

Other research
in the
Zuiderweg Lab

NMR methods in dynamics

Zeng, L., Fischer, M.W.F. and Zuiderweg, E.R.P. Study of Protein Dynamics in Solution by Measurement of ^{13}C - ^{13}CO NOE and ^{13}CO longitudinal relaxation. *J. Biomol. NMR*, 1996; 7, 157-162

Fischer, M. W.F., Zeng, L., Pang, Y., Hu, W., Majumdar, A. and Zuiderweg, E.R.P. Experimental characterization of models for backbone pico-second dynamics in proteins. Quantification of NMR auto- and cross correlation relaxation mechanisms involving different nuclei of the peptide plane. *J. Am. Chem. Soc.* 119, 12629-12642 (1997)

Pang, Y., Wang, L., Pellecchia, M., Kurochkin, A.V. and Zuiderweg, E.R.P. Evidence for extensive anisotropic local motions in a small enzyme using a new method to determine NMR cross-correlated relaxation rates in the absence of resolved scalar coupling, *J. Biomol.* 14, 297-306 (1999)

Pellecchia, M, Pang, Y, Wang, L., Kurochkin, A.V., Anil Kumar and Zuiderweg, E.R.P. Quantitative Measurement of Cross-Correlations Between ^{15}N and ^{13}CO Chemical Shift Anisotropy Relaxation Mechanisms by Multiple Quantum NMR, *J. Am. Chem. Soc.* 121, 9165-9170 (1999)

Weaver, D.S and Zuiderweg, E.R.P a TROSY NMR experiment measuring longitudinal relaxation interference. *J Chem Phys*, 128 155103 (14 pg) (2008)

NMR methods in cross-polarization

Majumdar, A., Wang, H., Morshauer, R. and Zuiderweg, E.R.P. Sensitivity improvement in 2D and 3D HCCH spectroscopy using heteronuclear cross polarization J. Biomol. NMR 1993; 3, 387-397

Majumdar, A. and Zuiderweg, E.R.P. Efficiencies of Double and triple-resonance J-cross polarization in multidimensional NMR. J. Magn. Reson. 1995; A 113, 19-31.

Wang, H. and Zuiderweg, E.R.P. HCCH-TOCSY spectroscopy of ^{13}C -labeled proteins in H_2O using heteronuclear cross polarization and pulsed-field gradients J. Biomol. NMR 1995; 5, 207-211

Zuiderweg, E.R.P., Zeng, L., Brutscher, B. and Morshauer, R.C. "Band-Selective Hetero- and Homo-nuclear Cross Polarization Using Trains of Shaped Pulses" J. Biomol. NMR 8, 147-160 (1996)

A variety of NMR method contributions (1)

Wang, H., Glick, G., and Zuiderweg, E.R.P. A three-dimensional method for the separation of zero-quantum-coherence and NOE in NOESY spectra. *J. Magn. Reson.* 1993; A102, 116-121

Van Doren, S.W. and Zuiderweg, E.R.P. Improvement in HSMQC-Type Double and Triple Resonance NMR experiments by using full sweep (semi-) constant-time shift labeling. *J. Magn. Reson.* 1994; B 104, 193 - 198

Beckman, R.A. and Zuiderweg, E.R.P. Guidelines for the use of oversampling in protein NMR *J. Magn. Reson.* 1995; , A 113, 223-231

Hu, W. and Zuiderweg, E.R.P. Stereo-specific assignments of Val and Leu methyl groups in a selectively ^{13}C labeled 18 kDa polypeptide using 3D CT-(H)CCH-COSY and 2D ^1JCC edited heteronuclear correlation experiments, *J. Magn. Reson.*, B113, 70-75 (1996)

Fischer, M.W.F., Zeng, L. and Zuiderweg, E.R.P. Use of ^{13}C - ^{13}C NOE for the assignment of NMR lines of larger labeled proteins at larger magnetic fields *J. Am. Chem. Soc.*, 49, 12457-12458 (1996)

A variety of NMR method contributions (2)

Cain, R.J., Glick, G.D. and Zuiderweg, E.R.P. Extracting quantitative information from two- and three-dimensional NOE spectra measured with short recycle delays. *J. Magn. Reson. B* 133, 252-255 (1996)

Pang, Y., Zeng, L., Kurochkin, A.V. and Zuiderweg, E.R.P. High-Resolution Detection of Five Frequencies in a Single 3D Spectrum: HNHCACO - a Bi-directional Coherence Transfer Experiment. *J. Biomol. NMR*, 11, 185-190 (1998)

Morshauer, R.C. and Zuiderweg, E.R.P. High Resolution Four-Dimensional HMQC-NOESY-HSQC Spectroscopy, *J. Mag. Reson*, 139, 232-239, 1999

Vander Kooi, C.W., Kupce, E., Zuiderweg, E.R.P., and Pellecchia, M.: Line Narrowing in Spectra of Proteins Dissolved in a Dilute Liquid Crystalline Phase by Band-Selective Adiabatic Decoupling: Application to $^1\text{H}^{\text{N}}\text{-}^{15}\text{N}$ Residual Dipolar Coupling Measurements, *J. Biomol. NMR*. 15, 335-338 (1999)

A variety of NMR method contributions (3)

Pellecchia, M. Vander Kooi, C.W. , Keliikuli, K., and Zuiderweg, E.R.P. Magnetization Transfer via Residual Dipolar Couplings: Application to Proton-Proton Correlations in Partially Aligned Proteins, *J. Magn. Reson.* 143, 435-439 (2000)

Cai, S., Stevens, S.Y., Budor, A.P. and Zuiderweg, E.R.P. Solvent interaction of a Hsp70 chaperone substrate-binding domain investigated with Water-NOE NMR experiments *Biochemistry* 42, 11100-11108 (2003)

Yip, G. and Zuiderweg, E.R.P. A phase cycle scheme that significantly suppresses offset-dependent artifacts in the R_2 -CPMG ^{15}N relaxation experiment." *J. Magn. Reson.* 171, 25-36 (2004)

Duty-Cycle Heating Compensation in NMR Relaxation Experiments" by Grover N.B. Yip and Erik R.P. Zuiderweg, *J. Magnetic Resonance*, 176, 171-178 (2005).

A variety of NMR method contributions (4)

Bhattacharya, A., Revington, M., and Zuiderweg, E.R.P. Measurement and interpretation of ^{15}N - ^1H residual dipolar couplings in larger proteins J. Magn. Reson. 203 11–28, (2010)

Pseudo-4D triple resonance experiments to resolve HN overlap in the backbone assignment of unfolded proteins. Ireena Bagai, Stephen W. Ragsdale and Erik R.P. Zuiderweg, J Biomol NMR. 49:69-74 (2011)

Other structural biology (1)

Van Doren, S.W., Kurochkin, A.V., Ye, Q.Z., Johnson, L.L., Hupe, D.J. and Zuiderweg, E.R.P. Assignments for the main chain nuclear magnetic resonances and delineation of the secondary structure of the catalytic domain of human stromelysin-1 as obtained from triple resonance 3D NMR experiments. *Biochemistry* 1993; 32, 13109-13122.

Wang, H., Osborne, S.E., Zuiderweg, E.R.P. and Glick, G. Three dimensional structure of a disulfide-stabilized non-ground-state DNA hairpin. *J. Am. Chem. Soc.* 1994; 116, 5021-5022

Sandusky, P., Wooten, E.W., Kurochkin, A.V., Mandecki, W. and Zuiderweg, E.R.P. Occurrence, Solution Structure and Stability of DNA hairpins Stabilized by a CG/GA helix unit. *Nucleic Acids Research*, 1995; 23, 4717-4725

Van Doren, S.W., Kurochkin, A.V., Hu, W., Ye, Q.Z., Johnson, L.L., Hupe, D.J. and Zuiderweg, E.R.P. Solution structure of the catalytic domain of human stromelysin complexed with a hydrophobic inhibitor. *Protein Science* 1995; 4, 2487-2498

Other structural biology (2)

Stevens, S.Y., Hu, W., Gladysheva, T., Rosen, B.P., Zuiderweg, E.R.P. and Lee, L. Secondary Structure and Fold Homology of the ArsC Protein from the Escherichia coli Arsenic Resistance Plasmid R773, *Biochemistry*, 38, 10178-10186 (1999)

Hall, D.A., Vander Kooi, C.W., Stasik, C.N., Stevens, S.Y., Zuiderweg, E.R.P., and Matthews, R.G., Mapping the Interactions Between Flavodoxin and Its Physiological Partners Flavodoxin Reductase and Cobalamin-dependent Methionine Synthase, *Proc Natl Acad Sci U S A.* 98, 9521-9526. (2001)

Stevens, S.Y., Sanker, S., Kent, C. and Zuiderweg, E.R.P. Delineation of the allosteric mechanism for a cytidyltransferase exhibiting negative cooperativity, *Nature Structural Biology* 8, 947-952 (2001)

Khandelwal, P., Keliikuli, K., Smith, C.L., Saper, M.A. and Zuiderweg, E.R.P. Solution structure and phosphopeptide binding to the N-terminal domain of Yersinia YopH, Comparison with a Crystal Structure. *Biochemistry*, 41, 11425-11437 (2002).

Shao, W., Im, S.-C., Zuiderweg, E.R.P.* and Waskell, L.* Mapping the Binding Interface of the Cytochrome b5- Cytochrome c Complex by NMR *Biochemistry* 42, 14774-14784 (2003)

Characterization and Calculation of a cytochrome c-cytochrome b5 complex using NMR data. Deep, S., Im, S.C., Zuiderweg, E.R.P., and Waskell, L. *Biochemistry* 44, 10654-10668 (2005)

Contributors:

Hong Wang (1991-1995, Ph.D)
Robert C. Morshauer (1992-1998, Ph.D)
Mark W.F. Fischer (1992 – 1998, Ph.D)
Yuxi Pang (1997 -2001, Ph.D)
Grover Yip (2001 – 2006, Ph.D)
Dan Weaver, (2004 –2009, Ph.D)
Akash Bhattacharya, (2006 –2009, Ph.D.)
Ananya Majumdar, Ph.D. / 1992-1994
Steven R. van Doren, Ph.D. / 1991-1995
Peter O. Sandusky, Ph.D. / 1994-1995
Robert A. Beckman, M.D. / 1993-1994
Lei Zeng, Ph.D. / 1995 – 1997
Weidong Hu, Ph.D. / 1994 – 1997
Maurizio Pellecchia, Ph.D. / 1998 – 1999
Weiping Shao, Ph.D. / 1998 – 2000
Lincong Wang, Ph.D. / 1998 – 2001
Shawn Y. Stevens, Ph.D. / 1997 –2003
Purnima Khandelwal , Ph.D. / 2000 –2002
Sheng Cai, Ph.D. / 2001 –2004
Mark Berjanskii, Ph.D. / 2002 –2004,
Tian-Zhi Wang , Ph.D. / 2001 - 2005
Shashank Deep, Ph.D. / 2003 –2005
Ireena Bagai, Ph.D., 2009 –2010











