachidonoyl dopamine is a possible factor of the rate of tentacle formation in freshwater hydra. *Ontogenez* 39 (1), 66–71.
54. **Akimov MG**, Gretskaya NM, Shevchenko KV, Shevchenko VP, Myasoedov NF, Bobrov MY, Bezuglov VV (2007). New aspects of biosynthesis and metabolism of N-acyldopamines in rat tissues.*Russ. J. Bioorganic Chem.* 33 (6), 602–606, 10.1134/S1068162007060118
55. Bezuglov VV, Gretskaya NM, Blazhenova AV, Andrianova EL, **Akimov MG**, Bobrov MY, Nazimov IV, Kisel MA, Sharko OL, Novikov AV, Krasnov NV, Shevchenko VP, Shevchenko KV, VYunova TV, Myasoedov NF (2006). Arachidonoyl amino acids and arachidonoyl peptides: Synthesis and properties. *Russ. J. Bioorganic Chem.* 32 (3), 231–239, 10.1134/S1068162006030046