Curriculum vitae: Vladimir Martynov

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Education

1983–2013	Russia, Moscow	Shemyakin–Ovchinnikov Institute of Bioorganic Chemistry, Russian Academy of Sciences	Dr. of Science in chemistry
1975–1983	Russia, Moscow	Shemyakin Institute of Bioorganic Chemistry, Academy of Sciencesof USSR (IBCH)	PhD in chemistry
1970–1975	Russia, Moscow	M.V. Lomonosov Moscow State University (chemical faculty)	Ms in chemistry

IBCh positions

2026–to date	Head of Laboratory	
2018–to date	Principal research fellow	

Scientific interests

Generally, scientific interests of Vladimir Martynov are associated with investigations of the structure and functions of photosensitive proteins, as well as their potential applications in molecular, cellular biology and in theranostics of various diseases.

Titles

	Doctor of Science (Chemistry)

Contacts

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Grants and projects

2023–2024	-Модульные пептидно-белковые конструкции для ранней диагностики и лечения онкологических заболеваний
2020–2022	-
2018–2020	-

Publications

1. Frolova AY, Shramova EI, Kakuev DL, **Martynov VI**, Pakhomov AA, Deyev SM, Proshkina GM (2025). Bispecific targeting system based on DARPins-modified light-chain ferritin for cancer chemotherapy.

Biochimie 240, 11–18, 10.1016/j.biochi.2025.10.003
2. Efimova AS, Ustimova MA, Frolova AY, **Martynov VI**, Deyev SM, Fedorov YV, Fedorova OA, Pakhomov AA (2024). Styryl dyes for viscosity measurement and detection of pathological processes in mitochondria of living cells using fluorescence lifetime imaging microscopy, a critical study. *Opt Mater (Amst)* 159 (2), 116517, 10.1016/j.optmat.2024.116517
3. Frolova AY, Pakhomov AA, Deyev SM, **Martynov VI** (2024). Influence of Peptide Linkers on the Functional Properties of Hybrid Structures with Selective pH-Dependent Binding to Cancer Cells. *Russ. J. Bioorganic Chem.* 50 (4), 1141–1149, 10.1134/S1068162024040010
4. Frolova AY, Kim EE, Kononevich YN, **Martynov VI**, Deyev SM, Pakhomov AA (2024). Octa-BODIPY dye for monitoring live cell parameters using fluorescence lifetime imaging microscopy. *Opt Spectrosc* 132 (4), 358–363, 10.61011/EOS.2024.04.58874.26-24
5. Frolova AY, Pakhomov AA, Kakuev DL, Sungurova AS, Dremina AA, Mamontova ED, Deyev SM, **Martynov VI** (2023). Hybrid protein-peptide system for the selective pH-dependent binding and photodynamic ablation of cancer cells. *J Photochem Photobiol B* 249, 112803, 10.1016/j.jphotobiol.2023.112803
6. Efimova AS, Ustimova MA, Maksimova MA, Frolova AY, **Martynov VI**, Deyev SM, Pakhomov AA, Fedorov YV, Fedorova OA (2023). Synthesis and optical characteristics of 4-styrylpyridinium dyes and their conjugates with antibody. *MENDELEEV COMMUN* 33 (3), 384–386, 10.1016/j.mencom.2023.04.027
7. Pakhomov AA, Efremova AV, Kononevich YN, Ionov DS, Maksimova MA, Volodin AD, Korlyukov AA, Dubinets NO, **Martynov VI**, Ivanov AA, Muzafarov AM (2023). NIR-I fluorescent probes based on distyryl-BODIPYs with two-photon excitation in NIR-II window. *ChemPhotoChem* 7 (5), e20220032, 10.1002/cptc.202200324
8. Mamaeva AA, Frolova AY, Kakuev DL, **Martynov VI**, Deyev SM, Pakhomov AA (2023). Co-expression of different proteins in Escherichia coli using plasmids with identical origins of replication. *Biochem Biophys Res Commun* 641, 57–60, 10.1016/j.bbrc.2022.12.020
9. Pakhomov AA, Efremova AV, Maksimova MA, Kononevich YN, Ionov DS, Dubinets NO, **Martynov VI**, Muzafarov AM, Alfimov MV (2023). Spectral Properties of Functional Distyryl Derivatives of BODIPY. *HIGH ENERG CHEM+* 57 (3), 192–199, 10.1134/S0018143923030104
10. Frolova AY, Kutyakov SV, **Martynov VI**, Deyev SM, Pakhomov AA (2023). BODIPY Dye Derivative for Irreversible Fluorescent Labeling of Eukaryotic Cells and Their Simultaneous Cytometric Analysis. *Acta Naturae* 15 (4), 92–99, 10.32607/actanaturae.26879
11. Pakhomov AA, Belova AS, Khchoyan AG, Kononevich YN, Ionov DS, Maksimova MA, Frolova AY, Alfimov MV, **Martynov VI**, Muzafarov AM (2022). Ratiometric Singlet Oxygen Sensor Based on BODIPY-DPA Dyad. *Molecules* 27 (24), 9060, 10.3390/molecules27249060
12. Mamaeva AA, **Martynov VI**, Deyev SM, Pakhomov AA (2022). Comparison of Colorimetric and Fluorometric Chemosensors for Protein Concentration Determination and Approaches for Estimation of their Limits of Detection. *Chemosensors (Basel)* 10 (12), 542, 10.3390/chemosensors10120542
13. Frolova AY, Pakhomov AA, Kakuev DL, Sungurova AS, Deyev SM, **Martynov VI** (2022). Cancer cells targeting with genetically engineered constructs based on a pH-dependent membrane insertion peptide and fluorescent protein. *Biochem Biophys Res Commun* 612, 141–146, 10.1016/j.bbrc.2022.04.112
14. Pakhomov AA, Kim EE, Kononevich YN, Ionov DS, Maksimova MA, Khalchenia VB, Maksimov EG, Anisimov AA, Shchegolikhina OI, **Martynov VI**, Muzafarov AM (2022). Modulation of the photophysical properties of multi-BODIPY-siloxane conjugates by varying the number of fluorophores. *Dyes Pigm* 203, , 10.1016/j.dyepig.2022.110371
15. **Martynov I**, Pakhomov A (2021). BODIPY derivatives as fluorescent reporters of molecular activities in living cells. *RUSS CHEM REV* 90 (10), 1213, 10.1070/RCR4985
16. Goryashchenko AS, Pakhomov AA, Ryabova AV, Romanishkin ID, Maksimov EG, Orsa AN, Serova OV, Mozhaev AA, Maksimova MA, **Martynov VI**, Petrenko AG, Deyev IE (2021). FLIM-Based Intracellular and Extracellular pH Measurements Using Genetically Encoded pH Sensor. *Biosensors (Basel)* 11 (9), ,

10.3390/bios11090340
17. Orsa AN, Goryashchenko AS, Serova OV, Mozhaev AA, **Martynov VI**, Pakhomov AA, Svirshchevskaya EV, Petrenko AG, Deyev IE (2021). Generation and Characteristics of Genetically Encoded Fluorescent Sensors of Extracellular pH. *Russ. J. Bioorganic Chem.* 47 (5), 1060–1065, 10.1134/S1068162021040178
18. Pakhomov AA, Pastukhova AA, Tishkin GV, **Martynov VI** (2021). Transformations of the Chromophore in the Course of Maturation of a Chromoprotein from Actinia equina. *Russ. J. Bioorganic Chem.* 47 (1), 230–235, 10.1134/S1068162021010167
19. Frolova AY, Pakhomov AA, **Martynov VI** (2021). Physicochemical Properties of Photoconvertible Fluorescent Protein from Montastraea cavernosa. *Russ. J. Bioorganic Chem.* 47 (1), 244–251, 10.1134/S1068162021010052
20. Pakhomov AA, Frolova AY, Tabakmakher VM, Chugunov AO, Efremov RG, **Martynov VI** (2020). Impact of external amino acids on fluorescent protein chromophore biosynthesis revealed by molecular dynamics and mutagenesis studies. *J Photochem Photobiol B* 206, 111853, 10.1016/j.jphotobiol.2020.111853
21. **Martynov VI**, Pakhomov AA, Deyev IE, Petrenko AG (2018). Genetically encoded fluorescent indicators for live cell pH imaging. *BIOCHIM BIOPHYS ACTA* 1862 (12), 2924–2939, 10.1016/j.bbagen.2018.09.013
22. Pakhomov AA, **Martynov VI**, Orsa AN, Bondarenko AA, Chertkova RV, Lukyanov KA, Petrenko AG, Deyev IE (2017). Fluorescent protein Dendra2 as a ratiometric genetically encoded pH-sensor. *Biochem Biophys Res Commun* 493 (4), 1518–1521, 10.1016/j.bbrc.2017.09.170
23. Pakhomov AA, Mironiuk VB, Kononevich YN, Korlyukov AA, Volodin AD, Pryakhina TA, **Martynov VI**, Muzafarov AM (2017). Synthesis and crystal structure of a meso-decene-BODIPY dye as a functional bright fluorophore for silicone matrices. *MENDELEEV COMMUN* 27 (4), 363–365, 10.1016/j.mencom.2017.07.014
24. Pakhomov AA, Chertkova RV, Deyev IE, Petrenko AG, **Martynov VI** (2017). Generation of photoactivatable fluorescent protein from photoconvertible ancestor. *Russ. J. Bioorganic Chem.* 43 (3), 340–343, 10.1134/S106816201703013X
25. Pakhomov AA, Deyev IE, Ratnikova NM, Chumakov SP, Mironiuk VB, Kononevich YN, Muzafarov AM, **Martynov VI** (2017). BODIPY-based dye for no-wash live-cell staining and imaging. *Biotechniques* 63 (2), 77–79, 10.2144/000114577
26. Pakhomov AA, Kononevich YN, Korlyukov AA, **Martynov VI**, Muzafarov AM (2016). Synthesis, crystal structure and optical properties of a new meso-acrylate BODIPY dye. *MENDELEEV COMMUN* 26 (3), 196–198, 10.1016/j.mencom.2016.04.005
27. Pakhomov AA, Kononevich YN, Stukalova MV, Svidchenko EA, Surin NM, Cherkaev GV, Shchegolikhina OI, **Martynov VI**, Muzafarov AM (2016). Synthesis and photophysical properties of a new BODIPY-based siloxane dye. *Tetrahedron Lett* 57 (9), 979–982, 10.1016/j.tetlet.2016.01.059
28. Pletneva NV, Pletnev S, Pakhomov AA, Chertkova RV, **Martynov VI**, Muslinkina L, Dauter Z, Pletnev VZ (2016). Crystal structure of the fluorescent protein from Dendronephthya sp. in both green and photoconverted red forms. *Acta Crystallogr D Struct Biol* 72 (8), 922–932, 10.1107/S205979831601038X
29. **Martynov VI**, Pakhomov AA, Popova NV, Deyev IE, Petrenko AG (2016). Synthetic Fluorophores for Visualizing Biomolecules in Living Systems. *Acta Naturae* 8 (4), 33–46, 10.32607/20758251-2016-8-4-33-46
30. Pakhomov AA, Chertkova RV, **Martynov VI** (2015). PH-sensor properties of a fluorescent protein from Dendronephthya sp. *Russ. J. Bioorganic Chem.* 41 (6), 602–606, 10.1134/S1068162015060114
31. Ilnitskaya EV, Kononevich YN, Muzafarov AM, Rzhevskiy SA, Shadrin IA, Babaev EV, **Martynov VI**, Pakhomov AA (2015). Preparation and application of a BODIPY-labeled probe for a real-time polymerase chain reaction. *Russ. J. Bioorganic Chem.* 41 (4), 451–453, 10.1134/S1068162015040068
32. Pletneva NV, Pletnev VZ, Souslova E, Chudakov DM, Lukyanov S, **Martynov VI**, Arhipova S, Artemyev I, Wlodawer A, Dauter Z, Pletnev S (2013). Yellow fluorescent protein phiYFPv (Phialidium): Structure and

structure-based mutagenesis. *Acta Crystallogr D Biol Crystallogr* 69 (6), 1005–1012, 10.1107/S0907444913004034
33. Pakhomov AA, Tretyakova SA, **Martynov VI** (2012). The influence of chromophore-protein interactions on spectroscopic properties of the yellow fluorescent protein. *Dokl Biochem Biophys* 445 (1), 207–209, 10.1134/S1607672912040072
34. Pakhomov AA, **Martynov VI** (2011). [3D-structure determination of fluorescent proteins by homology modeling combined with mass spectrometry]. *Bioorg Khim* 37 (3), 429–432.
35. Pakhomov AA, **Martynov VI** (2011). A method for the determination of the three-dimensional structure of fluorescent proteins based on homology modeling and mass spectrometry. *Russ. J. Bioorganic Chem.* 37 (3), 383–386, 10.1134/S1068162011030137
36. Pakhomov AA, **Martynov VI** (2011). Probing the structural determinants of yellow fluorescence of a protein from Phialidium sp. *Biochem Biophys Res Commun* 407 (1), 230–235, 10.1016/j.bbrc.2011.03.004
37. Pletneva NV, Pletnev VZ, Lukyanov KA, Gurskaya NG, Goryacheva EA, **Martynov VI**, Wlodawer A, Dauter Z, Pletnev S (2010). Structural evidence for a dehydrated intermediate in green fluorescent protein chromophore biosynthesis. *J Biol Chem* 285 (21), 15978–15984, 10.1074/jbc.M109.092320
38. Pakhomov AA, Tretyakova YA, **Martynov VI** (2010). Posttranslational reactions that shift spectra of asFP595, a Protein from Anemonia sulcata, towards the long-wavelength region. *Russ. J. Bioorganic Chem.* 36 (1), 109–113, 10.1134/S1068162010010127
39. Pakhomov AA, Tretiakova IA, **Martynov VI** (2010). Posttranslational reactions resulting in a long-wavelength shift in the spectra of asFP595 protein from Anemonia sulcata. *Bioorg Khim* 36 (1), 117–121.
40. Pletnev S, Gurskaya NG, Pletneva NV, Lukyanov KA, Chudakov DM, **Martynov VI**, Popov VO, Kovalchuk MV, Wlodawer A, Dauter Z, Pletnev V (2009). Structural basis for phototoxicity of the genetically encoded photosensitizer KillerRed. *J Biol Chem* 284 (46), 32028–32039, 10.1074/jbc.M109.054973
41. Pakhomov AA, **Martynov VI** (2009). Posttranslational chemistry of proteins of the GFP family. *Biochemistry (Mosc)* 74 (3), 250–259, 10.1134/S000629790903002X
42. Pakhomov AA, **Martynov VI** (2008). GFP Family: Structural Insights into Spectral Tuning. *Cell Chem Biol* 15 (8), 755–764, 10.1016/j.chembiol.2008.07.009
43. Pakhomov AA, **Martynov VI** (2007). Chromophore aspartate oxidation-decarboxylation in the green-to-red conversion of a fluorescent protein from Zoanthus sp. 2. *Biochemistry* 46 (41), 11528–11535, 10.1021/bi700721x
44. Pletneva N, Pletnev V, Tikhonova T, Pakhomov AA, Popov V, **Martynov VI**, Wlodawer A, Dauter Z, Pletnev S (2007). Refined crystal structures of red and green fluorescent proteins from the button polyp Zoanthus. *Acta Crystallogr D Biol Crystallogr* 63 (10), 1082–1093, 10.1107/S0907444907042461
45. Pletneva NV, Pletnev SV, Chudakov DM, Tikhonova TV, Popov VO, **Martynov VI**, Wlodawer A, Dauter Z, Pletnev VZ (2007). Three-dimensional structure of yellow fluorescent protein zYFP538 from Zoanthus sp. at the resolution 1.8 angstrom. *Bioorg Khim* 33 (4), 421–430.
46. Pletneva NV, Pletnev SV, Chudakov DM, Tikhonova TV, Popov VO, **Martynov VI**, Wlodawer A, Dauter Z, Pletnev VZ (2007). Three-dimensional structure of yellow fluorescent protein zYFP538 from Zoanthus sp. at the resolution 1.8 Å. *Russ. J. Bioorganic Chem.* 33 (4), 390–398, 10.1134/S1068162007040048
47. Tretyakova YA, Pakhomov AA, **Martynov VI** (2007). Chromophore structure of the kindling fluorescent protein asFP595 from Anemonia sulcata. *J Am Chem Soc* 129 (25), 7748–7749, 10.1021/ja071992c
48. Pakhomov AA, Pletneva NV, Balashova TA, **Martynov VI** (2006). Structure and reactivity of the chromophore of a GFP-like chromoprotein from Condylactis gigantea. *Biochemistry* 45 (23), 7256–7264, 10.1021/bi060207q
49. Pletneva N, Pletnev S, Tikhonova T, Popov V, **Martynov V**, Pletnev V (2006). Structure of a red fluorescent protein from Zoanthus, zRFP574, reveals a novel chromophore. *Acta Crystallogr D Biol Crystallogr* 62 (5), 527–532, 10.1107/S0907444906007852
50. Yampolsky IV, Remington SJ, **Martynov VI**, Potapov VK, Lukyanov S, Lukyanov KA (2005). Synthesis

and properties of the chromophore of the asFP595 chromoprotein from Anemonia sulcata. *Biochemistry* 44 (15), 5788–5793, 10.1021/bi0476432

51. Pakhomov AA, Martynova NY, Gurskaya NG, Balashova TA, **Martynov VI** (2004). Photoconversion of the chromophore of a fluorescent protein from Dendronephthya sp. coral. *Biochemistry (Mosc)* 69 (8), 1108–1117.
52. Pakhomov AA, Martynova NY, Gurskaya NG, Balashova TA, **Martynov VI** (2004). Photoconversion of the chromophore of a fluorescent protein from Dendronephthya sp. *Biochemistry (Mosc)* 69 (8), 901–908, 10.1023/B:BIRY.0000040223.09641.29
53. **Martynov VI**, Maksimov BI, Martynova NY, Pakhomov AA, Gurskaya NG, Lukyanov SA (2003). A Purple-blue Chromoprotein from Goniopora tenuidens Belongs to the DsRed Subfamily of GFP-like Proteins. *J Biol Chem* 278 (47), 46288–46292, 10.1074/jbc.M306810200
54. Fradkov AF, Verkhusha VV, Staroverov DB, Bulina ME, Yanushevich YG, **Martynov VI**, Lukyanov S, Lukyanov KA (2002). Far-red fluorescent tag for protein labelling. *Biochem J* 368 (1), 17–21, 10.1042/BJ20021191
55. Gurskaya NG, Fradkov AF, Terskikh A, Matz MV, Labas YA, **Martynov VI**, Yanushevich YG, Lukyanov KA, Lukyanov SA (2001). GFP-like chromoproteins as a source of far-red fluorescent proteins. *FEBS Lett* 507 (1), 16–20, 10.1016/S0014-5793(01)02930-1
56. **Martynov VI**, Savitsky AP, Martynova NY, Savitsky PA, Lukyanov KA, Lukyanov SA (2001). Alternative cyclization in GFP-like proteins family. The formation and structure of the chromophore of a purple chromoprotein from Anemonia sulcata. *J Biol Chem* 276 (24), 21012–21016, 10.1074/jbc.M100500200
57. Bayramashvili DI, Drachev AL, Drachev LA, Kaulen AD, Kudelin AB, **Martynov VI**, Skulachev VP (1984). Proteinase-treated photoreceptor discs. Photoelectric activity of the partially-digested rhodopsin and membrane orientation. *FEBS J* 142 (3), 583–590, 10.1111/j.1432-1033.1984.tb08326.x
58. **Martynov VI**, Kostina MB, Feigina MIu, Miroshnikov AI (1983). Limited proteolysis studies on molecular organization of bovine rhodopsin in the photoreceptor membrane. *Russ. J. Bioorganic Chem.* 9, 734–745.
59. Ovchinnikov YA, Abdulaev NG, Feigina MY, Artomonov ID, Zolotarev AS, Kostina MB, Bogachuk AS, Miroshnikov AI, **Martinov VI**, Kudelin AB (1982). The Complete Amino Acid Sequence of Visual Rhodopsin. *Bioorg Khim* 8 (7), 1011.
60. Abdulaev NG, Artamonov ID, Bogachuk AS, Feigina MY, Kostina MB, Kudelin AB, **Martynov VI**, Miroshnikov AI, Zolotarev A, Ovchinnikov YA (1982). Structure of Light-Activated Proteins - Visual Rhodopsin. *Biochem Int* 5 (6), 693–703.
61. Gushchin IS, Miroshnikov AI, **Martynov VI**, Sviridov VV (1981). Histamine releasing and anti-inflammatory activities of MCD-peptide and its modified forms. *Agents Actions* 11 (1-2), 69–71, 10.1007/BF01991459
62. Gushchin IS, Miroshnikov AI, **Martynov VI** (1977). Character of the histamine-liberating action of MCD-peptide from bee venom. *Bull Exp Biol Med* 84 (1), 1013–1015, 10.1007/BF00798533