

CURRICULUM VITAE

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1. GENERAL INFORMATION

1.1. EDUCATION

1999 – **PhD, Bioorganic Chemistry**, Novosibirsk Institute of Bioorganic Chemistry, Russia
Dissertation: ‘Synthesis of photoreactive dNTP analogs and their application for the study of protein-nucleic acid interactions’
Advisor: Olga I. Lavrik

1994 – **BS, Chemistry**, Novosibirsk State University, Russia
Thesis: ‘Synthesis of dTTP analogs conjugated with photoreactive arylazido groups’
Advisor: Tatyana S. Godovikova

1.2. POSTDOCTORAL TRAINING

2002-03 – **Postdoctoral Research Scientist**, Columbia University, New York, USA
Aptameric sensors and molecular computation
Research advisors: Milan N. Stojanovic and Donald W. Landry

2000-02 – **Postdoctoral Research Fellow**, National Institute of Genetics, Japan,
Study of molecular architecture of influenza virus RNA polymerase
Research advisor: Akira Ishihama

1.3. PROFESSIONAL EMPLOYMENT

2014-present – **Associate Professor**, University of Central Florida, Orlando, FL, USA
2008-14 – **Assistant Professor**, University of Central Florida, Orlando, FL, USA
2003-08 – **Associate Research Scientist**, Columbia University, New York, NY, USA

1.4. HONORS AND AWARDS

2015 – The 2015 College of Science **Dean’s Rising Star Award**
2014 – The 2013-2014 **Research Incentive Award** (RIA) University of Central Florida. RIA rewards outstanding achievements in research, scholarly and creative activities
2000 – The 2000-2003 **Young Talented Scientist Award** of Siberian Branch of Russian Academy of Science

2001-02 – **Postdoctoral Fellowship** from Centre of Excellence (COE) program of the Ministry of Education, Culture, Sport, Science, and Technology of Japan

2000-01 – **Postdoctoral Fellowship** from Centre of Excellence (COE) program of the Ministry of Education, Culture, Sport, Science, and Technology of Japan

1.4. INTERNATIONAL RESEARCH PROGRAMS AND COLLABORATIONS

2014-present – **Jef Hooyberghs**, Flemish Institute for Technological Research, VITO, Boeretang 200, B-2400 Mol, Belgium and Theoretical

2013-present – **Maxim V. Berezovski**, University of Ottawa, Ottawa, Canada

2000-02 – International Academic Exchange Program (Centre of Excellence (COE) program of the Ministry of Education, Culture, Sport, Science, and Technology of Japan) in **Akira Ishihama's** lab

1999 – Visiting Scientist, NIEHS, NC, USA in **Samuel H Wilson's** lab

1999 – International Exchange Program between Russian Academy of Science and French Academy of Science (CNRS) Convention de'Exchange in **Alan Favre's** lab

1998 – International Exchange Program between Russian Academy of Science and French Academy of Science (CNRS) Convention de'Exchange in **Alan Favre's** lab

2. RESEARCH

2.1. RESEARCH INTERESTS

Biosensors: nucleic acid-based biosensors, nucleic acid analysis, specific recognition of proteins and nucleic acids, SNP and STR analysis, high selectivity

Bioorganic chemistry: Irreversible inhibition, biochemistry of nucleic acids, protein-nucleic acid interactions, structural and dynamic aspects of protein-ligand interactions, cross-linking of proteins and nucleic acids

Synthetic biology: structural DNA nanotechnology, logic circuits, biomolecular engineering

2.2. PUBLICATIONS (78 total excluding conference proceedings)

Summary: textbooks (1); book chapters (2); reviews (4); research papers (67); non-peer reviewed commentary papers (3); *Chem. Rev.* (1); *Chem. Soc. Rev.* (1); *Nature Chem.* (1); *J. Am. Chem. Soc.* (8); *Angew. Chem. Int. Ed.* (6); *Chem. Commun. (Camb.)* (7); *Nucleic Acid Res.* (3). Total citations **2396** (Google Scholar), H index **27**. **Professional highlights (12) are in blue**. Asterisks (*) indicate corresponding authors.

2.3.1. Books and book chapters (3)

1. Cornett E.M., Kolpashchikov D.M.* (2013) SNP analysis using a molecular beacon-based operating cooperatively (OC) sensor. *Methods in Molecular Biology*, Nucleic acid detection, Humana press, 1039, 81-86

2. Gerasimova Y.V.,* Ballantyne J., Kolpashchikov D.M. (2013) Detection of SNP-Containing human DNA sequences using a split sensor with universal molecular beacon reporter. *Methods in Molecular Biology*, Nucleic acid detection, Humana press, 1039, 69-80

3. Gerasimova Y.V., Kolpashchikov D.M. (2011) Biochemistry I. Electronic textbook for BCH4053 students. Kendall Hunt, ISBN 0757576648, 9780757576645

2.3.2. Peer-reviewed reviews (4)

4. Gerasimova Y.V.,* Kolpashchikov D.M. (2014) Enzyme-assisted target recycling (EATR) for nucleic acid detection. *Chemical Society Reviews*, 43, 6405-6438. J. impact factor: **24.9**, Number of Citations: **85**
5. Kolpashchikov D.M.* (2012) An elegant biosensor molecular beacon probe: challenges and recent solutions. *Scientifica*, 2012, ID 928783, 17 pages. doi:10.6064/2012/928783. J. impact factor: **N/D**, Number of Citations: **27**
6. Kolpashchikov D.M.* (2010) Binary probes for nucleic acid analysis. *Chemical Reviews*, 110, 4709-4723. J. impact factor: **33.0**, Number of Citations: **191** This paper was featured on the cover of September 2010 issue of the journal.
7. Kolpashchikov D.M.* (2003) Superaffinity labeling of proteins: approaches and techniques. *Journal of Biomolecular Structure and Dynamics*, 21, 55-64. J. impact factor: **4.9**, Number of Citations: **9**

2.3.3. Peer-reviewed research articles (68)

8. Bakshi S. F., Guz N., Zakharchenko A., Deng H., Tumanov A., Woodworth C. D., Minko S.,* Kolpashchikov D. M.,* Katz E.* (2018) Nanoreactors Based on DNAzyme-Functionalized Magnetic Nanoparticles Activated by Magnetic Field. *Nanoscale*, 10, 1356–1365. J. impact factor: **6.5**, Number of Citations: **0**
9. Fedotova T. A. Kolpashchikov D. M.* (2017) Liquid-to-Gel Transition for Visual and Tactile Detection of Biological Analytes. *Chem. Commun. (Camb.)*, 53, 12622 – 12625. J. impact factor: **6.5**, Number of Citations: **0** This paper was featured on the front cover of the journal. In addition, this article was highlighted by *Chemistry World*, monthly chemistry news magazine published by the Royal Society of Chemistry <https://www.chemistryworld.com/news/tactile-alternative-to-colour-changes/3008395.article>
10. Kamar O., Sun S. C., Lin C. H., Chung W. Y., Lee M. S., Liao Y. C.,* Kolpashchikov D. M.,* Chuang M. C.* (2017) A mutation-resistant deoxyribozyme OR gate for highly selective detection of viral nucleic acids. *Chem. Commun. (Camb.)*, 53, 10592-10595. J. impact factor: **7.4**, Number of Citations: **0**
11. Bakshi S.F., Guz N., Zakharchenko A., Deng H., Tumanov A., Woodworth C. D., Minko S.,* Kolpashchikov D. M.,* Katz E.* (2017) Magnetic Field-Activated Sensing of mRNA in Living Cells. *Journal of the American Chemical Society*, 139, 12117-12120. J. impact factor: **13.8**, Number of Citations: **2**
12. Smith A., Kolpashchikov D. M.* (2017) Divide and Control: Comparison of Split and Switch Hybridization Sensor. *ChemistrySelect*, 2, 5427-5431. J. impact factor: **N/D**, Number of Citations: **0**
13. Kikuchi N., Kolpashchikov D. M.* (2017) Universal Split Spinach Aptamer (USSA) Probe for Nucleic Acid Analysis and DNA/RNA Computation. *Chem. Commun. (Camb.)*, 53, 4977-4980. DOI: 10.1039/C7CC01540B, J. impact factor: **6.5**, Number of Citations: **2**

14. Campbell E. A., Peterson E., Kolpashchikov D. M.* (2017) Self-Assembling Molecular Logic Gates Based on DNA Crossover Tiles. *ChemPhysChem*, 18, 1730-1734. DOI: 10.1002/cphc.201700109 J. impact factor: 3.1. Number of Citations: **0**
15. Bengtson H. N., Homolka S., Niemann S., Reis A. J., da Silva P. E. A., Gerasimova Y. V., Kolpashchikov D. M. Rohde K. H.* (2017) Multiplex Detection of Extensively Drug Resistant Tuberculosis using Binary Deoxyribozyme Sensors. *Biosensors & Bioelectronics*, 94, 176-183. J. impact factor: 7.5. Number of Citations: **2**
16. Mills D. M. Calvo-Marzal P., Pinzon J. M., Armas S., Kolpashchikov D. M., Chumbimuni-Torres K.Y.* (2017) A Single Electrochemical Probe Used for Analysis of Multiple Nucleic Acid Sequences. *Electroanalysis*, 29, 873–879. J. impact factor: 2.5, Number of Citations: **1**
17. Gamella M., Zakharchenko A., Guz N., Masi M., Minko S., Kolpashchikov D. M., Iken H., Poghosian A., Schöning, M. J. Katz E.* (2017) DNA Computing Systems Activated by Electrochemically-Triggered DNA Release from a Polymer-Brush-Modified Electrode Array. *Electroanalysis*, 29, 398–408 J. impact factor: 2.5, Number of Citations: **2**
18. Cox A. J., Bengtson, H. N., Rohde K. H., Kolpashchikov D. M.* (2016) DNA Nanotechnology for Nucleic Acid Analysis: Multifunctional Molecular DNA Machine for RNA Detection. *Chem. Commun. (Camb.)*, 52, 14318-14321. J. impact factor: 6.5, Number of Citations: **6**
19. Stancescu M., Fedotova T. A., Hooyberghs J., Balaeff A., Kolpashchikov D. M.* (2016) Non-Equilibrium Hybridization Enables Discrimination of a Point Mutation within 5-40°C. *Journal of the American Chemical Society*, 138, 13465–13468. J. impact factor: 13.0, Number of Citations: **5**
20. Cox A. J., Bengtson, H. N., Gerasimova, Y. V., Rohde K. H., Kolpashchikov D. M.* (2016) DNA Antenna Tile-Associated Deoxyribozyme Sensor with Improved Sensitivity. *ChemBioChem*. 21, 2038-2041, DOI: 10.1002/cbic.201600438 J. impact factor: **3.1**. Number of Citations: **3** This paper was featured on the cover of 21st issue of the journal. <http://onlinelibrary.wiley.com/doi/10.1002/cbic.v17.21/issuetoc>
21. Gerasimova Y. V., Kolpashchikov D. M.* (2016) Towards a DNA Nanoprocessor: Reusable Tile-Integrated DNA Circuits. *Angewandte Chemie International Edition Engl.*, 55, 10244-10247. J. impact factor: **11.7**. Number of Citations: **13**
22. Kikuchi N., Kolpashchikov D. M.* (2016) Split spinach aptamer for highly selective recognition of DNA and RNA at ambient temperatures. *ChemBioChem*, 17, 1589-1592. doi: 10.1002/cbic.201600323 accepted. J. impact factor: **3.1**. Number of Citations: **6**
23. Guz N., Fedotova T.A., Fratto B.E., Schlesinger O., Alfonta L., Kolpashchikov D. M.,* Katz E.* (2016) Bioelectronic Interface Connecting Reversible Logic Gates Based on Enzyme and DNA Reactions. *ChemPhysChem* 17, 2247-2255. Doi: 10.1002/cphc.201600129. J. impact factor: **3.4**. Number of Citations: **8**
24. Gerasimova Y. V.,* Yakovchuk P., Dedkova L. M., Hecht S. M., Kolpashchikov D. M. (2015) Expedited quantification of genetically modified ribosomal RNA by binary deoxyribozyme sensors. *RNA*, 10, 1834-1843. J. impact factor: **4.6**. Number of Citations: **4**

25. Mailloux S., Gerasimova Y.V., Guz N., Kolpashchikov D.M.,* Katz E.* (2015) Bridging the Two Worlds: A Universal Interface between Enzymatic and DNA Computing Systems *Angewandte Chemie International Edition Engl.*, 54, 6562-6566. J. impact factor: 11.3. Number of Citations: **45** This paper was featured by *Nature Nanotechnology* doi:10.1038/nnano.2015.102. <http://www.nature.com/nnano/reshigh/2015/0515/full/nnano.2015.102.html>
26. O'Steen M.R., Cornett E.M., Kolpashchikov D.M.* (2015) Nuclease-Containing Media for Reversible Operation of DNA Logic Gates. *Chem. Commun. (Camb.)*, 51, 1429–1431. J. impact factor: 6.7, Number of Citations: **9**
27. Gerasimova Y.V., Kolpashchikov D.M.* (2015) Divide and Control: Split Design of Multi-Input DNA Logic Gates. *Chem. Commun. (Camb.)*, 51, 870–872. J. impact factor: 6.7, Number of Citations: **8**
28. Yang K-A., Barbu M., Halim M., Pallavi P., Kim B, Kolpashchikov D.M., Pecic S., Taylor S., Worgall T.S.* Stojanovic M.N.* (2014) Recognition and sensing of low-epitope targets via ternary complexes with oligonucleotides and synthetic receptors. *Nature Chemistry*, 11, 1003-1008. J. impact factor: 23.3. Number of Citations: **30**
29. Bengtson H.B., Kolpashchikov D.M.* (2014) A Differential Fluorescent Receptor for Nucleic Acid Analysis. *ChemBioChem*, 15, 228-231. J. impact factor: 3.7. Number of Citations: **5**
30. Labib M., Ghobadloo S.M., Khan N., Kolpashchikov D.M., Berezovski M.V.* (2013) Four-Way Junction Formation Promoting Ultrasensitive Electrochemical Detection of MicroRNA. *Analytical Chemistry*, 85, 9422-9427. J. impact factor: 5.7. Number of Citations: **45**
31. Gerasimova Y.V.,* Kolpashchikov D.M.* (2013) Folding 16S RNA in a signal-producing structure for detection of bacteria. *Angewandte Chemie International Edition Engl.*, 52, 10586-10588. 10.1002/anie.201303919. J. impact factor: 13.7. Number of Citations: **19** This paper was featured on the cover of September 27, 2013 issue of the journal.
32. Gerasimova Y.V., Cornett E.M., Edwards E., Su X., Rohde K.H.*, Kolpashchikov D.M.* (2013) Deoxyribozyme Cascade for Visual Detection of Bacterial RNA. *ChemBioChem*. 14, 2087-2090, DOI: 10.1002/cbic.201300471. J. impact factor: 3.7. Number of Citations: **18**
33. Cornett E.M., Osteen M.R, Kolpashchikov D.M.* (2013) Operating cooperatively (OC) sensor for highly specific recognition of nucleic acids. *PLOS one* 8, e55919. doi:10.1371/journal.pone.0055919. J. impact factor: 4.4, Number of Citations: **9**
34. Cornett E.M., Gerasimova Y.V., Kolpashchikov D.M.* (2013) Two-component covalent inhibitor. *Bioorganic & Medicinal Chemistry*, 21, 1988–1991. J. impact factor: 2.6, Number of Citations: **1**
35. Gerasimova Y.V.,* Kolpashchikov D.M.* (2013) Detection of bacterial 16S rRNA using a molecular beacon-based X sensor. *Biosensors & Bioelectronics*, 41, 386–390. DOI: 10.1016/j.bios.2012.08.058. J. impact factor: 5.3, Number of Citations: **19**
36. Cornett E.M., Campbell E.A., Gulenay G., Peterson E., Bhaskar N., Kolpashchikov D.M.* (2012) Molecular logic gates for DNA analysis: detection of rifampin resistance in

- M.tuberculosis* DNA. *Angewandte Chemie International Edition Engl.* 51, 9075-9077. J. impact factor: 13.45, Number of Citations: **36**
37. Gerasimova Y.V., Kolpashchikov D.M.* (2012) Connectable DNA logic gates: OR and XOR logics. *Chemistry-An Asian Journal*, 7, 534-540. J. impact factor: 4.5, Number of Citations: **21**
 38. Kolpashchikov D.M.* Gerasimova Y.V., Khan M.S. (2011) DNA nanotechnology for nucleic acid analysis: DX motif-based sensor. *ChemBioChem*, 12, 2564-2567. J. impact factor: 3.9, Number of Citations: **22**
 39. Nguyen C., Grimes J., Gerasimova Y.V., Kolpashchikov D.M.* (2011) Molecular beacon-based tricomponent probe for SNP analysis in folded nucleic acids. *Chemistry: A European J.* 17, 13052-13058. J. impact factor: 5.9, Number of Citations: **20**
 40. Gerasimova Y.V.*, Peck S., Kolpashchikov D.M. (2010) Enzyme-assisted binary probe for sensitive detection of RNA and DNA. *Chem. Commun. (Camb.)*, 46, 8761-8763. J. impact factor: 6.1, Number of Citations: **33**
 41. Grimes J., Gerasimova Y.V., Kolpashchikov D.M.* (2010) Real-time SNP Analysis in secondary structure-folded nucleic acids. *Angewandte Chemie International Edition Engl.*, 49, 8950-8953. J. impact factor: 13.45, Number of Citations: **33** This paper was highlighted by Faculty 1000 (DOI: 10.3410/f.6959956.7154054. F1000Prime.com/6959956#eval7154054).
 42. Gerasimova Y.V., Hayson A., Ballantyne J., Kolpashchikov D.M.* (2010) A single molecular beacon probe is sufficient for the analysis of multiple nucleic acid sequences. *ChemBioChem*, 11, 1762-1768. J. impact factor: 3.9, Number of Citations: **33**
 43. Lake A., Shang S., Kolpashchikov D.M.* (2010) Molecular logic gates connected via DNA four way junctions. *Angewandte Chemie International Edition Engl.*, 49, 4459-4462. J. impact factor: 13.45, Number of Citations: **54**
 44. Gerasimova Y.V., Cornett E., Kolpashchikov D.M.* (2010) RNA cleaving deoxyribozyme sensor for nucleic acid analysis: the limit of detection. *ChemBioChem*, 11, 811-817. J. impact factor: 3.9, Number of Citations: **28** This paper was featured on the cover of April 2010 issue of the journal.
 45. Kolpashchikov D.M.* (2008) Split DNA enzyme for visual single nucleotide polymorphism typing. *Journal of the American Chemical Society*, 130, 2934-2935. J. impact factor: 9.9, Number of Citations: **160** This paper was highlighted in Science & Technology Concentrates, C&EN, February 25, 2008.
 46. Kolpashchikov D.M.* (2007) A binary deoxyribozyme for nucleic acid analysis. *ChemBioChem*, 8, 2039-2042. J. impact factor: 3.9, Number of Citations: **65**
 47. Kolpashchikov D.M.* (2006) A binary DNA probe for highly specific nucleic acid recognition. *Journal of the American Chemical Society*, 128, 10625-10628. J. impact factor: 9.9, Number of Citations: **83**
 48. Kolpashchikov D.M.* (2005) Binary malachite green aptamer for fluorescent detection of nucleic acids. *Journal of the American Chemical Society*, 127, 12442-12443. J. impact factor: 9.9, Number of Citations: **134**

49. Kolpashchikov D.M., Stojanovic M.N.* (2005) Boolean control of aptamer binding states. *Journal of the American Chemical Society*, 127, 11348-11341. J. impact factor: 9.9, Number of Citations: **94** This paper was highlighted in Science & Technology Concentrates, C&EN, August 1, 2005 (<http://pubs.acs.org/cen/science/83/8331scic.html>).
50. Stojanovic M.N.*, Semova S., Kolpashchikov D., Macdonald J., Morgan C., Stefanovic D. (2005) Deoxyribozyme-based ligase logic gates and their initial circuits. *Journal of the American Chemical Society*, 127, 6914-6915. J. impact factor: 9.9, Number of Citations: **155**
51. Stojanovic M.N.*, Kolpashchikov D.M. (2004) Modular aptameric sensors. *Journal of the American Chemical Society*, 126, 9266-9270. J. impact factor: 9.9, Number of Citations: **288** This paper was highlighted in Nature magazine (Famulok M. Chemical biology; green fluorescent RNA, Nature 2004, 430, 976-977). This paper was also highlighted by Faculty 1000.
52. Kolpashchikov D.M., Honda A., Ishihama A.* (2004) Structure-function relationships of Influenza virus RNA polymerase: primer-binding site on PB1 subunit. *Biochemistry*, 43, 5882-5887. J. impact factor: 3.4, Number of Citations: **23**
53. Dezhurov S.V., Khodyreva S.N., Rechkunova N.I., Kolpashchikov D.M., Lavrik O.I.* (2003) Comparative study of the efficacy of modifying DNA polymerase and DNA matrix by different photoactive groups at the 3'-end of the DNA primer. *Russian Journal of Bioorganic Chemistry*, 29, 75-82. J. impact factor: 0.6, Number of Citations: **4**
54. Lavrik O.I., Kolpashchikov D.M., Prasad R., Sobol R.W., Wilson S.H.* (2002) Binary system for selective photoaffinity labeling of base excision repair DNA polymerases. *Nucleic Acids Research*, 30, e73. J. impact factor: 8.0, Number of Citations: **21**
55. Lebedeva N.A., Kolpashchikov D.M., Rechkunova N.I., Khodyreva S.N., Lavrik O.I.* (2002) Highly efficient labeling of DNA polymerases by a binary system of photoaffinity reagents. *Biochemistry (Moscow)*, 67, 807-814. J. impact factor: 1.0, Number of Citations: **3**
56. Lebedeva N.A., Kolpashchikov D.M., Rechkunova N.I., Khodyreva S.N., Lavrik O.I.* (2001) A binary system of photoreagents for high-efficiency labeling of DNA polymerases. *Biochemical and Biophysical Research Communications*, 287, 530-535. J. impact factor: 2.5, Number of Citations: **6**
57. Kolpashchikov D.M., Hughes P., Favre A., Baldacci G., Lavrik O.I.* (2001) Localization of the large subunit of replication factor C near the 5' end of DNA primers. *Journal of Molecular Recognition*, 14, 239-244. J. impact factor: 3.3, Number of Citations: **13**
58. Kolpashchikov D.M., Khodyreva S.N., Khlimankov D.Y., Wold M.S., Favre A., Lavrik O.I.* (2001) Polarity of human replication protein A binding to DNA. *Nucleic Acids Research*, 29, 373-379. J. impact factor: 8.0, Number of Citations: **98**
59. Zakharenko A.L., Kolpashchikov D.M., Khodyreva S.N., Lavrik O.I., Menéndez-Arias L.* (2001) Investigation of the dNTP-binding site of HIV-1 reverse transcriptase using photoreactive analogs of dNTP. *Biochemistry (Moscow)*, 66, 999-1007. J. impact factor: 1.0, Number of Citations: **6**

60. Khlimankov D.Iu., Rechkunova N.I., Kolpashchikov D.M., Petruseva I.O., Khodyreva S.N., Favre A., Lavrik O.I.* (2001) Interaction of human replication protein A with DNA-duplexes, containing gaps of varying sizes. *Molecular biology (Moscow)*, 35, 827-835. J. impact factor: 0.6, Number of Citations: **8**
61. Khlimankov D.Y., Rechkunova N.I., Kolpashchikov D.M., Khodyreva S.N., Lavrik O.I.* (2001) Affinity labeling of flap-endonuclease FEN-1 by photoreactive DNAs. *Biochemistry (Moscow)*, 66, 733-739. J. impact factor: 0.6, Number of Citations: **5**
62. Khlimankov D.Iu., Petruseva I.O., Rechkunova N.I., Belousova E.A., Kolpashchikov D.M., Khodyreva S.N., Lavrik O.I.* (2001) Preparation of photoreactive oligonucleotide duplexes and their application for photoaffinity modification of DNA-binding proteins. *Russian Journal of Bioorganic Chemistry*, 27, 205-209. J. impact factor: 0.6, Number of Citations: **7**
63. Rechkunova N.I., Kolpashchikov D.M., Lebedeva N.A., Petruseva I.O., Dobrikov M.I., Degtyarev S.K., Lavrik O.I.* (2000) Highly selective affinity labeling of DNA-polymerase from *Thermus thermophilus* B35 by a binary system of photoreactive agents. *Biochemistry (Moscow)*, 65, 244-249. J. impact factor: 0.6, Number of Citations: **15**
64. Kolpashchikov D.M., Pestryakov P.E., Wlassoff W.A., Khodyreva S.N., Lavrik O.I.* (2000) Study of interaction of human replication factor A with DNA using new photoreactive analogs of dTTP. *Biochemistry (Moscow)*, 65, 160-163. J. impact factor: 0.6, Number of Citations: **9**
65. Kolpashchikov D.M., Khodyreva S.N., Lavrik O.I.* (2000) Replicative protein A exhibits a specific polarity in binding single-stranded DNA. *Doklady Akademii Nauk*, 372, 824-826. J. impact factor: 0.3, Number of Citations: **2**
66. Kolpashchikov D.M., Ivanova T.M., Bogachev V.S., Nasheuer H.-P., Weisshart K., Favre A., Lavrik O.I.* (2000) Synthesis of base-substituted dUTP analogues carrying a photoreactive group and their application to study human replication protein A. *Bioconjugate Chemistry*, 11, 445-451. J. impact factor: 4.9, Number of Citations: **23**
67. Kolpashchikov D.M., Alexandrova L.A., Zakirova N.F., Khodyreva S.N., Lavrik O.I.* (2000) Synthesis of photoreactive analog of 2',3'-dideoxyuridine-5'-triphosphate and its usage for photoaffinity modification of human replication factor A. *Russian Journal of Bioorganic Chemistry*, 26, 134-137. J. impact factor: 0.6, Number of Citations: **2**
68. Lavrik O.I., Kolpashchikov D.M., Weisshart K., Nasheuer H.-P., Khodyreva S.N., Favre A.* (1999) RPA subunit arrangement near the 3'-end of the primer is modulated by the length of the template-strand and cooperative protein interactions. *Nucleic Acids Research*, 27, 4235-4240. J. impact factor: 8.0, Number of Citations: **73**
69. Kolpashchikov D.M., Zakharenko A.L., Dezhurov S.V., Rechkunova N.I., Khodyreva S.N., Degtyarev S.Kh., Litvak V.V., Lavrik O.I.* (1999) New reagents for directed modification of biopolymers: photoaffinity modification of Tte DNA polymerase. *Russian Journal of Bioorganic Chemistry*, 25, 110-117. J. impact factor: 0.6, Number of Citations: **25**
70. Kolpashchikov D.M., Weisshart K., Nasheuer H.-P., Khodyreva S.N., Fanning E., Favre A., Lavrik O.I.* (1999) Interaction of the p70 subunit of RPA with a DNA template directs p32

to the 3'-end of nascent DNA. *FEBS Letters*, 450, 131-134. J. impact factor: 3.3, Number of Citations: **32**

71. Godovikova T.S., Kolpashchikov D.M., Orlova T.N., Richter V.A., Ivanova T.M., Grochevsky S.L., Nasedkina T.V., Poletaev A.I.* (1999) 5-{3-[N-(4-Azido-2,3,5,6-tetrafluorobenzoyl)-amino]-trans-propenyl-1}-2'-deoxyuridine-5'-triphosphate substitutes for thymidine-5'-triphosphate in the polymerase chain reaction. *Bioconjugate Chemistry*, 10, 529-537. J. impact factor: 4.9, Number of Citations: **32**
72. Kolpashchikov D.M., Rechkunova N.I., Dobrikov M.I., Khodyreva S.N., Lebedeva N.A., Lavrik O.I.* (1999) Sensitized photomodification of mammalian DNA polymerase beta. A new approach for highly selective affinity labeling of polymerases. *FEBS Letters*, 448,141-144. J. impact factor: 3.3, Number of Citations: **25**
73. Morozova O.V., Kolpashchikov D.M., Ivanova T.M., Godovikova T.S.* (1999) Synthesis of new photocross-linking 5-C-base-substituted UTP analogs and their application in highly selective affinity labelling of the tick-borne encephalitis virus RNA replicase proteins. *Nucleosides & Nucleotides*, 18, 1513-1514. J. impact factor: 1.1, Number of Citations: **11**
74. Lavrik O.I.*, Kolpashchikov D.M., Nasheuer H.P., Weisshart K., Favre A. (1998) Alternative conformations of human replication protein A are detected by crosslinks with primers carrying a photoreactive group at the 3'-end. *FEBS Letters*, 441, 186-190. J. impact factor: 3.3, Number of Citations: **29**
75. Nasedkina T.V., Mal'kov R.B., Fedorova L.I., Godovikova T.S., Kolpashchikov D.M., Poletaev A.I.* (1998) Use of photo-anchoring of DNA probes for fluorescent in situ hybridization. *Tsitologiya*, 40, 763-767. J. impact factor: 0.5, Number of Citations **3**

2.3.4. Non-peer reviewed invited highlight and commentary papers (3)

76. Kolpashchikov D.M.* (2014) 'Methods in Molecular Biology, Vol. 1094: Functional Analysis of DNA and Chromatin Edited by Juan Carlos Stockert, Jesús Espada and Alfonso Blázquez-Castro'. A book review. *ChemBioChem*, 15, 2469-2470. J. impact factor: 3.9, Number of Citations: **0**
77. Gerasimova Y.V., Kolpashchikov D.M.* (2010) Nucleic acid detection using MNAszymes. *Chemistry & Biology*, 17, 104-106. J. impact factor: 5.9, Number of Citations: **23**
78. Kolpashchikov D.M.* (2009) Triple-stem DNA probe: a new conformationally constrained probe for SNP typing. *ChemBioChem*, 10, 1443-1445. J. impact factor: 3.9, Number of Citations: **9**

2.3. CONFERENCE PROCEEDINGS (5)

1. Bengtson H. N., Geden S., Sidders A., Kolpashchikov D. M., Kyle R. 2017 Translational Tools for Diagnostics and In Vivo Drug Testing of Non-Tuberculous Mycobacteria (NTM). American Society of Microbiology 103rd Southeastern Branch Annual Meeting. Nov 11, 2017.
2. Kolpashchikov D. M.* (2017) Nucleic Acid Analysis Using Multifunctional Hybridization Sensors. *Proceedings*, 1, 773.

2. East K. E., Dupras T. L.,* Chumbimuni-Torres K., Williams L., Kolpashchikov D. M. A (2015) Multidisciplinary Approach to Analyzing Sex and Gender in the Ancient World using aDNA and Stable Isotope Analysis: A Pilot Study from the Dakhleh Oasis, Egypt. *American Journal of Physical Anthropology*, 156, 126. Number of Citations: **0**
3. Bayryamov S. G.,* Danalev D. L., Kolpashchikov D. (2014) Synthesis in solution of a matrix heptapeptide as template for the peptide-assisted deoxyribozyme technology. *Journal of peptide science*, 20, S156-157. Number of Citations: **0**
4. Kolpashchikov D.M.* (2007) Binary probes for selective nucleic acid recognition *Journal of Biomolecular Structure & Dynamics* 24, 736. Number of Citations: **0**
5. Godovikova T. S.,* Kolpashchikov D. M., Orlova T. N., Richter V. A. (1997) New photoreactive deoxynucleoside-5'-triphosphates substitutes for thymidine-5'-triphosphate in the polymerase chain reaction. *FASEB journal* 11, A1367. Number of Citations: **8**

2.4. PRESENTATIONS (Presenters are underlined)

2.4.1. Invited conference presentations (4)

1. Kolpashchikov D. M. (2017) Nucleic Acid Analysis Using Multifunctional Hybridization Sensors The 5th International Symposium on Sensor Science will take place from 27–29 September 2017 in Barcelona, Spain. **Invited oral presentation**
2. Gerasimova Y. V., Stancescu M., Rohde K. H., Kolpashchikov D. M. (2015) Multicomponent 'Smart' Sensors for DNA and RNA Analysis. 98th Canadian Chemistry Conference and Exhibition Ottawa, June 13-17, 2015. **Keynote talk**
3. Kolpashchikov D. M. (2015) DNA nanotechnology for nucleic acid analysis: the advantages of nanostructured sensors and logic gates' June 13-17, 2015, 2015 International Symposium on Smart-Sensing Technology (ISST) and 20th Symposium of Association for chemical Sensors in Taiwan, Chang Gung University, Taiwan, June 5, 2015. **Plenary Lecture**
4. Kolpashchikov D. M. (2007) Binary probes for selective nucleic acid recognition. Nucleic acid based technologies meeting the demands. Baltimore, Maryland. **Invited oral presentation**

2.4.2. Contributed conference presentations (49, presenters are underlined)

1. Wathiong B., Lohrmann C., Nelissen I., Kolpashchikov D. M., Hooyberghs J. Aptamer-based surface functionality for fluorescent detection of the intracellular localization of nanoparticles “Aptamers in Bordeaux” in September 2017
2. Kolpashchikov D. M. Multifunctional DNA nanomachine for diagnostics and therapy. All-Russian conference with international participation «Biotechnology for medicine of the future” (Molecular medicine - Tomorrow’s day) July 24-26, 2017, Novosibirsk, Russia. **Oral Presentation.**

3. Kolpashchikov D. M. 'DNA-based machines for analysis and cleavage of specific RNA' Nucleic acids Gordon Research Conference. June 4-9 2017, Biddeford, ME, US. Poster presentation.
4. Ledezma C. E., Kolpashchikov D. M. (2017) Design and Synthesis of Two Component Covalent Inhibitors (TCCIs) for Inactivation of DNA Polymerases. American Chemical Society Florida Annual Meeting and Exhibition (FAME). May 4-6 2017, Tampa, FL. Poster presentation
5. Smith A.L., Kolpashchikov D. M. (2017) Sex determination of human remains using LAMP amplified Amelogenin gene and a deoxyribozyme sensor. American Chemical Society Florida Annual Meeting and Exhibition (FAME). May 4-6 2017, Tampa, FL. Poster presentation
6. Fedotova T. A. Kolpashchikov D.M. (2017) Creating DNA computer: five integrated NAND gates with half-adder function. FNANO17, April 10-13, 2017, Snowbird, Utah
7. Kikuch N., Kolpashchikov D. M. (2017) Label-Free Aptamer Sensor for Detecting Sequence Specific Nucleic Acid. *ACS National Meeting & Exposition*, April 2-6, 2017, San Francisco, CA
8. Smith A.L., Kolpashchikov D. M. (2017) Sex determination of human remains using LAMP amplified Amelogenin gene and a deoxyribozyme sensor. *ACS National Meeting & Exposition*, April 2-6, 2017, San Francisco, CA
9. Mills D., Kolpashchikov D. M., Chumbimuni-Torres K. Y. (2017) A Universal and Highly Selective Four-Way Junction Electrochemical Nucleic Acid Sensor. *PITTCON conference and expo 2017*, Feb 26 - Mar 1, 2018, Orlando, FL
10. Bengtson H. N., Hodges H., Sidders A., Homolka S., Niemann S., Reis A. J., da Silva P. E. A., Kolpashchikov D. M., Rohde K. Development of TB Diagnostics using Deoxyribozyme Sensors. Keystone Symposia, January 2017, Vancouver, Canada. Poster Presentation
11. Fedotova T. A. Kolpashchikov D.M. (2016) Creating DNA Computer: Half-Adder using DNA logic gates, *NanoFlorida 2016*, September 25-26, 2016, University of Central Florida, Orlando
12. Kikuch N. Kolpashchikov D.M. (2016) Split aptamer for fluorescent analysis of specific nucleic acids, *NanoFlorida 2016*, September 25-26, 2016, University of Central Florida, Orlando
13. Bengtson H. N., Hodges H., Sidders A., Homolka S., Niemann S., Reis A. J., da Silva P. E. A., Kolpashchikov D. M., Rohde K. Development of TB Diagnostics using Deoxyribozyme Sensors. Lake Nona Medical Research Day, Guidewell UST Global Innovation Center, Orlando, Florida. Poster Presentation. October 2016
14. Bakshi S., Guz N., Zakharchenko A., Tumanov A., Woodworth C. D., Kolpashchikov D. M., Minko S., Katz E. (2016) A Magnetic-Field Assisted Sensor for Live Cell mRNA Detection. *Gordon Research Conference on Bioanalytical Sensors*, June 26 - July 1, 2016 Salve Regina University Newport, RI

15. Kikuchi N., Kolpashchikov D. M. (2016) Label Free Aptamer Sensor for Detecting Sequence Specific Nucleic Acid. *Biosensors 2016*, the 26th Anniversary World Congress on Biosensors in Gothenburg, May 25-27, 2016, Gothenburg, Sweden
16. Karadeema R., Steidl T., Kolpashchikov D. M. (2016) Direct Probing of Nucleic Acid Structures by Hybridization Based Probes. *Biosensors 2016*, the 26th Anniversary World Congress on Biosensors in Gothenburg, May 25-27, 2016, Gothenburg, Sweden
17. Ledezma C., Kolpashchikov D. M. (2016) Synthesis of Azido dTTP Analogs for Biological Applications. *American Chemical Society Florida Annual Meeting and Exhibition (FAME)*. May 5-7 2016, Tampa, Fl. Poster presentation
18. Kikuchi N., Kolpashchikov D. M. (2016) Binary aptamer for instant fluorescent analysis of specific nucleic acid in vitro. *The 251st ACS National Meeting & Exposition meeting*, March 13-17, 2016, San Diego, CA
19. Karadeema R. and Kolpashchikov D. M. (2016) DNA nanotechnology for nucleic acid analysis: smart nanostructured sensors for Probing of Nucleic Acid Structures. *The 251st ACS National Meeting & Exposition*, March 13-17, 2016, San Diego, CA
20. Mills D., Pinzon J., Calvo-Marzal P, Kolpashchikov D.M., Chumbimuni-Torres K.Y. (2016) ‘Signal Amplification of a Highly Selective Universal MicroRNA Electrochemical Sensor for Single Nucleotide Polymorphism Detection’ *Pittcon 2016 Conference and Expo*, March 6 - 10, 2016, Atlanta, GA USA
21. Bakshi S., Guz N., Zakharchenko A., Kolpashchikov D. M., Minko S., Katz E. (2015) ‘Overcoming the Diffusional Limit: Controlled DNA delivery and detection triggered by magnetic field.’ *Magnetically Stimulated Soft Materials Conference*. Monday, May 11-12, 2015, University of Georgia
22. Kikuchi N., Kuguoglu E., Kolpashchikov D. M. (2015) ‘Development of aptameric sensors for detection prostate cancer.’ *2015 Annual FAME Conference*, May 7-9, 2015
23. Stancescu M., Kolpashchikov D. M. (2015) ‘Binary DNA sensors for single nucleotide polymorphisms detection.’ *2015 Annual FAME Conference*, May 7-9, 2015
24. Karadeema R. J., Koculi E., Kolpashchikov D. M. (2015) ‘General method for analysis of nucleic acid structures by deoxyribozyme sensors.’ *249th ACS National Meeting & Exposition*, March 22-26, 2015, Denver, CO
25. Bengtson H. N., Rohde K. H., Kolpashchikov D. M. (2014) ‘Development and optimization of deoxyribozyme sensors for point-of-care diagnostics of Mycobacterium tuberculosis.’ *The Southeastern Microbiology Summit*, September 5-7, 2014, Ponte Vedra Beach Sawgrass Marriott Resort
26. Kolpashchikov D. M., Gerasimova Y. V., Bengtson H. N., Cornett E. M., Labib M., Berezovski M. V. (2014) DNA crossover-based smart sensors for nucleic acid analysis, *Biosensors 2014*, May 27-30, 2014. Melbourne, Australia. Oral presentation

27. Gerasimova Y. V., Bengtson H. N., Rohde K. H., Kolpashchikov D. M. (2014) Smart Deoxyribozyme Sensors for POC Detection of Pathogenic Bacteria. *Biosensors 2014*, May 27-30, 2014. Melbourne, Australia. Poster presentation
28. O'Steen M. R., Cornett E. M., Kolpashchikov D. M. (2014) Resetting DNA logic gates using lambda exonuclease. *American Chemical Society Florida Annual Meeting and Exhibition (FAME)*. May 8-10 2014, Tampa, FL. Poster Presentation. [This presentation won 3rd place](#)
29. Bengtson H. N., Gerasimova Y. V., Rohde K.H, Kolpashchikov D. M. (2014) Detection of mycobacteria species using multicomponent DNA sensors. *American Chemical Society Florida Annual Meeting and Exhibition (FAME)*. May 8-10 2014, Tampa, FL. Oral Presentation
30. Stines M., Solomon J. A., Ramshaw B., Kolpashchikov D. M., Lewis S., Domozych R., Bég S. (2014) Role of Molecular Mimicry in SLE Immune Complex Disease. *Translational Science Meeting*. Washington DC, April 2014. Poster Presentation
31. Nierenberg D., Gerasimova Y. V., Kolpashchikov D. M., Rohde K. H. (2014) Detection of SNPs in *Mycobacterium tuberculosis* using MNzyme technology. *5th Southeastern Mycobacteria Meeting*, Jan. 24-26, 2014. University of Alabama at Birmingham, Birmingham, AL, USA. Poster presentation
32. Bengtson H. N., Gerasimova Y. V., Rohde K. H., Kolpashchikov D. M. (2014) Nanosensors for the detection and differentiation of Mycobacteria species. *5th Southeastern Mycobacteria Meeting* Jan. 24-26, 2014. University of Alabama at Birmingham, Birmingham, AL, USA. Oral presentation
33. Gerasimova Y. V., Cornett E., O'steen M., Campbell E., Kolpashchikov D. M. (2013) Connectable DNA logic gates based on crossover tiles. *DNA19*, Sept 22-27, Arizona State University, Tempe. Poster presentation
34. Gerasimova Y. V., Kolpashchikov D. M. (2013) DNA logic gates assembled on a two-dimensional DNA scaffold. *DNA19*, Sept. 22-27, 2013. Arizona State University, Tempe. Poster presentation
35. Cornett E. M., Ledezma C., Babilonia J., Gerasimova Y. G, Kolpashchikov D. M. (2013) Two-component covalent inhibitors: an approach to specific inactivation of biopolymers. *American Chemical Society Florida Annual Meeting and Exhibition (FAME)*. May 9-11 2013, Tampa, FL. Oral presentation
36. Gerasimova Y. V., Cornett E. M., Rohde K. H., Kolpashchikov D. M. (2013) Deoxyribozyme cascade for visual detection of mycobacteria. *American Chemical Society Florida Annual Meeting and Exhibition (FAME)*. May 9-11 2013, Tampa, FL. Oral presentation
37. Bengtson H. N., Kolpashchikov D. M. (2013) A differential fluorescent receptor for the analysis of nucleic acids. *American Chemical Society Florida Annual Meeting and Exhibition (FAME)*. May 9-11 2013, Tampa, FL. Poster presentation

38. Ledezma C., Cornett E.M., Kolpashchikov D.M. (2013) Design and Synthesis of Two Component Covalent Inhibitors (TCCIs) for Inactivation of DNA Polymerases. *American Chemical Society Florida Annual Meeting and Exhibition (FAME)*. May 9-11 2013, Tampa, FL. Poster presentation. [This presentation won 3rd place](#)
39. Kolpashchikov D. M., Gerasimova Y. V., Cornett E. M., Bengtson H. N. (2013) DNA crossover tiles for nucleic acid analysis and molecular computation. *FNANO13*, April 15-18, 2013, Snowbird Cliff Lodge, UT. Poster presentation
40. Cornett E. M., Ledezma C., Babilonia J., Gerasimova Y. G, Kolpashchikov, D. M. (2013) Two-component covalent inhibitors. *8th Annual Drug Discovery Chemistry*. April 16-18 2013, San Diego, CA. Poster presentation
41. Kolpashchikov D. M., Gerasimova Y. V., (2012) Detection of bacterial 16S rRNA using an MB-based tricomponent probe. *Biosensors 2012*, Cancun, Mexico, May 2012. Poster presentation
42. Adina-Zada A., Kolpashchikov D., Jitrapakdee S., Zeczycki T. N., Maurice M., Cleland W. W., Wallace J. C., Attwood P. V. (2012) 'Elementary stages of the overall reaction of pyruvate carboxylation catalysed by metabolic enzyme pyruvate carboxylase'. *VIII International Voevodsky Conference*, July 15-19, 2012 Novosibirsk, Russia
43. Kolpashchikov D. M., Gerasimova Y. V., Cornett E. (2011) Deoxyribozyme sensors for nucleic acid analysis: *Albany 2011, 17th conversation*. June 14-18, 2011, SUNY at Albany. Poster presentation
44. Adina-Zada A., Kolpashchikov D., Jitrapakdee S., Zeczycki T. N., St. Maurice M, Cleland W. W., Wallace J.C., Attwood P.V.* (2011) Allosteric regulation of pyruvate carboxylase by acetyl CoA. *ComBio2011*, 25-29 September 2011, Cairns, Queensland, Australia. Poster presentation
45. Gerasimova Y. V., Cornett E., Kolpashchikov D.M. (2010) Fluorescent RNA cleaving deoxyribozyme sensor for nucleic acid analysis: the limit of detection. *Biosensors 2010: 20th Anniversary World Congress on Biosensors*. 26-28 May 2010, Glasgow, UK
46. Kolpashchikov D. M. (2007) Binary probes for selective nucleic acid recognition. *Albany 2007 15th Conversation*. SUNY at Albany, NY. Poster presentation
47. Kolpashchikov D. M., Stojanovic M.N. (2005) Direct coupling of computation and binding in molecular devices. *Engineering a DNA World*. California Institute of Technology Rock Auditorium, Pasadena, CA. Poster presentation
48. Kolpashchikov D. M., Lebedeva N. A., Rechkunova N. I., Lavrik O. I. (2001) Binary system of photoaffinity reagents for highly selective modification of DNA polymerase. *All-Russia School for Young Scientist "Actual Problems of Organic Chemistry"*, Novosibirsk, Russia. Oral presentation
49. Kolpashchikov D. M., Nasheuer H.-P., Weisshart K., Ivanova T. M., Favre A., Lavrik O. I. (1998) Synthesis of base-substituted dUTP analogs carrying a photoreactive group and their application to study human replication protein A. *International Conference on Natural*

Products and Physiological Active Substances (ICNPAS-98), Novosibirsk, Russia. Oral presentation

4.4.3. Invited seminars (11)

1. 'From Hybridization Probes to DNA Nanorobots', University of North Carolina Charlotte, October 26, 2017, host **Kirill Afonin**
2. 'Molecular computation and DNA based logic gates' UCF, ACS association, March 28, 2017, host **Rayan Sapia**
3. 'DNA Nanotechnology for Biosensing and Molecular Robotics' UCF, Orlando, Biophysics seminar March 22, 2017, host **Suren Tatulian**
4. 'Development of Nanosensors and Molecular Robots Based on DNA Nanotechnology' ITMO, Saint Petersburg, Russia, December 22, 2016, host **Vladimir Vinogradov**
5. 'Design and application of 'smart' hybridization probes for disease diagnosis' National Chiao Tung University, Hsinchu City, Taiwan, June 5, 2015, host **Min-Chieh (Eric) Chuang**
6. 'Two-component approach for recognition of nucleic acids and proteins: Applications in molecular diagnostics and drug design', New Jersey Institute of Technology, Newark, NJ, February 26, 2015, host **Edgardo T. Farinas**
7. 'Two-component approach for recognition of nucleic acids and proteins: Applications in molecular diagnostics and drug design', Clarkson University, Potsdam, NY, March 9, 2015, host **Phillip Christiansen**
8. 'DNA nanotechnology and nucleic acid analysis' Daytona State College, Daytona Beach, FL, January 29, 2014, host **Gajendra Tulsian**
9. 'Two-component approach for recognition of proteins and nucleic acids: application in drug design and molecular diagnostics' Arizona State University, Tempe, March 1st, 2013, host **Sidney Hecht**
10. 'Two-component approach for recognition of proteins and nucleic acids: application in drug design and molecular diagnostics' University of Central Florida, Orlando, February 22nd 2013, host **Kyle H. Rohde**
11. 'Binary probes for quantitative PCR' University of Medicine & Dentistry of New Jersey, NJ, USA, February 2009, host **Fred R. Kramer**

2.4. EXTRAMURAL GRANTS

2.5.1. Current (4)

1. 2017-19 – NSF, 'A universal nucleic acid recognition platform for detection of pathogenic bacteria' co-PI, 11.9%, \$199,923.00
2. 2017-18 – Florida Department of Health, 'A Universal Nucleic Acid Recognition Platform for Detection of Zika Virus' co-PI, 20.0%, \$216,580.00
3. 2016-18 – NSF CCF 1423219 'REU: Toward a DNA Nanoprocessor: Optimization of Tile-Associated DNA Circuits.' PI, 100%, \$32,000.00
4. 2014-18 – NSF CCF 1423219 'Toward a DNA Nanoprocessor: Optimization of Tile-Associated DNA Circuits.' PI, 100%, \$293,520.00

2.5.2. Completed (9)

1. 2013-17 – NIH R15AI103880 'Deoxyribozyme sensor-based diagnostics for *Mycobacterium tuberculosis*.' PI, 47%, \$429,965.00
2. 2013-14 – NSF CCF 1117205 'REU: Connectable Nanoscale DNA Logic Gates'. PI, 100%, \$14,800.00
3. 2011-14 – NSF CCF 1117205 'Connectable Nanoscale DNA Logic Gates.' PI, 100%, \$299,999.00

4. 2012-13 – BioDetection Instruments LLC ‘A Binary Probe-Based DNAzyme Cascade for Rapid Detection of MRSA/MSSA.’ PI, 100%, \$78,069.00
5. 2010-11 – NIH ‘Deoxyribozyme technology for nucleic acid analysis.’ 3R21HG004060-03S1. PI, 100%, \$195,000.00
6. 2009-10 – Intelligent Automation, Inc. ‘A miniature RFID sensor for biological warfare agents (BWA).’ Subcontractor, 100%, \$55,000.00
7. 2006-08 – NIH, ‘Deoxyribozyme technology for nucleic acid analysis.’ R21 HG004060. PI, 100%, \$399,000.00
8. 2000-02 – Russian Foundation for Basic Research (00-0449309). “Selective inactivation of human immunodeficiency virus reverse transcriptase.” PI, 100%, \$3,000.00 (estimated after conversion from rubles)
9. 2000-01 – Scientific Project of Young Scientists Program Siberian “Binary photoreagent for highly selective labeling of DNA polymerases.” Division of Russian Academy of Science. PI, 100%, \$2,000.00 (estimated after conversion from rubles)

2.5.3. Instrumental grants (1)

1. 2016 – MSF ‘MRI: Acquisition of a Cathodoluminescence Microscope for Device Testing, Materials Research and Education’ total \$1,050,000.00, Co-PI, (16.6 %, \$174,300.00)

2.6. IN HOUSE GRANTS (3)

1. 2014-15 – UCF-COM Grant Identifying the genetic sequence and source of the DNA antigenic component of the anti-DNA immune complexes in systemic lupus erythematosus in order to establish the role of exogenous antigens evoking molecular mimicry response in human SLE disease pathogenesis co-PI, 90%, PI Dr. Shazia Beg \$10,000.00
2. 2013-14 – NTN COM Novel Diagnostic and Drug Discovery Platforms for Nontuberculous Mycobacteria. (Seed grant from UCF College of Medicine) co-PI 14%, PI Dr. Kyle Rohde \$ 50,000.00
3. 2013 – University of Central Florida. ‘Major Research Equipment - Acquisition of a Liquid Chromatography Mass Spectrometry (LC-MS)’ PI, \$99,996.00

2.7. PATENTS (6)

1. Katz J., Kolpashchikov D. M. (2015) Method of detecting single nucleotide polymorphisms ID 31797, US Patent 9,121,053, awarded to UCF Sep. 1, 2015
2. Gerasimova Y. V., Kolpashchikov D. M. (2014) Binary Probe System for Sensitive Detection of Target Analysis. US Patent 8,859,266, awarded to UCF Oct. 14, 2014
3. Kolpashchikov D. M. (2014) Microarrays of binary nucleic acid probes for detecting nucleic acid analytes. US Patent 8,853,134, awarded to Columbia University
4. Kolpashchikov D. M. (2013) A split DNA enzyme for visual single nucleotide polymorphisms typing. US Patent 8,551,768, awarded to Columbia University
5. Kolpashchikov D. M. (2013) Binary deoxyribozyme probe for highly selective and highly sensitive nucleic acid analysis. US Patent 8,354,227, awarded to Columbia University
6. Kolpashchikov D. M. (2012) Binary probes for fluorescent analysis of nucleic acids. US Patent 8,313,903, awarded to Columbia University

3. TEACHING AND ADVISING

3.1. REGULAR COURSES (6 courses, ~ 3135 students)

- 2015-Present – BCH 6740.0W61 Advanced Biochemistry a webcourse for graduate students. Taught 2 session for the total of **34** students.
- 2013-2014 – Biochemistry II BCH 4054, Chemistry Department, University of Central Florida, Orlando, FL, USA. Taught 2 sessions for the total of **114** students
- 2008-Present – Biochemistry I BCH 4053, Chemistry Department, University of Central Florida, Orlando, FL, USA. Taught 15 sessions for the total of **2798** students
- 1996-97 – Biochemistry, discussion section, Department of Molecular Biology, Novosibirsk State University, Novosibirsk, Russia. Taught 2 sessions for **29** students
- 1996-98 – Organic chemistry, discussion section and laboratory practice, Department of Organic Chemistry, Novosibirsk State University, Novosibirsk, Russia, Taught 2 sessions for ~ **40** students
- 1992-97 – Organic chemistry, lecture course, Department of Chemistry, Specialized Training-Scientific Center, Novosibirsk, Russia. Taught 3 sessions for about ~**120** students

3.2. GRADUATE ADVISEES

3.2.1. PhD students (9 students)

2017-present –Tatiana A. Fedotova; 2016-present Martin O'steen (Chem. UCF); Ola Kamar (Chem. UCF); 2013-Present – Nanami Kikuchi (Chem. UCF).

Completed:

1. 2011-2017 – Carlos Ledezma, (Chem, UCF)
2. 2012-2017 – Hillary Bengtson (Molbio, UCF)
3. 2015-2017 – Alexandra Smith (Chem, UCF), Phenomenex, a technical sales consultant
4. 2014-15 – Maria Stancescu (Chem, UCF), currently at Intel Corporation Portland, Oregon
5. 2011-15 – Evan Cornett (Molbio, UCF), currently postdoctoral researcher at Van Andel Institute, Michigan

3.2.2. MS students (2)

Current: None

Completed:

1. 2015-16 –Rebekah Karadeema (Chem, UCF), currently a PhD student, Scripps Research Institute, San Diego, California
2. 2010-12 – Evan Cornett (Molbio, UCF) currently a postdoctoral researcher at Van Andel Institute, Michigan

3.2.3. Graduate Advisees Awards (5)

2016 – **Hillary Bengtson** won 2nd place at 11th Annual BSBS Graduate Research Symposium for her poster presentation

2015 – Best poster award by **Nanami Kikuchi** at the ‘National conference for Prostate Cancer, June 22-24, 2015, Florida

2014 – 3rd place in poster competition received by **Carlos Ledezma** at the American Chemical Society Florida Annual Meeting and Exhibition (FAME). May 8-10, 2014, Tampa, FL

2013 – 3rd place in poster competition received by **Carlos Ledezma** at the American Chemical Society Florida Annual Meeting and Exhibition (FAME). May 9-11, 2013, Tampa, FL

2013 – Graduate Research Excellence Fellowship awarded to **Evan Cornett**

3.3. UNDERGRADUATE ADVISEES

3.3.1. Undergraduate research advisees (55; underlined are 13 students each of which co-authored at least one research publication as an undergraduate student)

Current Tyler Steidl (MilBio, UCF), Sophia Bertot (MilBio, UCF), Marcella Grillo (Chem, UCF), Christopher Roldan (MilBio, UCF), Brittany Mueller (UCF, chemistry).

Completed: Sergey Dezhurov (Chem., Novosibirsk State University), Alex Lake (Molbio., UCF), Evan Cornett (Molbio., UCF), Stephen Shang (Molbio, UCF), Mohamed Khan (Molbio., UCF), Emily Moore (Edwards) (Molbio., UCF), Nahim Dewan (Molbio., UCF), Aaron Hayson (Molbio., UCF), Ryan Adreozzi (Chem., UCF), Jeffrey Grimes (Chem., UCF), Jamie Moore (Chem., UCF), Tonia Patch (Molbio, UCF), Cvetelina Petrov (Chem, UCF), Colleen Robinson (Molbio., UCF), Camha Nguyen (Molbio, UCF), Bradley Campagna, (Molbio., UCF), Kristina Rodriguez (Molbio., UCF), Aleks Kovalskiy (Molbio., UCF), Noor Bawaney (MolBio., UCF), Aisha Bawaney (MolBio., UCF), Jasmine Thomas (MolBio, UCF), Joanny Babilonia (MolBio, UCF), George Gulenay (Molbio, UCF), Hillary Bengtson (Molbio, UCF), Eleanor Campbell (Chem., UCF), Jessica Dorfman (MolBio., UCF), Ryan Whelen (MolBio, UCF), Kathryne Young (Chem., UCF), Daniel Nierenberg (Bioengineering, UCF), Alexey Goloubev (MolBio, UCF), Tyler Pontius (Chem., UCF), Diego Campos (MolBio, UCF), Evan Khoshnou (Interdisciplinary, UCF), Elif Kuguoglu (MolBio, UCF), Michael Mitchell (Chem., UCF), Aijana Leonard (Chem., UCF), Rebekah J. Karadeema (Chem., UCF), Felix Sosa (Chem., UCF), Nicole Parada (MolBio, UCF), Martin O'steen (MolBio, UCF), Courtney Powell (Chem., UCF), Brett Martini (Chem., UCF), Brooke Bayless (Chem., UCF), Derek Miller, (Chem., UCF), Amanda J. Cox (Chem, MolBio, UCF), Enrique J. Blanco (Chem. UCF), Elliot Williams (Chem. UCF), Houssine Ikhlef (Biol., UCF), Tyler Martin (Chem, UCF); Tatiana A. Fedotova (Molden) (Chem, UCF),

3.3.2. Undergraduate advisees' awards (12)

2017 – Distinguished Undergraduate Researcher Award, July 2017 awarded to **Tatiana A. Fedotova**

2016 – Department of Chemistry's nominee for a 2017 Founders' Day Award to **Tatiana A. Fedotova** (December 8, 2016)

2016 – Best Poster Presentation awarded to **Tatiana A. Fedotova** at NanoFlorida 2016 science and Technology Conference September 25, 2016, UCF, Orlando, Florida

2016 – 1st place at the Show of Undergraduate Research Excellence (SURE) awarded to **Amanda Cox** for her research presentation on April 7th, 2016

2016 – Honorable Mention at the Show of Undergraduate Research Excellence (SURE) awarded to **Brooke Bayless** for her research presentation on April 7th, 2016

2015 – 1st place at the Show of Undergraduate Research Excellence (SURE) awarded to **Rebekah Karadeema** for her research presentation on April 2th, 2015

2014 – NSF sponsored CAMP-YES program in the amount \$5,000 received by **Courtney Powell**

2014 – UCF LIFE OUR Gerontology Grants in the amount of \$500 was awarded to **Rebekah Karadeema**

2014 – 3rd place at the American Chemical Society Florida Annual Meeting and Exhibition (FAME) to **Martin O'Steen**. May 8-11, 2014, Tampa, FL

2014 – 1st place at the Show of Undergraduate Research Excellence (SURE) awarded to **Nicole Parada** for her research presentation on April 3th, 2014

2013 – 2nd place at the Show of Undergraduate Research Excellence (SURE) awarded to **Hillary Bengtson** for her research presentation on April 4th, 2013

2012 – UCF Founders Day award received by **Camha Nguyen** for her excellent achievements in undergraduate research

3.3.3. Honors in the major students (6)

2015-17 Enrique J. Blanco (MolBio, UCF); 2015–16, Derek Miller (MolBio, UCF); 2014-15 Amanda Cox (Chem, MolBio, UCF); 2013–14, Elif Kuguoglu (Molbio, UCF); 2012–13, Noor Bawaney (MolBio, UCF); 2010–11, Camha Nguyen (Molbio, UCF)

3.3.4. UCF Research & Mentoring Program (RAMP) (3)

2015-16 Tatiana Fedotova (Molden) (Chem, UCF); 2014–15 Courtney Powell (Chem., UCF)
2013–14 Nicole Parada (MolBio, UCF)

3.3.5. UCF Summer Undergraduate Research Fellowship (SURE) students (8)

2017 – Sophia Bertot (MilBio, UCF), Marcella Grillo (Chem, UCF), Christopher Roldan (MilBio, UCF); 2015 – Tatiana Fedotova-Molden (Chem, UCF); 2014 – Rebekah Karadeema, 2013 – Michael Mitchell (UCF); 2012 – Hillary Bengtson (Molbio., UCF); 2011 – Camha Nguyen (Molbio, UCF)

3.3.6. Advisor for Chemistry Research Reports (11)

2017 – Tatiana A. Fedotova (Molden), Tyler Martin, Elliot Williams; 2016 – Brett Martini, Courtney Powell; 2015- Rebekah Karadeema; 2014 – Tyler Pontius, Aijana Leonard; 2013 – Eleanor Campbell; 2010 – Ryan Adreozzi; Cvetelina Petrov

3.3.7. Supervising presentations at UCF show of undergraduate research excellence (SURE) (17)

2017 – Tatiana Fedotova (Molden), Houssine Ikhlef, Tyler Steidl & Sophia Bertot
2016 – Tatiana Fedotova (Molden), Amanda Cox, Courtney Powell, Brooke Bayless
2015 – Rebekah Karadeema, Amanda Cox, Michael Mitchell, Courtney Powell
2014 – Nicole Parada, Tyler Pontius, Elif Kuguoglu
2013 – Noor Bawaney, Hillary Bengtson, Nicole Parada

4. SEVICE

4.1. PROFESSIONAL SERVICE

4.1.1. Referee for 41 professional journals, IF - journal impact factor (total reviewed 210 papers)

Nature Nanotechnology (IF=35.3), Advanced Materials (IF=18.96), Journal of the American Chemical Society (IF=13.0), Cell Research (IF=12.4), Angewandte Chemie Int. (IF=11.4), Chemical Science (RSC) (IF=9.1), Nucleic Acid Research (IF=9.1), Small (IF=8.3), Nanoscale (IF=7.7), Biosensors & Bioelectronics (IF=7.5), ACS Applied Materials & Interfaces (IF=7.5) Chemical Communications (IF= 6.5), Organic Letters (IF=6.4), Analytical Chemistry (IF=5.6), Chemistry - A European Journal (IF=5.7), Journal of Materials Chemistry B (IF=4.9), Analytica Chimica Acta (IF=4.5), Analyst (IF=4.1), Sensors & Actuators B. Chemical (IF=4.1), Biomaterials Science, (IF=3.6), Organic & Biomolecular Chemistry (IF=3.6), Journal of Molecular Sciences (IF=3.2), PLoS one (IF=3.2), RSC Advances (IF=3.2), ChemBioChem (IF=3.1), Current Pharmaceutical Design (IF=3.1), Biochemistry (IF=3.0), ChemPlusChem (IF=3.0), the Journal of Physical Chemistry (IF=2.9), Bioorganic & Medicinal Chemistry (IF=2.7), Journal of Photochemistry and Photobiology (IF=2.4), Sensors (IF=2.0), Biochemical and Biophysical Research Communications (IF=2.3), Inorganica Chimica Acta (IF=2.0), Journal of Nanomaterials (IF=1.8), IET Nanobiotechnology (IF=1.6), International Journal of Environmental Analytical Chemistry (IF=1.4), Optical Engineering (IF=0.8), Journal of Nucleic Acids (IF=N/D), Molecular Therapy – Nucleic Acids (MTNA) (IF=N/D), African Journal of

Biotechnology (IF=N/D)

4.1.2. Grant proposal reviewer (total 55 proposals)

1. 2017 – NIH **5** proposals
2. 2017 – NSF, ad-hoc reviewer of **1** proposal
3. 2016 – NSF, **6** proposals
4. 2016 – NIH, **6** proposals
5. 2015 – NSF, **5** proposals
6. 2014 – The Innovation and Technology Commission (ITC), Hong Kong, **1** proposal
7. 2013 – NSF, **14** proposal
8. 2012 – NSF, **6** proposal
9. 2010 – NSF, **9** proposal
10. 2010 – The Natural Sciences and Engineering Research Council of Canada CRSNG, **1** proposal
11. 2009 – MITACS, Canadian not-for-profit research organization, **1** proposal
12. 2005 – Vienna Science and Technology Fund (WWTF), **1** proposal

4.1.3. PhD dissertation reviewer (total 4)

- 2018 – 1 for The University of the Sunshine Coast, Australia
- 2017 - 1 for The University of the Sunshine Coast, Australia
- 2016 - 1 for The University of the Sunshine Coast, Australia
- 2014 - 1 for The University of New South Wales, Australia

4.1.4. Book editor and reviewer

Invited Editor of *Methods in Molecular Biology Series*, Vol. 1039, ‘Nucleic acid detection’, Humana Press, 2013

4.1.5. Textbook reviewer

1. 2009-15 – ‘Biochemistry’ Berg, Tymoczko, Stryer, W.H. Freeman.
2. 2011-14 – ‘Lehninger Principles of Biochemistry’, Nelson D.L., Cox M.M., Freeman.
3. 2012 – ‘Fundamentals of Biochemistry’ Voet, Voet, Pratt, Wiley, 4th ed.
4. 2012 – ‘Biochemistry: The Molecular Basis of Life’ McKee T., McKee J., 5th ed. Oxford press.

4.2. SERVICE TO UCF

11.2.1. Serving for UCF Senate

2017 - present

11.2.2. Serving on Senate Budget and Administrative committees

2017 - present

11.2.3. UCF Radiation Safety committee

2013 - present

11.2.4. Mentor for NSF Site Visit Pitch Circles (organized by ORC)

2018 - 2 mentoring sessions for 3 junior faculties

2016 - 1 mentoring session for 2 junior UCF faculties

11.2.5. 2012-2015 - UCF Undergraduate Research Council

1. Reviewer of Undergraduate Student Research (OUR) grants: Fall 2014, Summer 2014, Spring 2013, Summer 2013, Spring 2012, Fall 2012
2. Reviewer of Summer Undergraduate Research Fellowship (SURF) grants: 2014, 2013, 2012
3. Summer Research Academy: June 13, 2014 lab tour; June 14, 2013, lab tour; June 22, 2012, a laboratory tour and a lecture

11.2.6. 2014-present BioMedical Ph.D. Program Graduate Advisory Committee

11.2.7. Judge of Showcase of Undergraduate Research Excellence (SURE): April 6, 2017, April 7, 2016; April 2, 2015; April 3, 2014; April 4, 2013; April 5, 2012

11.2.8. Participated in LEARN graduate mentoring program: 2012-13, 2013-14

4.3. SERVICE TO UCF COLLEGE OF SCIENCE

- 4.3.1. 2015 – present **COS Divisional Review Committee**
- 4.3.2. 2014-15 – **RIA committee** (research award making committee)
- 4.3.3. 2011-15 – **COS Dean’s Research Advisory Council**
- 4.3.4. 2011 – **Sharing grant submission experience with junior COS faculties**

4.4. SERVICE TO UCF CHEMISTRY DEPARTMENT

4.4.1. 2008-present – Chemistry departmental seminars. Service includes 6 research presentations, evaluation of students’ presentations, advising students

4.4.1.1. *Chemistry seminar presentation advisees (17)*

- 2017 – Tatiana A. Fedotova (Molden), Tyler Martin, Elliot Williams
- 2016 – Brooke Bayless, Brett Martini, Courtney Powell
- 2015 – Rebekah Karadeema, Nanami Kikuchi, Amanda Cox
- 2014 – Sean Doyle, Aijana Leonard, Kathryne Young
- 2013 – Tyler Pontius, Eleanor Campbell, Gesca Borchardt
- 2011 – Mirna Paul
- 2010 – Cvetelina Petrov, Ryan Adreozzi

4.4.1.2. *Lectures (total 7)*

- September 28, 2015 – ‘DNA Constructs for Molecular Computation and Analytical Applications’
- October 25, 2013 – ‘Smart Nanostructured Sensors for Point-of-Care Diagnostics’
- September 17, 2012 – ‘Evolution of Hybridization Assay From Southern Blot to DNA Computers’
- October 1, 2011 – ‘DNA nanotechnology’
- October 4, 2010 – ‘Binary Nucleotide Reagent for Inactivation of HIV Reverse Transcriptase’
- November 2, 2009 – ‘Binary Probes for Nucleic Acid Analysis’
- September 15, 2008 – ‘Oligonucleotide constructs for nucleic acid analysis and a DNA-based computer’

4.4.1.3. *Evaluation of students’ research reports (9)*

- 2014 – Kristen Tran, Jared Childs; 2013 – Andrew Towers, Elle Campbell, Shane Geffe; 2012 – Craig Mohn; 2010 – Ryan Adreozzi, Cvetelina Petrov, Jacquie Esquiaqui

4.4.1.4. *Faculty advisees in the frame of FIRST program (1)*

2012 – Present Dr. Chumbimuni-Torres

4.4.2. Departmental Committees

4.4.2.1. Faculty Search (6)

2015-16 – Chemistry Department Chair search committee
2014-15 – Chemistry Department Chair search committee
2014-15 – Lecturer search committee
2013-14 – Forensic Scientist and Toxicologist
2012-13 – Biochemistry
2011-12 – Organic Chemistry
2009-10 – NMR Specialist

4.4.2.2. 2014-present, Promotion and tenure committee

4.4.2.3. 2014, Lecturer promotion committee

4.4.3. Serving on graduate thesis committees (14)

PhD committees (9): 2016-2017 – Dawn Mills; 2015 Héctor J. Rivera Jacquez; 2015 Alexandra Smith; 2013-2016 Ana Carr; 2014 – Srijita Basumallick; 2013-2014 Astha Malhotra; 2013-2014 Eileen Sherman, 2012-2013 – Haining Wang; 2011-2012 – Zheng Shi; 2010-2011 – Warkalemahu Berhamu

MS committees (4): 2016 – Nicole Masker; 2015 – Katherine Farash; 2013 – Brittany Morgan; 2011 – Charly Parker

4.4.4. Serving on Honors in the Major (HIM) Committees (13)

2017 – Baggio Evangelista; 2016 – Michelle Cherne; 2015 – Marvi Qureshi, Brad Rosenkrantz, Marina Addario, Kaley Wilburn; 2014 – Cristhian Valor, Rainel Zelaya; 2013 – Katherine Camacho; 2012 – Alex Fagenson, Jessica Yap, Sean Holmes; 2009 – Christopher Reilly

4.5. SERVICE TO THE COMMUNITY

4.5.1. High school student advisees (6)

Current: Parnika Agrawal (Lake Highland Preparatory School)

Completed: 2014-17 Julia Gallagher 2011–14 - Neha Bhaskar (Lake Highland Preparatory School), 2011-14 Evan Peterson (Lake Highland Preparatory School), 2012-14 – Jacob Campbell (Seminole high school), Avina Harry (2012), Viraj Shah (Seminole high school, 2012), Daniel Maser (Lake Highland Preparatory School, 2010-2011), Kirill Lebedev (2007),

4.5.2. Outreach programs

June 25-29, 2016 Physics Summer Institute at UCF for middle school students, lecture ‘hydrophobic effect’ and laboratory practice.

2013 – Present, Laboratory tours for high school students from Windermere Preparatory School

2010 – Present, Outreach program with Lake Highland Preparatory School, Orlando, FL