## Sergey (Serge) Smirnov, Ph.D.

Department of Chemistry Western Washington University 516 High Street, Bellingham, WA 98225 360-650-2302 (office): 360-650-2826 (fax) <u>smirnov@chem.wwu.edu</u>

## **EDUCATION:**

Doctor of Philosophy in Molecular Pharmacology, SUNY at Stony Brook, NY, 2000

Master of Science, double-major: Molecular Biophysics & Applied Physics/Math, Moscow Institute of Physics & Technology, Moscow, Russia, 1990

## **EXPERIENCE:**

10/14-present Associate Professor (Chemistry), Graduate/Undergraduate Advisor, AMSEC, Western Washington University (WWU).

<u>Research focus</u>: structure/function of modular and unfolded proteins and chemically modified DNA.

- 09/08-09/14 Assistant Professor (Chemistry), Graduate/Undergraduate Advisor, AMSEC, *Western Washington University (WWU)*.
- 09/07-05/08 Adjunct Assistant Professor of Mathematics and Physics, *Massachusetts College of Pharmacy and Health Sciences*.
- 07/07-06/08 Whitaker Training Fellow, *Whitaker Cardiovascular Institute, Boston University School of Medicine*. <u>Lab of Dr. C.J. McKnight. Research focus</u>: structural/functional studies of villin, a cytoskeleton regulating protein.
- 09/04-06/07 Postdoctoral Scientist, **Boston University School of Medicine**. <u>Lab of Dr. C.J. McKnight. Research focus</u>: structural/functional studies of villin, a cytoskeleton regulating protein.
- 09/03-08/04 Postdoctoral Scientist, *Clark University*. <u>Lab of Dr. R.Brushweiler. Research focus</u> on advanced methods of data processing in biomolecular NMR.
- 10/00-08/03 Software Engineer, Center for Genome Research, *Whitehead Institute / M.I.T.* (Cambridge, MA). Designed and implemented automated software tools for the annotation of the newly sequenced fungal genomes.
- 08/94-09/00 Graduate Student Research/Teaching Assistant, *SUNY, Stony Brook*, <u>lab of Dr. C.</u> <u>de los Santos. Research focus</u>: structural characterization NMR of DNA duplexes containing mutagenic and chemically modified nucleotides.
- 01/91-07/94 Junior Researcher, *Institute of Theoretical And Experimental Biophysics, Puschino*, *Russia*, group of <u>Dr. A. Ya. Silberstein. Research focus</u>: conformational investigation of trans-membrane ion channels.

### HONORS AND AWARDS

Project Development Award, WWU Research and Sponsored Programs	2012
Project Development Award, WWU Research and Sponsored Programs	2010
Whitaker Training Fellowship from the Cardiovascular Institute	2007-2008
Research Support Grant from the Pacific Northwest National Lab	2006
Student Travel Stipend, 41st Experimental NMR Conference, Asilomar, CA	2000
George Soros Foundation Young Scientists Award, Moscow, Russia	1994

## TEACHING EXPERIENCE AT WESTERN WASHINGTON UNIVERSITY (09/08-present)

All are Lecture classes; about half of them also include Lab components.

Title:	<u>Number</u> of Terms Taught:
General Chemistry I (with Lab)	3 since F08, most recent F14;
General Chemistry II (with Lab)	6 since W10, most recent S14;
General Chemistry III (with Lab)	2 since W11, most recent S11;
Biophysical Chemistry I	<u>2,</u> W14;
Biochemistry I	10 since F08, most recent F14;
Biochemistry II	<u>1</u> , S13;
Advanced NMR spectroscopy	<u>1</u> , W10;
Selected Topics in Research	<u>1</u> , F12;
Selected Topics in Research	<u>1</u> , F13;
	Title: General Chemistry I (with Lab) General Chemistry II (with Lab) General Chemistry III (with Lab) Biophysical Chemistry I Biochemistry I Biochemistry I Advanced NMR spectroscopy Selected Topics in Research Selected Topics in Research

Also, *five* General Chemistry (I,II,III) lab sections were taught for other lecture instructors since F08.

## SELECTED PUBLICATIONS

- \*Fedechkin S, \*Brockerman J, \*Pfaff D, \*Burns L, \*Webb T, \*Nelson A, Zhang F, McKnight C and Smirnov SL. "Gelsolin-Like Activation of Villin: Calcium-Sensitivity of the Long Helix In Domain 6" <u>Biochemistry</u>, 52(45):7890-900, 2013
- Kasymov RD, Grin IR, Endutkin AV, Smirnov SL, Ishchenko AA, Saparbaev MK, Zharkov DO, "Excision of 8-oxoguanine from methylated CpG dinucleotides by human 8-oxoguanine DNA glycosylase", <u>FEBS Lett.</u>, 587(18), 3129-3134, 2013
- \*Fedechkin S, \*Brockerman J, Luna E, Lobanov M, Galzitskaya O & Smirnov. SL. "An N-terminal, 830 residues intrinsically disordered region of the cytoskeleton-regulatory protein supervillin contains Myosin II- and F-actin-binding sites", <u>J Biomol Struct Dyn.</u>, 31(10):1150-9, 2013

\* WWU student co-authors

 Smirnov SL, Isern NG, Jiang ZG, Hoyt DW, McKnight CJ. "The Isolated Sixth Gelsolin Repeat and Headpiece Domain of Villin Bundle F-Actin in the Presence of Calcium and Are Linked by a 40-Residue Unstructured Sequence", <u>Biochemistry</u>, 46(25), 7488-7496, 2007

- 5. Trbovic N, **Smirnov SL**, Zhang F, Bruschweiler R. "Covariance NMR Spectroscopy by Singular Value Decomposition", <u>Journal of Magnetic Resonance</u>, 171 (2), 277-283, 2004
- Galagan JE, Calvo SE, Borkovich KA, Selker EU, Read ND, Jaffe D, FitzHugh W, Ma LJ, Smirnov SL, et. al. (>70 co-authors total) "The genome sequence of the filamentous fungus Neurospora crassa", <u>Nature</u>, 422(6934) 859-68, 2003
- Galagan JE, Nusbaum C, Roy A, Endrizzi MG, Macdonald P, FitzHugh W, Calvo S, Engels R, Smirnov SL, et. al. (>50 co-authors total) "The genome of M. acetivorans reveals extensive Metabolic and Physiological Diversity", <u>Genome Research</u>, 12(4), 532-542, 2002
- 8. **Smirnov SL**, Kool E, de los Santos C. "Integrity of duplex structures without hydrogen bonding: DNA with pyrene paired at abasic sites", <u>Nucleic Acid Research</u>, 30(24) 5561-5569, 2002
- Smirnov SL, Johnson F, Marumoto R, de los Santos C. "Structure of an 11-mer DNA duplex containing the carbocyclic nucleotide analog: 2'-deoxyaristeromycin." <u>J Biomol Struct Dyn.</u>, Jun;17(6):981-91, 2000

#### SELECTED ORAL PRESENTATIONS

- "Structure–Function Studies Of Modular, Actin–Regulating Proteins", International Conference on Postgenomic Technology for Biomedicine, Novosibirsk, Russia, 2012
- "Villin: Structure, Dynamics and Function of Domains and Linkers in Modular Proteins", WWU/Biology Dept., Bellingham, WA, 2009
- "Villin and Supervillin: Probing the Structure, Dynamics and Function of Modular Proteins", WWU/Chemistry Dept., Bellingham, WA, 2008

#### **GRANTSMANSHIP**

- "RUI: Interplay between epigenetic methylation and oxidative damage: effects on DNA stability, structure and dynamics", National Science Foundation, \$263,035, <u>Funded (2013-2015)</u>.
- "The role of folded domains and inter-domain linkers in regulation of actin filaments by proteins of villin family", Ministry of Education and Science of Russian Federation, (role: Invited PI, joined application with State Polytechnic University St. Petersburg, Russia), \$83,000, <u>Funded (2012-2013)</u>.
- "Investigation of cancer-regulating protein Supervillin by Atomic Force Microscopy", Project Development Award, Western Washington University, \$14,320, <u>Funded (2012)</u>.
- "(RUI) Interplay between epigenetic methylation and oxidative damage: effects on DNA stability, structure and dynamics", National Science Foundation, Sep 2011, \$258,105, *Not Funded*.
- "Structural synergy between oxidative damage and epigenetic methylation of DNA in cancer and neurological diseases", National Science Foundation, Jan 2011, \$260,082, *Not Funded*.
- "Synergy between regulatory methylation and oxidative damage of DNA in breast cancer", Corporate Support by Retail Imports International, Apr 2011, \$3,393, <u>Funded (2011-2013)</u>.
- "Atomic force microscopy imaging of supervillin, a cancer-regulating protein", Pilot Project, Western Washington University, \$3,960, <u>Funded (2011)</u>.

- "Structural synergy between oxidative damage and epigenetic methylation of DNA in cancer and neurological diseases", Research Corporation, 2010, \$45,000, *Not Funded*
- "Structural synergy between oxidative damage and epigenetic methylation of DNA in cancer and neurological diseases", Project Development Award, Western Washington University, \$30,887, **Funded** (2010).
- "Structural characterization of supervillin, an important cancer mediator", Summer Research Grant, Western Washington University, 2010, \$5000, <u>Granted (2010)</u>.
- "Deciphering the structure-function enigma of supervillin, a modular, multi-role cytoskeleton accessory and tumor-regulating protein." Research Corporation, 2009, \$44,972, *Not Funded*.
- "Structural characterization of D6-HP, a villin fragment capable of bundling of F-actin", National High Magnetic Field Lab access to the 720 MHz NMR spectrometer (NSF-funded), <u>Granted</u> (2009-2012).

# **CURRENT COLLABORATORS**

Dr. C.W. Akey (Boston University School of Medicine, Dept. of Physiology & Biophysics, MA)

Dr. C.J. McKnight (Boston University School of Medicine, Dept. of Physiology & Biophysics, MA)

Dr. E.J. Luna (University of Massachusetts Medical School, Dept. of Cell Biology, Worcester, MA)

Dr. D.O. Zharkov (Institute of Chemical Biology and Fundamental Medicine, Novosibirsk, Russia)

Dr. M.A. Khodorkovskiy (Institute for Nanobiotechnologies, SPb-PU, St.Petersburg, Russia)

## NATIONAL ACADEMIC SERVICE

National Science Foundation ( <u>NSF</u> ):	Panel and ad-hoc reviewer	<u>2013</u>
Biochemistry (ACS Journal):	Manuscript reviewer	<u>2014-2015</u>

## **RESEARCH STUDENTS MENTORSHIP:**

Total number of undergraduate students mentored to date:  $\sim 35$ Total number of graduate (M.S.) students mentored to date: 5