

CURRICULUM VITAE

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EDUCATION:

Ph. D. in Physical and Mathematical Sciences (Biophysics), October 1990, Institute of Protein Research, Pushchino, Russian Academy of Sciences.

M.S. in Computer Science, October 1984, Moscow Institute of Radio, Electronics, and Automatics.

POSITIONS HELD:

- 1998 - present Professor, Department of Biophysics, The School of Theoretical Modeling, 1629 K St NW s 300 Washington DC 20006.
- 1996 – 1998 Research Scientist, Applied Thermodynamics, 222 Schilling Circle, suite #130, Hunt Valley, MD 21030-0157.
- 1991 - 1996 NIH Visiting Postdoctoral Fellow, Laboratory of Molecular Biology, National Cancer Institute, National Institutes of Health, Bethesda, MD 20892
- 1989 - 1991 Postdoctoral Researcher, Group of stereochemistry of proteins and nucleic acids, Institute of Protein Research, Russian Academy of Sciences. Pushchino, Moscow region, 142292.
- 1984 - 1990 Engineer, Laboratory of X-ray structure analysis, Institute of Protein Research, Russian Academy of Sciences.

CITIZENSHIP

US Citizenship, American

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

Biophysical Society

American Association for the Advancement of Science

ACTIVITIES:

Patent co-author – Design of permuted antibody for immunotoxin

Judge – NIH Research Festival Science Competition

Guest Lecturer – Georgetown University Graduate Program

Reviewer – Peer-review, Journal of Theoretical Biology, Biophysical Reviews

Book Editor – Springer, Life Sciences, 2015-2016

Recent conference presentation: BDNS 2022

TECHNICAL SKILLS:

Bioinformatics.

MAIN SCIENTIFIC PUBLICATIONS:

1. N.A. Nevskaya, **N.A. Kurochkina**, N. Yu, N. Chirgadze. The building of the three-dimensional protein structure in electron density maps using computer graphics. *Crystallographia* (1986) 31, pp. 303 (in Russian).
2. N. Yu, N. Chirgadze, **N.A. Kurochkina**, S.V. Niconov. Molecular Cartography of Proteins: Surface Relief Analysis of Calf Eye Lens Protein Gamma-crystallin. *Protein Engineering* (1989) 3, pp. 105.
3. A.V. Bogdanova, T.V. Cherednikova, T.A. Egorov, E.G. Harutyunyan, **N.A. Kurochkina**, V.S. Lamsin, A.P. Savitsky, I.A. Shumilin, V.O. Popov. Mapping of the immunodominant regions of the NAD-dependent formatedehydrogenase. *FEBS Letters* (1990) 260, pp. 297.
4. V.I. Lim, C. Venclovas, **N.A. Kurochkina**. The path of a protein chain can be approximated by the conformation dictated by interpeptide ionic bridges. *FEBS Letters* (1992) 302, pp. 57.
5. H.S. Kang, **N.A. Kurochkina**, B. Lee. Estimation and use of protein backbone angle probabilities. *Journal of Molecular Biology* (1993) 229, pp. 448.
6. **N. Kurochkina**, H.S. Kang, B. Lee. Experiences with dihedral angle space Monte Carlo search for small protein structures. In: Statistical mechanics, protein structure and protein-substrate interactions. ed/S. Doniach. Plenum Press, 1994.
7. **N. Kurochkina**, B. Lee. Hydrophobic potential based on pair-wise surface area sum. *Protein Engineering* (1995) 8, pp. 437.
8. B. Lee, **N. Kurochkina**, H.S. Kang. Protein folding by a biased Monte Carlo procedure in the dihedral angle space. *Faseb Journal* (1996) 10, pp. 119.
9. U. Brinkmann, A. Di Carlo, G. Vasmatzis, **N. Kurochkina**, R. Beers, B. Lee, I. Pastan. Stabilization of recombinant Fv Fragment by base loop interconnection and VH-VL permutation. *Journal of Molecular Biology* (1997) 268, pp. 107.
10. **N. Kurochkina**, G. Privalov. Heterogeneity of packing: Structural Approach. *Protein Science* (1998) 7, pp. 897.
11. S. Yakovlev, E. Makogonenko, **N. Kurochkina**, W. Nieuwenhuizen, K. Ingham, L. Medved. Conversion of fibrinogen to fibrin: mechanism of exposure for tPA-plasminogen binding site. *Biochemistry* (2000) 39, pp. 15730.
12. **N. Kurochkina**. Amino acid composition of parallel helix-helix interfaces. *Journal of Theoretical Biology* (2007) 247, pp. 110.
13. **N. Kurochkina**. Specific sequence combinations at parallel and antiparallel helix-helix interfaces. *Journal of Theoretical Biology* (2008) 255, pp. 188.
14. **N. Kurochkina**, T. Yardeni, and M. Huizing. Molecular modeling of the bifunctional enzyme UDP-GlcNAc 2-epimerase/ManNAc kinase and predictions of structural effects of mutations associated with HIBM and sialuria. *Glycobiology* (2010) 20, pp. 322.
15. **N. Kurochkina**. Helix-helix interfaces and their impact on protein motifs and assemblies. *Journal of Theoretical Biology* (2010) 264, pp. 585.
16. **N. Kurochkina**. Proteins motifs and protein assemblies: role of helix-helix interfaces. SciTopics. Retrieved August 18, 2010, from http://www.scitopics.com/Proteins_motifs_and_protein_assemblies_role_of_helix_helix_interfaces.html
17. **N. Kurochkina**, T. Choekyi. Helix-helix interactions of proteins involved in the process of apoptosis. SciTopics. Retrieved February 15, 2011, from http://www.scitopics.com/Helix_helix_interactions_of_proteins_involved_in_the_process_of_apoptosis.html
18. **N. Kurochkina** Common structural characteristics of fibrous and globular proteins. In: Protein Structure. (2011) Ed: L. M. Haggerty. Nova Science Publishers, Inc.
19. **N. Kurochkina**, T. Choekyi. Helix-helix interfaces and ligand binding. *Journal of Theoretical Biology* (2011) 283, 92.
20. Yardeni, T., Choekyi, T., Jacobs, K., Ciccone, C., Patzel, K., Anikster, Y., Gahl, W. A., **Kurochkina, N.**, Huizing, M. (2011) Identification, Tissue Distribution and Molecular Modeling of Novel Human

- Isoforms of the Key Enzyme in Sialic Acid Synthesis, UDP-GlcNAc 2-epimerase/ManNAc Kinase
Biochemistry, 50, 8914.
21. **Kurochkina, N.**, Guha, U. (2014) SH3 domains: modules of protein-protein interactions. *Biophysical Reviews* DOI: 10.1007/s12551-012-0081-z.
 22. **Kurochkina, N.**, Iadarola, M. (2015) Helical assemblies: Structure determinants. *Journal of Theoretical Biology*. 369C 80-84 <http://dx.doi.org/10.1016/j.jtbi.2015.01.012>
 23. **Kurochkina, N.**, Guha, U., Lu, Z. (2015) SH Domains and Epidermal Growth Factor Receptors. In: SH Domains. Structure, mechanisms, and applications. Ed: Kurochkina. Springer, 2015.
 24. **Kurochkina, N.**, Iadarola M. (2015) SH Domains and Helical Assemblies. In: SH Domains. Structure, mechanisms, and applications. Ed: Kurochkina. Springer, 2015.
 25. **Kurochkina N**, Bhaskar M, Yadav SP, Pant HC. Phosphorylation, Dephosphorylation, and Multiprotein Assemblies Regulate Dynamic Behavior of Neuronal Cytoskeleton: A Mini-Review. *Front Mol Neurosci*. 2018;11:373. Published 2018 Oct 8. doi:10.3389/fnmol.2018.00373
 26. SH Domains. Structure, mechanisms, and applications. Ed: **Kurochkina**. Springer, 2015.
 27. <https://link.springer.com/book/10.1007/978-3-319-20098-9>
 28. Hall BE, Prochazkova M, Sapio MR, Minetos P, **Kurochkina N**, Binukumar BK, Amin ND, Terse A, Joseph J, Raithel SJ, Mannes AJ, Pant HC, Chung MK, Iadarola MJ, Kulkarni AB. Phosphorylation of the Transient Receptor Potential Ankyrin 1 by Cyclin-dependent Kinase 5 affects Chemo-nociception. *Sci Rep*. 2018 Jan 19;8(1):1177. doi: 10.1038/s41598-018-19532-6. PubMed PMID: 29352128; PubMed Central PMCID: PMC5775258
 29. Natalya **Kurochkina**. Protein Structure and Modeling. Springer 2019.
<https://link.springer.com/book/10.1007/978-981-13-6601-7>
 30. Kurochkina N, Sapio MR, Iadarola MJ, Hall BE, Kulkarni AB. Multiprotein Assemblies, Phosphorylation and Dephosphorylation in Neuronal Cytoskeleton. *bioRxiv* [Preprint]. 2023 Jun 22:2023.06.21.545989. doi: 10.1101/2023.06.21.545989. PMID: 37502949; PMCID: PMC10370197. Preprint: Multiprotein Assemblies, Phosphorylation and Dephosphorylation in Neuronal Cytoskeleton. <https://doi.org/10.1101/2023.06.21.545989> (doi: 10.1101/2023.06.21.545989).
 31. M.R. Sapio, D.M. King, E.S. Staedtler, et al., Expression pattern analysis and characterization of the hereditary sensory and autonomic neuropathy 2A (HSAN2A) gene with no lysine kinase (WNK1) in human dorsal root ganglion, *Experimental Neurology* (2023), <https://doi.org/10.1016/j.expneurol.2023.114552>