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CURRICULUM VITAE

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Personal Information

Marital status: Married, one child (daughter).
Wife: Polshakova Galina (12.25.1958)
Daughter: Modenkova Anna (06.16.1980)
Nationality: Russian
Date of birth: March 14, 1959
Place of Birth: Saratov, Russia

Professional experience

- 2010 + **Laboratory of Magnetic Tomography and Spectroscopy,
Faculty of Fundamental Medicine,
M.V.Lomonosov Moscow State University**
Leading scientist, Head of Biomolecular NMR group
- 1981 – 2010 **Laboratory of Physical Methods,
Center for Drug Chemistry,
Chemical-Pharmaceutical Research Institute
Moscow, Russia**
1981 -1988: junior scientist; 1988- 1992: scientific researcher; 1992 - 1996 – senior scientist;
1996 – 2007: leading scientist, 2007 – 2010: head of the laboratory.
- 2005 – 2008 **Chemical Enzymology Chair,
Chemical Department,
M.V.Lomonosov Moscow State University**
Professor
- 1992 - 1994 **Division of molecular structure,
National Institute for Medical Research,
Medical Research Council
London, UK**
Visiting scientist

Education

- 1976 - 1981 **Chemical Department, Moscow State University
Moscow, Russia**
Degree: BSc (chemistry)

Summary of qualifications

- 2000 **Chemical Department, Moscow State University, Moscow**
Degree: DSc (Biochemistry)
- 1988 **Chemical-Pharmaceutical Research Institute**
Degree: PhD (Organic chemistry)

Scientific awards

- 2014 + Principal Investigator in the project supported by the grant of Russian Science Foundation;
- 2009 - 2012 Project manager of two contracts with the Ministry of Science & Technology (Russia);
- 1997 + Principal Investigator in 9 projects supported by Russian Foundation for Basic Research;
- 2001 - 2005 5-year scholarship from Howard Hughes Medical Institute (USA)
- 2000 - 2003 3-year Collaborative Research Initiative grant from Wellcome Trust (UK),
Collaborating with Dr J. Feeney, UK
- 1995 - 2000 5-year grant from Howard Hughes Medical Institute (USA),
Collaborating with Dr J. Feeney, UK

Scientific recognition

- 2001 + Biography included in Marquis "Who's Who in the World"
- 2003 + Biography included in Marquis "Who's Who in Science and Engineering"

Scientific societies

- 2001 + American Chemical Society
- 2000 + American Association for the Advancement of Science
- 1981 + All-Russian Mendeleev Chemical Society
- 1996 - 1998 New York Academy of Sciences

Expert and Editorial Activities

- 2005 - 2014 Editor (molecular pharmacology section) of the *Central European Journal of Medicine* (Springer);
- 2015 + Editor (molecular pharmacology section), *Open Medicine* (De Gruyter);
- 2014 + Member of the Editorial board, *Frontiers in Molecular Biosciences*;
- 2007 + Member of the dissertation council D002.235.01 in Engelhardt Institute of Molecular Biology, Russian Academy of Sciences;
- 2004 + Expert of the Review Panel, Russian Foundation for Basic Research;
- 2005 + Expert of the Review Panel, Russian Federal Specialized Scientific Programs, Ministry of Science & Technology, Russia.
- 2016 + Expert of Russian Academy of Sciences.

Teaching Experience

- 1998 + Scientific supervisor of 9 graduate (BSc & master degrees) and 6 PhD projects.
- 2000 + Lecture courses "Biomolecular NMR spectroscopy", "Protein structure and dynamics" and "Methods of molecular modeling" for students of Chemical Department, Physical Department and Department of Bioinformatics and Bioengineering, M.V.Lomonosov Moscow State University.
- 2013 Invited lecturer of the School "Modern biology and future biotech", Puschino, Russia.
- 2013 Course of lectures and workshops "NMR of biomolecules", Kazan Federal University, Kazan, Russia.
- 2013 + Course of lectures "Principles of drug design and development of new medicinal preparations", Faculty of Fundamental Medicine, M.V. Lomonosov Moscow State University

Research Interests

Structural biochemistry, Biomolecular NMR spectroscopy, Protein structure and dynamics, Protein-Ligand interactions, Molecular pharmacology, Molecular mechanisms of drug action.

Selected publications

Full publication list contains 152 papers including 83 articles in peer reviewed journals, h-index = 16 (October 2018).

1. Mantsyzov, A.B., Savelyev, O.Y., Ivantcova, P.M., Brase, S., Kudryavtsev, K.V., Polshakov, V.I. (2018) Theoretical and NMR conformational studies of β -proline oligopeptides with alternating chirality of pyrrolidine units, *Frontiers in Chemistry*, DOI: 10.3389/fchem.2018.00091. IF = 4.155.
2. Petrova, O.A., Mantsyzov, A.B., Rodina, E.V., Efimov, S.V., Hackenberg, C., Hakanpaa, J., Klochkov, V.V., Lebedev, A.A., Chugunova, A.A., Malyavko, A.N., Zatsepin, T.S., Mishin, A.V., Zvereva, M.I., Lamzin, V.S., Dontsova, O.A., Polshakov, V.I. (2018) Structure and function of the N-terminal domain of the yeast telomerase reverse transcriptase. *Nucleic Acids Research*, 46(3): 1525–1540, DOI: 10.1093/nar/gkx1275. IF = 11.561.
3. Polshakov, V.I., Mantsyzov, A.B., Kozin, S.A., Adzhubei, A.A., Zhokhov, S.S., van Beek, W., Kulikova, A.A., Indeykina, M.I., Mitkevich, V.A., Makarov, A.A. (2017) A binuclear zinc interaction fold discovered in homodimer of Alzheimer's amyloid- β fragment with Taiwanese mutation D7H. *Angewandte Chemie International Edition*, 56(39): 11734-11739. DOI: 10.1002/anie.201704615. IF=12.102.
4. Shebanova, A., Ismagulova, T., Solovchenko, A., Baulina, O., Lobakova, E., Ivanova, A., Moiseenko, A., Shaitan, K., Polshakov, V., Nedbal, L., Gorelova, O. (2017) Versatility of the green microalga cell vacuole function as revealed by analytical transmission electron microscopy. *Protoplasma*, 254: 1323-1340. IF= 2.457.
5. Kudryavtsev, K.V., Mantsyzov, A.B., Ivantcova, P.M., Sokolov, M.N., Churakov, A.V., Bräse, S., Zefirov, N.S., Polshakov V.I. (2016) Control of Azomethine Cycloaddition Stereochemistry by CF_3 Group: Structural Diversity of Fluorinated β -Proline Dimers. *Organic Letters*, 18: 4698-4701. DOI: 10.1021/acs.orglett.6b02327. IF= 6.732.
6. Tevyashova, A.N., Korolev, A.M., Trenin, A.S., Dezhenskova, L.G., Shtil, A.A., Polshakov, V.I., Savelyev, O.Yu., Olsufyeva E.N. (2016) New conjugates of polyene macrolide amphotericin B with benzoxaboroles: synthesis and properties. *The Journal of Antibiotics*, 69: 549-560. doi:10.1038/ja.2016.34. IF=1.730.
7. Istrate, A.N., Kozin, S.A., Zhokhov, S.S., Mantsyzov, A.B., Kechko, O.I., Pastore, A., Makarov, A.A., Polshakov V.I. (2016) Interplay of histidine residues of the Alzheimer's disease A β peptide governs its Zn-induced oligomerization. *Scientific Reports*, 6: 21734; doi: 10.1038/srep21734. IF = 5.578.
8. S.A. Kozin, A.A. Kulikova, A.N. Istrate, P.O. Tsvetkov, S.S. Zhokhov, Y.V. Mezentsev, A.S. Ivanov, V. I. Polshakov, A.A. Makarov (2015) The English (H6R) familial Alzheimer's disease mutation facilitates zinc-induced dimerization of the amyloid- β metal-binding domain, *Metallomics*, 7: 422-425. IF = 3.978.
9. Logunova, N., Korotetskaya, M., Polshakov, V., Apt A. (2015) The QTL within the H2 Complex Involved in the Control of Tuberculosis Infection in Mice Is the Classical Class II H2-Ab1 Gene, *PLoS Genetics* 11(11): e1005672, 1-22. DOI:10.1371/journal.pgen.1005672. IF=7.528.
10. K.V. Kudryavtsev, C.-C. Yu, P.M. Ivantcova, V.I. Polshakov, A.V. Churakov, S. Bräse, N.S. Zefirov, J.-H. Guh (2015) Structural studies and anticancer activity of a novel class of β -peptides, *Chemistry – An Asian Journal*. 10(2): 383-389. IF = 3.935.
11. E. Smirnova, I. Safenkova, V. Stein-Margolina, V. Shubin, V. Polshakov, B. Gurvits (2015) pH-responsive modulation of insulin aggregation and structural transformation of the aggregates, *Biochimie*, 109(2): 49-59. IF = 3.142.
12. Polshakov, V., Eliseev, B., Frolova, L., Chang, C.-F., Huang, T.-H. (2015) Backbone ^1H , ^{13}C and ^{15}N resonance assignments of the human eukaryotic release factor eRF1, *Biomol. NMR Assign.*, 8(1), 37-42. IF = 0.820.
13. Kulikova, A.A., Tsvetkov, P.O., Indeykina, M.I., Popov, I., Zhokhov, S.S., Golovin, A.V., Polshakov, V.I., Nudler, E., Kozin, S., Makarov A.A. (2014) Phosphorylation of Ser8 promotes zinc-induced dimerization of amyloid- β metal-binding domain, *Molecular BioSystems*, 10, 2590-2596. IF = 3.350.

14. Istrate, A.N., Tsvetkov, P.O., Mantsyzov, A.B., Kulikova, A.A., Kozin, S.A., Makarov, A.A., Polshakov V.I. (2012) NMR solution structure of rat A β (1-16): towards understanding the mechanism of rats' resistance to Alzheimer's disease, *Biophys. J.*, **102**, 136-143. IF = 3.632.
15. Polshakov, V.I., Eliseev, B.D., Birdsall, B., Frolova, L.Yu. (2012) Structure and dynamics in solution of the stop codon decoding N-terminal domain of the human polypeptide chain release factor eRF1, *Protein Science*, **21**, 896-903. IF = 3.039.
16. Feeney, J., Birdsall, B., Kovalevskaya, N.V., Smurnyy, Y.D., Navarro Peran, E.M., Polshakov, V.I. (2011) NMR structures of apo *L.casei* Dihydrofolate reductase and its complexes with trimethoprim and NADPH. Contributions to positive cooperative binding from ligand-induced refolding, conformational changes and interligand hydrophobic interactions. *Biochemistry*, **50**, 3609-3620. IF = 2.876.
17. Mantsyzov, A.B., Ivanova, E.V., Birdsall, B., Alkalaeva, E.Z., Kryuchkova, P.N., Kelly, G., Frolova, L.Yu., Polshakov V.I. (2010) NMR solution structure and function of the C-terminal domain of eukaryotic polypeptide release factor eRF1, *FEBS Journal*, **277**, 2611-2627. IF = 4.237.
18. Vostrikov, V.V., Selishcheva, A.A., Sorokoumova, G.M., Shakina, Y.N., Shvets, V.I., Saveliev, O.Y., Polshakov, V.I. (2008) Distribution coefficient of rifabutin in liposome/water system as measured by different methods, *Eur. J. Pharm. Biopharm.*, **68**, 400-405. IF = 3.975.
19. Ivanova, E.V., Kolosov, P.M., Birdsall, B., Kelly, G., Pastore, A., Kisselev, L.L., Polshakov, V.I. (2007) Eukaryotic class-I translation termination factor eRF1: the NMR structure of the middle domain involved in triggering ribosome-dependent peptidyl-tRNA hydrolysis, *FEBS Journal*, **274**, 4223-37. IF = 4.237.
20. Polshakov, V.I., Birdsall, B., Feeney, J. (2006) Effects of co-operative ligand binding on protein amide NH hydrogen exchange, *J. Mol. Biol.*, **356**, 886-903. IF = 4.517.
21. Kovalevskaya, N.V., Smurnyy, Y.D., Polshakov, V.I., Birdsall, B., Bradbury, A.F., Frenkiel, T., Feeney, J. (2005) Solution structure of human dihydrofolate reductase in its complex with trimethoprim and NADPH, *J. Biomolecular NMR*, **33**, 69-72. IF = 3.439.
22. Polshakov, V.I., Smirnov, E.G., Birdsall, B., Kelly, G. and Feeney, J (2002) NMR-based solution structure of the complex of *Lactobacillus casei* dihydrofolate reductase with trimethoprim and NADPH, *J. Biomolecular NMR*, **24**: 67-70. IF = 3.439.
23. Polshakov, V.I., Birdsall, B., Frenkiel, T.A., Gargaro, A.R. and Feeney, J. (1999) Structure and dynamics in solution of the complex of *Lactobacillus casei* dihydrofolate reductase with the new lipophylic antifolate drug trimetrexate, *Protein Sci.*, **8**: 467-481. IF = 3.039.
24. Polshakov, V.I., Birdsall, B. and Feeney J. (1999) Characterisation of rates of ring-flipping in trimethoprim in its ternary complexes with *Lactobacillus casei* dihydrofolate reductase and coenzyme analogues, *Biochemistry*, **38**: 15962-15969. IF = 2.876.
25. Polshakov, V.I., Williams, M.A., Gargaro, A.R., Frenkiel, T.A., Westley, B.R., Chadwick, M.P., May, F.E.B. and Feeney, J. (1997) High-resolution solution structure of human pNR-2/pS2: a single trefoil motif protein. *J. Mol. Biol.*, **267**: 418-432. IF = 4.517.
26. Polshakov, V.I., Frenkiel, T.A., Birdsall, B., Soteriou, A. & Feeney, J. (1995) Determination of stereospecific assignments, torsion angle constraints and rotamer populations in proteins using the program AngleSearch. *J. Magn. Reson., Ser. B*, **108**: 31-43. IF = 2.889.