

Wouter D. Hoff, Ph.D.

Professor of Microbiology and Molecular Genetics
Department of Microbiology and Molecular Genetics
College of Arts and Sciences
Oklahoma State University

Contact Information:

E-mail: glenn.zhang@okstate.edu

Phone: 405-744-6619

Office: Rm 21, Animal Science Building, Oklahoma State University, Stillwater, OK 74078

Education:

1985-1991: B.S., Biology, University of Amsterdam, The Netherlands

1991-1995: Ph.D., Microbiology, University of Amsterdam, The Netherlands

1995-1997: Post-doc, Biochemistry, University of Texas

1997-1998: Post-doc, Biophysics, Oklahoma State University, OK

Academic Appointments:

1998-2005: Assistant Professor, Dept. of Biochemistry & Molecular Biology, University of Chicago

2005-2011: Associate Professor, Dept. of Microbiology & Mol. Genetics, Oklahoma State University

2010-2011: Adjunct Faculty Member, Dept. of Chemistry, OSU

2011-present: Professor, Dept. of Microbiology & Mol. Genetics, OSU

Honors and Awards

1991: B.S degree in biology cum laude (highest distinction), University of Amsterdam

1995: Ph.D. degree in chemistry cum laude (highest distinction), Univ. of Amsterdam

1995: 3-year postdoctoral fellowship, Damon Runyon-Walter Winchel Foundation

1996/1997: Award for best biophysics Ph.D. thesis in the Netherlands for the years from the Dutch Society for Biophysics

1999: Louis Block Fund Award, University of Chicago

1999: Cancer Research Foundation Young Investigator Award

1999: American Cancer Society Institutional Research Grant Award

Other Professional Experiences and Memberships:

1997-present: Member of American Physical Society

1998-present: Member of Biophysical Society

2000-present: Member of Society for Photobiology

2002-present: Organized invited (2002; 2011; 2014) and focus (2012; 2013; 2014) sessions at the American Physical Society March Meeting

2007: Member of ad hoc committee on biological applications of a soft X-ray free electron laser (MIT)

2009: Member of review panel NSF Biomolecular Systems Cluster, Program Director/Principal Investigator (Last, First, Middle): Hoff, Wouter D., PHS 398/2590 (Rev. 06/09) Page 3 Biographical Sketch Format Page

2009-present: Graduate Program Coordinator for the graduate program in Microbiology/Molecular and Cell Biology, Oklahoma State University

2011-present: Founding member of the Molecular and Cellular Biophysics Interdisciplinary Graduate Program

Initiative at Oklahoma State University.

2012-present: Founding Editor-in-Chief of *Microreviews in Cell and Molecular Biology*, a journal written, peerreviewed, edited, and published by undergraduate students at Oklahoma State University.

2012: Editorial Board Member of *Journal of Biological Chemistry* (7/2012-9/2017)

Research Support:

Current:

Past:

- 2013-2016: National Science Foundation Major Research Instrumentation, "MRI: Acquisition of an advanced FTIR system for interdisciplinary research and training at Oklahoma State University", Role: Co PI
- 2011-2015: NSF MCB-1051590. National Science Foundation Molecular and Cellular Biosciences, "Bacterial light sensing by photoactive yellow protein.", Role: PI
- 2012-2013: National Science Foundation Molecular and Cellular Biosciences, "Supplement for NSF MCB-1051590", Role: PI
- 2007-2010: Oklahoma Center for the Advancement of Science and Technology, Oklahoma Health Research Program, "Single molecule force spectroscopy of receptor function", Role: PI
- 2011-2012: OSU Technology and Business Development Program, "In vitro evolution of novel fluorescent protein tags.", Role: PI
- 2011-2012: OSU Interdisciplinary Creative Planning Grant Program, "Molecular and cellular biophysics interdisciplinary", Role: PI
- 2010-2011: OSU VPR, "Fluorescent biosensors.", Role: PI

Selected Publications:

1. Gomelsky M, Hoff WD. 2011. Light helps bacteria make important lifestyle decisions. *Trends Microbiol.* 19, 441-448 (cover story).
2. van der Horst MA, Stalcup TP, Kaledhondar S, Kumauchi M, Hara M, Xie A, Hellingwerf KJ, Hoff WD.
3. 2009. Locked chromophore analogs reveal that photoactive yellow protein regulates biofilm formation in the deep sea bacterium *Idiomarina loihiensis*. *J. Am. Chem. Soc.* 131, 17443-17451.
4. Kubota K, Shingae T, Foster ND, Kumauchi M, Hoff WD, Unno M. 2013. Active site structure of photoactive yellow protein with a locked chromophore analog revealed by near infrared Raman optical activity. *J. Phys.Chem. Lett.* 4: 3031–3038.
5. Kumauchi M, Kaledhonkar S, Philip AF, Wycoff J, Hara M, Li Y, Xie A, Hoff WD. 2010. A conserved helical capping hydrogen bond in PAS domains controls signaling kinetics in the superfamily prototype photoactive yellow protein. *J. Am. Chem. Soc.* 132, 15820-15830.
6. Philip AF, Kumauchi M, Hoff WD. 2010. Robustness and evolvability in the functional anatomy of a PAS domain. *Proc. Natl. Acad. Sci. USA* 107, 17986-17991.
7. Naseem S, Laurent AD, Carroll EC, Vengris M, Kumauchi M, Hoff WD, Krylov AI, Larsen DS. 2013. Photoisomerization upshifts the pKa of the photoactive yellow protein chromophore to contribute to photocycle propagation. *J. Photochem. Photobiol.* 270, 43– 52.
8. Youssef NH, Savage-Ashlock KN, McCully AM*, Ludetke B&, Shaw EI, Hoff WD, Elshahed MS. 2013. Trehalose/2-sulfotrehalose biosynthesis and glycine-betaine uptake are widely spread mechanisms for osmoadaptation in the Halobacteriales. *The ISME Journal*, in press.
9. Deole R, Challacombe J, Raiford DW, Hoff WD. 2013. An extremely halophilic proteobacterium combines a highly acidic proteome with a low cytoplasmic potassium content. *J. Biol. Chem.* 288, 581-588. ((This article was selected for the Faculty of 1000 Prime.)
10. Rathod R, Kang Z, Hartson SD, Kumauchi M, Xie A, Hoff WD. 2012. Side-chain specific isotopic labeling of proteins for infrared structural biology: the case of ring-D4-tyrosine isotope labeling of photoactive yellow protein. *Prot. Purif. Expr.* 85, 125-132.
11. van der Gulik TS, Hoff WD. 2011. Unassigned codons, nonsense suppression, and anticodon modifications in the evolution of the genetic code. *J. Mol. Evol.* 73, 59-69 (cover story).

12. Philip AF, Nome RA, Papadantonakis GA, Scherer NF, Hoff WD. 2010. Spectral tuning in photoactive yellow protein by modulation of the shape of the excited state energy surface. *Proc. Natl. Acad. Sci. USA* 107, 5821-5826. (This article was selected for the Faculty of 1000 Biology for 2010.)
13. Program Director/Principal Investigator (Last, First, Middle): Hoff, Wouter D.PHS 398/2590 (Rev. 06/09)
14. Kumauchi M, Hara M, Stalcup P, Xie A, Hoff WD. 2008. Identification of six new photoactive yellow proteins: diversity and structure-function relationships in a bacterial blue light photoreceptor. *Photochem. Photobiol.* 84, 956-969.
15. Philip AF, Eisenman KT, Papadantonakis GA, Hoff WD. 2008. Functional tuning of photoactive yellow protein by active site residue 46. *Biochemistry* 47, 13800-13810.
16. Nome RA, Zhao JM, Hoff WD, Scherer NF. 2007. Anisotropy in protein unfolding: integrated nonequilibrium single-molecule experiments, analysis, and simulation. *Proc. Natl. Acad. Sci. USA* 104, 20799-20804.
17. Zhao JM, Lee H, Nome RA, Majid S, Scherer NF, Hoff WD. 2006. Single-molecule detection of structural changes during PAS domain activation. *Proc. Natl. Acad. Sci. USA*. 103, 11561-11566.