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Адрес

Федеральное государственное бюджетное учреждение науки Институт биоорганической химии им. академиков М.М. Шемякина и Ю.А. Овчинникова Российской академии наук, Москва, Россия

Контакты

<https://www.ibch.ru/ru/users/44>

Образование

1970–2006	Россия, Москва	Московский государственный университет имени М.В. Ломоносова (МГУ), биологический факультет	Присуждена учёная степень доктора биологических наук
1970–1991	Россия, Москва	Московский государственный университет имени М.В. Ломоносова (МГУ), биологический факультет	Присуждена учёная степень кандидата физ.-мат. наук
1982–1988	Россия, Москва	Московский инженерно-физический институт (МИФИ)	диплом инженера-физика

Работа в ИБХ

2017–наст.вр.	Главный научный сотрудник
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Членство в советах и комиссиях ИБХ

Ученый совет

Научные интересы

Изучение структуры и функциональных свойств биологически активных соединений с широким использованием методов оптической спектроскопии и микроскопии. Разработка новых методических подходов к изучению биологических молекул на основе методов оптической микроскопии и спектроскопии.

Основные направления исследований включают в себя:

скрининг, структурно-функциональные, доклинические и клинические исследования новых фотосенсибилизаторов для противоопухолевой и антимикробной фотодинамической терапии (ФДТ);

оптимизация структуры и изучение свойств конъюгатов хлорина е6 с наночастицами бора применительно к ФДТ, бор нейтрон-захватной терапии рака и флуоресцентной диагностике;

изучение функциональной роли трансмембранных доменов эфриновых тирозинкиназных рецепторов EphA2;

изучение свойств и механизмов действия на клетки эукариот и прокариот природных пептидов из ядов насекомых;

поиск новых лигандов потенциал-зависимых калиевых каналов, изучение их активности и свойств.

Степени и звания

Доцент

Гранты и проекты

2022– наст.вр.	Гомо- и гетеро- тетрамерные потенциал-зависимые калиевые каналы Kv1 в клетках эукариот и их взаимодействия с поровыми блокаторами
2018– 2020	Разработка флуоресцентных хемосенсоров на основе резонансного переноса энергии для определения биогенных металлов в растворах и клетках
2019– 2022	Эпигенетические механизмы биологических процессов и их роль в патогенезе онкологических заболеваний
2017– 2020	Механизм взаимодействия PARP-1 с хроматином
2016– 2019	Магнито-плазмонные гибридные наносенсоры как многофункциональная платформа для детекции клеток рака груди
2019– 2021	Полифункциональные фотосенсибилизаторы на основе гуанидиновых производных природных порфиринов

Публикации

- Plotnikova E, Abramova O, Ostroverkhov P, Vinokurova A, Medvedev D, Tihonov S, Usachev M, Shelyagina A, Efremenko A, **Feofanov A**, Pankratov A, Shegay P, Grin M, Kaprin A (2024). Conjugate of Natural Bacteriochlorin with Doxorubicin for Combined Photodynamic and Chemotherapy. *Int J Mol Sci* 25 (13), , [10.3390/ijms25137210](#)
- Akulinichev SV, Glukhov SI, Efremenko AV, Kokontsev DA, Kuznetsova EA, Martynova VV, **Feofanov AV**, Yakovlev IA (2024). The Cellular Response to Exposure to Ionizing Radiation and Light in the Presence of a Photosensitizer. *Biophysics (Oxf)* 68 (5), 783–791, [10.1134/S0006350923050044](#)
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- Oleinikov PD, Fedulova AS, Armeev GA, Motorin NA, Singh-Palchevskaia L, Sivkina AL, Feskin PG, Glukhov GS, Afonin DA, Komarova GA, Kirpichnikov MP, Studitsky VM, **Feofanov AV**, Shaytan AK (2023). Interactions of Nucleosomes with Acidic Patch-Binding Peptides: A Combined Structural Bioinformatics, Molecular Modeling, Fluorescence Polarization, and Single-Molecule FRET Study. *Int J Mol Sci* 24 (20), 15194, [10.3390/ijms242015194](#)
- Maluchenko NV, Korovina AN, Saulina AA, Studitsky VM, **Feofanov AV** (2023). The Role of the WGR Domain in the Functions of PARP1 and PARP2. *Mol Biol* 57 (5), 782–791, [10.1134/S0026893323050114](#)
- Andreeva TV, Maluchenko NV, Efremenko AV, Lyubitelev AV, Korovina AN, Afonin DA, Kirpichnikov MP, Studitsky VM, **Feofanov AV** (2023). Epigallocatechin Gallate Affects the Structure of Chromatosomes, Nucleosomes and Their Complexes with PARP1. *Int J Mol Sci* 24 (18), , [10.3390/ijms241814187](#)
- Stefanova ME, Volokh OI, Chertkov OV, Armeev GA, Shaytan AK, **Feofanov AV**, Kirpichnikov MP, Sokolova OS, Studitsky VM (2023). Structure and Dynamics of Compact Dinucleosomes: Analysis by Electron Microscopy and spFRET. *Int J Mol Sci* 24 (15), , [10.3390/ijms241512127](#)
- Orlov NA, Kryukova EV, Efremenko AV, Yakimov SA, Toporova VA, Kirpichnikov MP, Nekrasova OV, **Feofanov AV** (2023). Interactions of the Kv1.1 Channel with Peptide Pore Blockers: A Fluorescent Analysis on Mammalian Cells. *Membranes (Basel)* 13 (7), 645, [10.3390/membranes13070645](#)
- Primak AL, Orlov NA, Peigneur S, Tytgat J, Ignatova AA, Denisova KR, Yakimov SA, Kirpichnikov MP, Nekrasova OV, **Feofanov AV** (2023). AgTx2-GFP, Fluorescent Blocker Targeting Pharmacologically Important Kv1.x (x = 1, 3, 6) Channels. *Toxins (Basel)* 15 (3), 229, [10.3390/toxins15030229](#)

10. Petrunina NA, Shtork AS, Lukina MM, Tsvetkov VB, Khodarovich YM, **Feofanov AV**, Moysenovich AM, Maksimov EG, Shipunova VO, Zatsepin TS, Bogomazova AN, Shender VO, Aralov AV, Lagarkova MA, Varizhuk AM (2023). Ratiometric i-Motif-Based Sensor for Precise Long-Term Monitoring of pH Micro Alterations in the Nucleoplasm and Interchromatin Granules. *ACS Sens* 8 (2), 619–629, [10.1021/acssensors.2c01813](https://doi.org/10.1021/acssensors.2c01813)
11. Dubovskii PV, Ignatova AA, Alekseeva AS, Starkov VG, Boldyrev IA, **Feofanov AV**, Utkin YN (2023). Membrane-Disrupting Activity of Cobra Cytotoxins Is Determined by Configuration of the N-Terminal Loop. *Toxins (Basel)* 15 (1), 6, [10.3390/toxins15010006](https://doi.org/10.3390/toxins15010006)
12. Sidorova MV, Bibilashvili RS, Avdeev DV, Kozhokar US, Palkeeva ME, Ovchinnikov MV, Molokoedov AS, Shirokov DA, Semyonova AV, Uvarova VI, Kulyaev PO, Khvatov EV, Ignatova AA, **Feofanov AV**, Osolodkin DI, Porozov YB, Kozlovskaya LI, Ishmukhametov AA, Parfyonova YV, Egorov AM (2022). Properties and Activity of Peptide Derivatives of ACE2 Cellular Receptor and Their Interaction with SARS-CoV-2 S Protein Receptor-Binding Domain. *Dokl Biochem Biophys* 507 (1), 1–5, [10.1134/S1607672922060126](https://doi.org/10.1134/S1607672922060126)
13. Pavlova MA, Panchenko PA, Alekhina EA, Ignatova AA, Plyutinskaya AD, Pankratov AA, Pritmov DA, Grin MA, **Feofanov AV**, Fedorova OA (2022). A New Glutathione-Cleavable Theranostic for Photodynamic Therapy Based on Bacteriochlorin e and Styrylnaphthalimide Derivatives. *Biosensors (Basel)* 12 (12), 1149, [10.3390/bios12121149](https://doi.org/10.3390/bios12121149)
14. Orlov NA, Ignatova AA, Kryukova EV, Yakimov SA, Kirpichnikov MP, Nekrasova OV, **Feofanov AV** (2022). Combining mKate2-Kv1.3 Channel and Atto488-Hongotoxin for the Studies of Peptide Pore Blockers on Living Eukaryotic Cells. *Toxins (Basel)* 14 (12), 858, [10.3390/toxins14120858](https://doi.org/10.3390/toxins14120858)
15. Efremenko A, Dyakova E, Ostroverkhov P, Ignatova A, Grin M, **Feofanov A** (2022). Photodynamic properties of lysine and arginine derivatives of bacteriopurpurinimide. *Future Med Chem* 14 (22), 1635–1647, [10.4155/fmc-2022-0192](https://doi.org/10.4155/fmc-2022-0192)
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17. Panchenko PA, Efremenko AV, Polyakova AS, **Feofanov AV**, Ustimova MA, Fedorov YV, Fedorova OA (2022). Fluorescent RET-Based Chemosensor Bearing 1,8-Naphthalimide and Styrylpyridine Chromophores for Ratiometric Detection of Hg²⁺ and Its Bio-Application. *Biosensors (Basel)* 12 (9), , [10.3390/bios12090770](https://doi.org/10.3390/bios12090770)
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21. Denisova KR, Orlov NA, Yakimov SA, Kirpichnikov MP, **Feofanov AV**, Nekrasova OV (2022). Atto488-Agitoxin 2—A Fluorescent Ligand with Increased Selectivity for Kv1.3 Channel Binding Site. *Bioengineering (Basel)* 9 (7), , [10.3390/bioengineering9070295](https://doi.org/10.3390/bioengineering9070295)
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 27. Andreeva TV, Maluchenko NV, Sivkina AL, Chertkov OV, Valieva ME, Kotova EY, Kirpichnikov MP, Studitsky VM, **Feofanov AV** (2021). Na⁺ and K⁺ Ions Differently Affect Nucleosome Structure, Stability, and Interactions with Proteins. *Microsc Microanal* 28 (1), 243–253, [10.1017/S1431927621013751](https://doi.org/10.1017/S1431927621013751)
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 29. Sharonov GV, Nekrasova OV, Kudryashova KS, Kirpichnikov MP, **Feofanov AV** (2021). Bioengineered System for High Throughput Screening of Kv1 Ion Channel Blockers. *Bioengineering (Basel)* 8 (11), 187, [10.3390/bioengineering8110187](https://doi.org/10.3390/bioengineering8110187)
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 31. Maluchenko NV, **Feofanov AV**, Studitsky VM (2021). PARP-1-Associated Pathological Processes: Inhibition by Natural Polyphenols. *Int J Mol Sci* 22 (21), , [10.3390/ijms222111441](https://doi.org/10.3390/ijms222111441)
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 33. Danilova ND, Geraskina OV, Diuvenji EV, **Feofanov AV**, Plakunov VK, Gannesen AV (2021). Inhibitory Effect of Norepinephrine on Biofilm Growth of the Human Skin Commensal *Kytococcus schroeteri* H01. *Microbiology* 90 (5), 666–669, [10.1134/S0026261721050039](https://doi.org/10.1134/S0026261721050039)
 34. Andreeva TV, Lyubitelev AV, Malyuchenko NV, Studitsky VM, Kirpichnikov MP, **Feofanov AV** (2021). Influence of Linker DNA on Nucleosome Structure according to Single-Particle Fluorescence Microscopy Data. *Moscow Univ Biol Sci Bull* 76 (3), 118–122, [10.3103/S0096392521030019](https://doi.org/10.3103/S0096392521030019)
 35. Efremenko AV, Dyakova ED, Ostroverkhov PV, Kirin NS, Mironov AF, Grin MA, **Feofanov AV** (2021). Intracellular Localization and the Mechanisms of Photodynamic Action of 131-[2-(Guanidiny)ethylamino] Chlorin e6 Dimethyl Ester. *Russ. J. Bioorganic Chem.* 47 (4), 845–853, [10.1134/S1068162021040087](https://doi.org/10.1134/S1068162021040087)
 36. Kudryashova KS, Nekrasova OV, Kirpichnikov MP, **Feofanov AV** (2021). Chimeras of KcsA and Kv1 as a bioengineering tool to study voltage-gated potassium channels and their ligands. *Biochem Pharmacol* 190, 114646, [10.1016/j.bcp.2021.114646](https://doi.org/10.1016/j.bcp.2021.114646)
 37. Maluchenko NV, Koshkina DO, **Feofanov AV**, Studitsky VM, Kirpichnikov MP (2021). Poly(ADP-Ribosyl) Code Functions. *Acta Naturae* 13 (2), 58–69, [10.32607/actanaturae.11089](https://doi.org/10.32607/actanaturae.11089)
 38. Ovcharova MA, Geraskina OV, Danilova ND, Botchkova EA, Martyanov SV, **Feofanov AV**, Plakunov VK, Gannesen AV (2021). Atrial Natriuretic Peptide Affects Skin Commensal *Staphylococcus epidermidis* and *Cutibacterium acnes* Dual-Species Biofilms. *Microorganisms* 9 (3), 1–21, [10.3390/microorganisms9030552](https://doi.org/10.3390/microorganisms9030552)
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43. Primak AL, Skutel MA, Nekrasova OV, Arseniev AS, Kirpichnikov MP, **Feofanov AV** (2020). Kv1 Potassium Channel Ligands Based On Hongotoxin 1 and Red Fluorescent Protein. *Russ. J. Bioorganic Chem.* 46 (6), 1011–1017, [10.1134/S1068162020060266](#)
44. Nekrasova OV, Primak AL, Ignatova AA, Novoseletsky VN, Geraskina OV, Kudryashova KS, Yakimov SA, Kirpichnikov MP, Arseniev AS, **Feofanov AV** (2020). N-Terminal Tagging with GFP Enhances Selectivity of Agitoxin 2 to Kv1.3-Channel Binding Site. *Toxins (Basel)* 12 (12), 802, [10.3390/toxins12120802](#)
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49. (конференция) Orlov N, Ignatova A, Nekrasova O, Kirpichnikov M, **Feofanov A** (2020). Design of far-red fluorescent Kv1.3 channel for membrane expression in eukaryotic cells and its interactions with hongotoxin1. *Microsc Microanal* , , [10.1017/S1431927620017936](#)
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