

Сведения о научном руководителе
диссертации Лаптева Ивана Георгиевича
«Новые метилтрансферазы митохондриальной рРНК»

Научный руководитель: Сергиев Пётр Владимирович

Ученая степень: доктор химических наук

Ученое звание: профессор РАН

Должность: профессор кафедры химии природных соединений Химического факультета МГУ имени М. В. Ломоносова

Место работы: ФГБОУ высшего образования «Московский государственный университет имени М. В. Ломоносова», Химический факультет

Адрес места работы: 119192, Москва, Ленинские горы, дом 1, стр. 40

Тел.: +7 495 939 54 18

E-mail: petya@genebee.msu.ru

Список основных научных публикаций по специальности 02.00.01 – биоорганическая химия за последние 5 лет:

1. Zhong-Ke J., Hu X., Xiao L., Ren Y., Shakhtina A.N., Lukianov D.A., Osterman I.A., **Sergiev P.V.**, Dontsova O.A., Wang H., Wu G., You X., Sun C. Beilunmycin, a new virginiamycins antibiotic from mangrove-derived *Streptomyces* sp. 2BBP-J2 and the antibacterial activity by inhibiting protein translation // Journal of Asian Natural Products Research. 2020. P. 1–9.
2. Pletnev P., Guseva E., Zanina A., Evfratov S., Dzama M., Treshin V., Pogorel'skaya A., Osterman I., Golovina A., Rubtsova M., Serebryakova M., Pobeguts O.V., Govorun V.M., Bogdanov A.A., Dontsova O.A., **Sergiev P.V.** Comprehensive Functional Analysis of *Escherichia coli* Ribosomal RNA Methyltransferases // Front. Genet. 2020. Vol. 11. P. 97.
3. Laptev I., Dontsova O., **Sergiev P.** Epitranscriptomics of Mammalian Mitochondrial Ribosomal RNA // Cells. 2020. Vol. 9, № 10. P. 2181.
4. Wang T., Lu Q., Sun C., Lukianov D., Osterman I.A., **Sergiev P.V.**, Dontsova O.A., Hu X., You X., Liu S., Wu G. Hetiamacin E and F, New Amicoumacin Antibiotics from *Bacillus subtilis* PJS Using MS/MS-Based Molecular Networking // Molecules. 2020. Vol. 25, № 19. P. 4446.
5. Veselov M.S., Ivanenkov Y.A., Yamanov R.S., Osterman I.A., **Sergiev P.V.**, Aladinskiy V.A., Aladinskaya A.V., Terentiev V.A., Ayginin A.A., Skvortsov D.A., Komarova K.S., Chemeris A.V., Baimiev A.K., Sofronova A.A., Machulkin A.E., Petrov R.A., Maklakova S.Y., Bezrukov D.S., Filkov G.I., Zainullina L.F., Maximova M.A., Zileeva Z.R., Kartsev V.G., Vakhitova Y.V., Dontsova O.A. Identification of pyrrolo-pyridine derivatives as novel class of antibiotics // Molecular Diversity. 2020. Vol. 24, № 1. P. 233–239.
6. Komarova E.S., Chervontseva Z.S., Osterman I.A., Evfratov S.A., Rubtsova M.P., Zatsepin T.S., Semashko T.A., Kostryukova E.S., Bogdanov A.A., Gelfand M.S., Dontsova O.A., **Sergiev P.V.** Influence of the spacer region between the Shine–Dalgarno box and the start codon for fine-tuning of the translation efficiency in *Escherichia coli* // Microb. Biotechnol. 2020. Vol. 13, № 4. P. 1254–1261.
7. Pichkur E.B., Paleskava A., Tereshchenkov A.G., Kasatsky P., Komarova E.S., Shiriaev D.I., Bogdanov A.A., Dontsova O.A., Osterman I.A., **Sergiev P.V.**, Polikanov Y.S., Myasnikov A.G., Konevega A.L. Insights into the improved macrolide inhibitory activity from the high-resolution cryo-EM structure of dirithromycin bound to the *E. coli* 70S ribosome // RNA. 2020. Vol. 26, № 6. P. 715–723.
8. Laptev I., Shvetsova E., Levitskii S., Serebryakova M., Rubtsova M., Zgoda V., Bogdanov A., Kamenski P., **Sergiev P.**, Dontsova O. METTL15 interacts with the assembly intermediate of murine mitochondrial small ribosomal subunit to form m4C840 12S rRNA residue // Nucleic Acids Res. 2020. Vol. 48, № 14. P. 8022–8034.

9. Ovchinnikov S.V., Bikmetov D., Livenskyi A., Serebryakova M., Wilcox B., Mangano K., Shiriaev D.I., Osterman I.A., **Sergiev P.V.**, Borukhov S., Vazquez-Laslop N., Mankin A.S., Severinov K., Dubiley S. Mechanism of translation inhibition by type II GNAT toxin AtaT2 // Nucleic Acids Research. 2020. Vol. 48, № 15. P. 8617–8625.
10. Pletnev P., Pupov D., Pshanichnaya L., Esyunina D., Petushkov I., Nesterchuk M., Osterman I., Rubtsova M., Mardanov A., Ravin N., **Sergiev P.**, Kulbachinskiy A., Dontsova O. Rewiring of growth-dependent transcription regulation by a point mutation in region 1.1 of the housekeeping σ factor // Nucleic Acids Research. 2020. Vol. 48, № 19. P. 10802–10819.
11. Averina O.A., Vysokikh M.Y., Permyakov O.A., **Sergiev P.V.** Simple recommendations for improving efficiency in generating genome-edited mice // Acta Naturae. 2020. Vol. 12, № 1. P. 42–50.
12. Osterman I.A., Wieland M., Maviza T.P., Lashkevich K.A., Lukianov D.A., Komarova E.S., Zakalyukina Y.V., Buschauer R., Shiriaev D.I., Leyn S.A., Zlamal J.E., Biryukov M.V., Skvortsov D.A., Tashlitsky V.N., Polshakov V.I., Cheng J., Polikanov Y.S., Bogdanov A.A., Osterman A.L., Dmitriev S.E., Beckmann R., Dontsova O.A., Wilson D.N., **Sergiev P.V.** Tetracenomycin X inhibits translation by binding within the ribosomal exit tunnel // Nat Chem Biol. 2020. Vol. 16, № 10. P. 1071–1077.
13. Ivanenkov Y.A., Osterman I.A., Komarova E.S., Bogdanov A.A., **Sergiev P.V.**, Dontsova O.A., Sofronova A.A., Terentiev V.A., Filkov G.I., Yamidanov R.S., Majouga A.G., Bezrukov D.S., Deyneka E.V., Skvortsov D.A. Tetrahydrocarbazoles as Novel Class of DNA Biosynthesis Inhibitors in Bacteria // AIA. 2020. Vol. 18, № 2. P. 121–127.
14. Osterman I.A., Chervontseva Z.S., Evfratov S.A., Sorokina A.V., Rodin V.A., Rubtsova M.P., Komarova E.S., Zatsepin T.S., Kabilov M.R., Bogdanov A.A., Gelfand M.S., Dontsova O.A., **Sergiev P.V.** Translation at first sight: the influence of leading codons // Nucleic Acids Research. 2020. Vol. 48, № 12. P. 6931–6942.
15. Mariasina S.S., Chang C., Petrova O.A., Efimov S.V., Klochkov V.V., Kechko O.I., Mitkevich V.A., **Sergiev P.V.**, Dontsova O.A., Polshakov V.I. Williams–Beuren syndrome-related methyltransferase WBSCR27: cofactor binding and cleavage // FEBS J. 2020. P. febs.15320.
16. Laptev I., Shvetsova E., Levitskii S., Serebryakova M., Rubtsova M., Bogdanov A., Kamenski P., **Sergiev P.**, Dontsova O. Mouse Trmt2B protein is a dual specific mitochondrial methyltransferase responsible for m 5 U formation in both tRNA and rRNA // RNA Biology. 2020. Vol. 17, № 4. P. 441–450.
17. Ivanenkov Y.A., Yamidanov R.S., Osterman I.A., **Sergiev P.V.**, Aladinskiy V.A., Aladinskaya A.V., Terentiev V.A., Veselov M.S., Ayginin A.A., Skvortsov D.A., Komarova K.S., Sadovnikov S.V., Matniyazov R., Sofronova A.A., Malyshev A.S., Machulkin A.E., Petrov R.A., Lukianov D., Iarovenko S., Bezrukov D.S., Baymiev A.Kh., Dontsova O.A. 2-Pyrazol-1-yl-thiazole derivatives as novel highly potent antibacterials // J Antibiot. 2019. Vol. 72, № 11. P. 827–833.
18. Osterman I., Shiriaev D., Sofronova A., Khven I., Lukianov D., Komarova E., Zakalyukina Y., Maviza T., Biryukov M., Ivanenkov Y., **Sergiev P.**, Dontsova O. DNA replication machinery and topoisomerases – good targets for new antibiotics development // FEBS open bio. 2019. Vol. 9. P. 149–149.
19. Qin-Pei L., Jing-Jing Y., Yong-Mei H., Liu D., Li-Fang L., Kun D., Razumova E.A., Osterman I.A., **Sergiev P.V.**, Dontsova O.A., Shu-Han J., Da-Lin H., Cheng-Hang S. Exploitation of Potentially New Antibiotics from Mangrove Actinobacteria in Maowci Sea by Combination of Multiple Discovery Strategies // Antibiotics. 2019. Vol. 8, № 4. P. 236.
20. Ivanenkov Y.A., Yamidanov R.S., Osterman I.A., **Sergiev P.V.**, Aladinskiy V.A., Aladinskaya A.V., Terentiev V.A., Veselov M.S., Ayginin A.A., Skvortsov D.A., Komarova K.S., Chemeris A.V., Baimiev A.Kh., Sofronova A.A., Malyshev A.S., Machulkin A.E., Petrov R.A., Bezrukov D.S., Filkov G.I., Puchinina M.M., Zainullina L.F., Maximova M.A., Zileeva Z.R., Vakhitova Y.V., Dontsova O.A. Identification of N-Substituted Triazolo-azetidines as Novel Antibacterials using pDualrep2 HTS Platform // CCHTS. 2019. Vol. 22, № 5. P. 346–354.

21. Ivanenkov Y.A., Zhavoronkov A., Yamidanov R.S., Osterman I.A., **Sergiev P.V.**, Aladinskiy V.A., Aladinskaya A.V., Terentiev V.A., Veselov M.S., Ayginin A.A., Kartsev V.G., Skvortsov D.A., Chemeris A.V., Baimiev A.Kh., Sofronova A.A., Malyshev A.S., Filkov G.I., Bezrukov D.S., Zagribelnyy B.A., Putin E.O., Puchinina M.M., Dontsova O.A. Identification of Novel Antibacterials Using Machine Learning Techniques // *Front. Pharmacol.* 2019. Vol. 10. P. 913.
22. Chugunova A., Loseva E., Mazin P., Mitina A., Navalayeu T., Bilan D., Vishnyakova P., Marey M., Golovina A., Serebryakova M., Pletnev P., Rubtsova M., Mair W., Vanyushkina A., Khaitovich P., Belousov V., Vysokikh M., **Sergiev P.**, Dontsova O. LINC00116 codes for a mitochondrial peptide linking respiration and lipid metabolism // *Proc Natl Acad Sci USA*. 2019. Vol. 116, № 11. P. 4940–4945.
23. Ivanenkov Y.A., Yamidanov R.S., Osterman I.A., **Sergiev P.V.**, Aladinskiy V.A., Aladinskaya A.V., Terentiev V.A., Veselov M.S., Ayginin A.A., Skvortsov D.A., Komarova K.S., Zagribelnyy B.A., Baimiev A.Kh., Shvetc K.Yu., Baimiev A.Kh., Sofronova A.A., Machulkin A.E., Petrov R.A., Zainullina L.F., Maximova M.A., Zileeva Z.R., Vakhitova Y.V., Bezrukov D.S., Puchinina M.M., Dontsova O.A. Large-scale high-throughput screening revealed 5'-(carbonylamino)-2,3'-bithiophene-4'-carboxylate as novel template for antibacterial agents // *CDDT*. 2019. Vol. 16.
24. Zakalyukina Y.V., Birykov M.V., Lukianov D.A., Shiriaev D.I., Komarova E.S., Skvortsov D.A., Kostyukevich Y., Tashlitsky V.N., Polshakov V.I., Nikolaev E., **Sergiev P.V.**, Osterman I.A. Nybomycin-producing Streptomyces isolated from carpenter ant Camponotus vagus // *Biochimie*. 2019. Vol. 160. P. 93–99.
25. Pletnev P.I., Nesterchuk M.V., Rubtsova M.P., Serebryakova M.V., Dmitrieva K., Osterman I.A., Bogdanov A.A., **Sergiev P.V.** Oligoglutamylation of *E. coli* ribosomal protein S6 is under growth phase control // *Biochimie*. 2019. Vol. 167. P. 61–67.
26. Kuznetsova S.A., Petrukov K.S., Pletnev F.I., **Sergiev P.V.**, Dontsova O.A. RNA (C5-cytosine) Methyltransferases // *Biochemistry Moscow*. 2019. Vol. 84, № 8. P. 851–869.
27. Khabibullina N.F., Tereshchenkov A.G., Komarova E.S., Syroegin E.A., Shiriaev D.I., Paleskava A., Kartsev V.G., Bogdanov A.A., Konevega A.L., Dontsova O.A., **Sergiev P.V.**, Osterman I.A., Polikanov Y.S. Structure of Dirithromycin Bound to the Bacterial Ribosome Suggests New Ways for Rational Improvement of Macrolides // *Antimicrobial Agents and Chemotherapy*. 2019. Vol. 63, № 6.
28. Feina L., Liu S., Qinpei L., Zheng H., Osterman I.A., Lukyanov D.A., **Sergiev P.V.**, Dontsova O.A., Liu S., Jingjing Y., Huang D., Sun C. Studies on Antibacterial Activity and Diversity of Cultivable Actinobacteria Isolated from Mangrove Soil in Futian and Maoweihi of China // *Evidence-based Complementary and Alternative Medicine*. 2019. Vol. 2019. P. 1–11.
29. Ivanenkov Y.A., Yamidanov R.S., Osterman I.A., **Sergiev P.V.**, Ayginin A.A., Aladinskiy V.A., Aladinskaya A.V., Terentiev V.A., Veselov M.S., Skvortsov D.A., Komarova K.S., Chemeris A.V., Zainullina L.F., Maximova M.A., Zileeva Z.R., Vakhitova Y.V., Baymiev A.Kh., Baymiev A.Kh., Sofronova A.A., Machulkin A.E., Petrov R.A., Bezrukov D.S., Puchinina M.M., Lukianov D.A., Dontsova O.A. Substituted Furanocoumarins as Novel Class of Antibacterial Translation Inhibitors // *CCHTS*. 2019. Vol. 22, № 6. P. 400–410.
30. Tereshchenkov A.G., Dobosz-Bartoszek M., Osterman I.A., Marks J., Sergeeva V.A., Kasatsky P., Komarova E.S., Stavrianidi A.N., Rodin I.A., Konevega A.L., **Sergiev P.V.**, Sumbatyan N.V., Mankin A.S., Bogdanov A.A., Polikanov Y.S. Binding and Action of Amino Acid Analogs of Chloramphenicol upon the Bacterial Ribosome // *Journal of Molecular Biology*. 2018. Vol. 430, № 6. P. 842–852.
31. Jiang Z., Tuo L., Huang D., Osterman I.A., Tyurin A.P., Liu S., Lukyanov D.A., **Sergiev P.V.**, Dontsova O.A., Korshun V.A., Li F., Sun C. Diversity, Novelty, and Antimicrobial Activity of Endophytic Actinobacteria From Mangrove Plants in Beilun Estuary National Nature Reserve of Guangxi, China // *Front. Microbiol*. 2018. Vol. 9. P. 868.
32. Wilcox B., Osterman I., Serebryakova M., Lukyanov D., Komarova E., Gollan B., Morozova N., Wolf Y.I., Makarova K.S., Helaine S., **Sergiev P.**, Dubiley S., Borukhov S., Severinov K.

- Escherichia coli ItaT is a type II toxin that inhibits translation by acetylating isoleucyl-tRNA^{ile} // Nucleic Acids Research. 2018. Vol. 46, № 15. P. 7873–7885.
33. Chugunova A., Navalayeu T., Dontsova O., **Sergiev P.** Mining for Small Translated ORFs // J. Proteome Res. 2018. Vol. 17, № 1. P. 1–11.
 34. Mariasina S.S., Petrova O.A., Osterman I.A., Sergeeva O.V., Efimov S.V., Klochkov V.V., **Sergiev P.V.**, Dontsova O.A., Huang T., Chang C.-F., Polshakov V.I. NMR assignments of the WBSCR27 protein related to Williams-Beuren syndrome // Biomol NMR Assign. 2018. Vol. 12, № 2. P. 303–308.
 35. **Sergiev P.V.**, Aleksashin N.A., Chugunova A.A., Polikanov Y.S., Dontsova O.A. Structural and evolutionary insights into ribosomal RNA methylation // Nat Chem Biol. 2018. Vol. 14, № 3. P. 226–235.
 36. Lukyanov D.A., Komarova E.S., Shiriaev D.I., Zakalyukina Y.V., Biryukov M.V., Skvortsov D.A., Rebrikov D.D., Podlesskaia M., Khven I.M., Tashlitsky V.N., Zatsepин T.S., Serebryakova M.V., Polshakov V.I., Bogdanov A.A., **Sergiev P.V.**, Dontsova O.A., Osterman I.A. Tetracenomycin X novel inhibitor of translation // FEBS open bio. 2018. Vol. 8, № S1. P. 243–243.
 37. Васильева Е.Н., Лаптев И.Г., **Сергиеv П.В.**, Донцова О.А. Общий партнер нескольких ферментов, метилирующих компоненты эукариотического аппарата трансляции // Молекулярная биология. 2018. Том 52, № 6. С. 975–983.
 38. Komarova Andreyanova E.S., Osterman I.A., Pletnev P.I., Ivanenkov Y.A., Majouga A.G., Bogdanov A.A., **Sergiev P.V.** 2-Guanidino-quinazolines as a novel class of translation inhibitors // Biochimie. 2017. Vol. 133. P. 45–55.
 39. Evfratov S., Osterman I., Komarova E., Pogorelskaya A., Rubtsova M., Zatsepин T., Semashko T., Kostryukova E., Mironov A., Burnaev E., Krymova E., Gelfand M., Govorun V., Bogdanov A., **Sergiev P.**, Dontsova O. Application of sorting and nextgeneration sequencing to study 5'-UTR influence on translation efficiency in Escherichia coli // Nucleic Acids Research. 2017. Vol. 45, № 6. P. 3487–3502.
 40. Metelev M., Osterman I.A., Ghilarov D., Khabibullina N.F., Yakimov A., Shabalin K., Utkina I., Travin D.Y., Komarova E.S., Serebryakova M., Artamonova T., Khodorkovskii M., Konevega A.L., **Sergiev P.V.**, Severinov K., Polikanov Y.S. Klebsazolicin inhibits 70S ribosome by obstructing the peptide exit tunnel // Nature Chemical Biology. 2017.
 41. Osterman I.A., Khabibullina N.F., Komarova E.S., Kasatsky P., Kartsev V.G., Bogdanov A.A., Dontsova O.A., Konevega A.L., **Sergiev P.V.**, Polikanov Y.S. Madumycin II inhibits peptide bond formation by forcing the peptidyl transferase center into an inactive state // Nucleic Acids Research. 2017.
 42. Prokhorova I.V., Akulich K.A., Makeeva D.S., Osterman I.A., Skvortsov D.A., **Sergiev P.V.**, Dontsova O.A., Yusupova G., Yusupov M.M., Dmitriev S.E. Amicoumacin A induces cancer cell death by targeting the eukaryotic ribosome // Scientific reports. 2016. Vol. 6. P. 27720.
 43. **Sergiev P.V.**, Osterman I.A., Golovina A.Y., Andreyanova E.S., Laptev I.G., Pletnev P.I., Evfratov S.A., Marusich E.I., Leonov S.V., Ivanenkov Y.A., Bogdanov A.A., Dontsova O.A. Application of reporter strains for screening of new antibiotics // Biochemistry, Supplemental Series B. 2016. Vol. 10, № 4. P. 293–299.
 44. **Sergiev P.V.**, Artemov A.A., Prokhortchouk E.B., Dontsova O.A., Berezkin G.V. Genomes of Strongylocentrotus franciscanus and Lytechinus variegatus: are there any genomic explanations for the two order of magnitude difference in the lifespan of sea urchins // AGING-US. 2016. Vol. 8. P. 260–271.
 45. **Sergiev P.V.**, Golovina A.Y., Osterman I.A., Nesterchuk M.V., Sergeeva O.V., Chugunova A.A., Evfratov S.A., Andreianova E.S., Pletnev P.I., Laptev I.G., Petriukov K.S., Navalayeu T.I., Koteliansky V.E., Bogdanov A.A., Dontsova O.A. N6-Methylated Adenosine in RNA:From Bacteria to Humans // Journal of Molecular Biology. 2016. Vol. 428, № 10 Pt B. P. 2134–2145.
 46. Osterman I.A., Komarova E.S., Shiryaev D.I., Korniltsev I.A., Khven I.M., Lukyanov D., Tashlitsky V.N., Serebryakova M.V., Efremenkova O.V., Ivanenkov Yan A.B., **Sergiev P.**, Dontsova O. Sorting out antibiotics' mechanisms of action: a double fluorescent protein

- reporter for high throughput screening of ribosome and DNA biosynthesis inhibitors // Antimicrobial Agents and Chemotherapy. 2016. P. AAC.02117-16.
47. Beloglazkina E.K., Manzheliy E.A., Moiseeva A.A., Maloshitskaya O.A., Zyk N.V., Skvortsov D.A., Osterman I.A., **Sergiev P.V.**, Dontsova O.A., Ivanenkov Y.A., Veselov M.S., Majouga A.G. Synthesis, characterization, cytotoxicity and antibacterial activity of ruthenium(II) and rhodium(III) complexes with sulphur-containing terpyridines // Polyhedron. 2016. Vol. 107. P. 27–37.

Доктор химических наук, профессор РАН
«27» ноября 2020 года



Сергиев П.В.

