

## Curriculum Vitae Martin Weik

Date of birth: 17th September 1968  
Place of birth: St. Gallen, Switzerland  
Marital status: single  
Nationality: German

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### Education

'**Abitur**' June 1988, Markgräfler Gymnasium Müllheim/Baden, Germany  
'**Vordiplom**' October 1991, Universität Karlsruhe, Germany subjects studied: Experimental physics, theoretical physics, chemistry and mathematics, honour: 'gut'  
'**Maîtrise de physique**' (Diploma requiring 4 years studies), June 1993, Université Joseph Fourier, Grenoble, France honour: 'assez bien'  
'**Diplôme d'Etudes Approfondies**' (DEA, equivalent to M.Sc.) 'Science et Structure des Matériaux', June 1994, Université Joseph Fourier, Grenoble honour: 'bien'  
'**Diplom-Physiker**' (equivalent to M.Sc.) November 1995, Universität Karlsruhe subjects studied: Experimental physics, theoretical physics, biophysics and statistical physics, honour: 'sehr gut'.  
**Ph.D. in Biophysics** April 1998, Institut de Biologie Structurale, Grenoble, Supervisor: Dr. J. Zaccai honor: 'Très Honorable avec les Félicitations de Jury'  
Authorization to defend the '**Habilitation à Diriger des Recherches**' in 2006 April 2005, Université Joseph Fourier, Grenoble, France.

### Experience

Practical course, Institut de Biologie Structurale, Grenoble, France, Dr. J. Zaccai, March-June 1993  
Subject: 'Etude biophysique et biochimique de deux protéines halophiles'

Practical course, Institut de Biologie Structurale, Grenoble, France, Dr. J. Zaccai, March-June 1994  
Subject: 'Etude biophysique de trois protéines transmembranaires à rétinol'

Diplomarbeit, Institut de Biologie Structurale, Grenoble, France, Dr. J. Zaccai, July 1994-July 1995  
Subject: 'Structure, hydratation et cristallinité de la Bactériorhodopsine de Halobacterium halobium: Etude par diffraction de neutrons et de rayons X'

Ph.D. Student, Institut de Biologie Structurale, Grenoble, France, Dr. J. Zaccai, October 1994-April 1998  
Subject: 'Rôle des Glycolipides et de l'Hydratation dans la Membrane Pourpre: Etude par Diffraction de Neutrons et Deutériation Spécifique'

Postdoctoral Researcher, Bijvoet Center, Utrecht, The Netherlands, Prof. J. Kroon,  
June 1998-December 1999

Subject: 'Acetylcholinesterase: Structure and Function'

Postdoctoral Researcher (Fellow of the European Molecular Biology Organization),  
January 2000-December 2000

Bijvoet Center, Utrecht, The Netherlands, Prof. J. Kroon and

Weizmann Institute of Science, Rehovot, Israel, Profs. I. Silman and J. Sussman,

Subject: 'Use of Temperature-dependent X-ray Crystallography to Study the  
Dynamics of Acetylcholinesterase'

Research staff position (Commissariat à l'Energie Atomique), since January 2001

Institut de Biologie Structurale, Grenoble, France.

### List of Publications

#### *Original work (peer reviewed)*

1. Weik, M., Zaccai, G., Dencher, N.A., Oesterhelt, D., and Hauß, T. (1998). Structure and hydration of the M-state of the bacteriorhodopsin mutant D96N studied by neutron diffraction. *J. Mol. Biol.* 275, 625-634.
2. Weik, M., Patzelt, H., Zaccai, G., and Oesterhelt, D. (1998). Localization of glycolipids in membranes by in-vivo labelling and neutron diffraction. *Mol. Cell* 1, 411-419.
3. Lehnert, U., Reat, V., Weik, M., Zaccai, G., and Pfister, C. (1998). Correlation between thermal motions and functional conformational changes in bacteriorhodopsin: a neutron scattering study at different hydration levels. *Biophys. J.* 75, 1945-1952.
4. Weik, M., Ravelli, R. B. G., Kryger, G., McSweeney, S., Raves, M., Harel, M., Gros, P., Silman, I., Kroon, J. & Sussman, J. L. (2000). Synchrotron X-ray radiation produces specific chemical and structural damage to protein structures, *Proc. Natl. Acad. Sci. USA* 97, 623-628.
5. Weik, M., Kryger, G., Schreurs, A.M.M., Bouma B., Silman, I., Sussman, J.L., Gros, P. & Kroon, J. (2001). Solvent behaviour in flash-cooled protein crystals. *Acta Crystallogr. D* 57, 566-573.
6. Specht, A., Ursby, T., Weik, M., Peng, L., Kroon, J., Bourgeois, D. & Goeldner, M. (2001). Cryophotolysis of ortho-nitrobenzyl derivatives of enzyme ligands for the potential kinetic crystallography of macromolecules. *ChemBioChem* 11, 845-848.
7. Weik, M., Ravelli, R.B., Silman, I., Sussman, J.L., Gros, P. & Kroon, J. (2001). Specific protein dynamics near the solvent glass transition assayed by radiation-induced structural changes. *Protein Sci* 10, 1953-1961.
8. Dekker, C., Agianian, B., Weik, M., Zaccai, G., Kroon, J., Gros, P. & de Kruijff, B. (2001). Biophysical characterization of the influence of salt on tetrameric SecB. *Biophys. J.* 81, 455-462.
9. Ursby, T., Weik, M., Fioravanti, E., Delarue, M., Goeldner, M. & Bourgeois, D. (2002). Cryo-photolysis of caged compounds: a technique for trapping intermediate states in protein crystals. *Acta Crystallogr. D* 58, 607-614.
10. Weik, M., Bergès, J., Raves, M., Gros, P., McSweeney, S., Silman, I., Sussman, J., Houée-Levin, C. and Ravelli, R. (2002). Elongation of a protein disulfide bond upon X-ray irradiation. *J. Synchrotron Radiat.* 9, 342-346.
11. Gabel, F., Bicout, D., Lehnert, U., Tehei, M., Weik, M. & Zaccai, G. (2002). Protein dynamics studied by neutron scattering. *Q. Rev. Biophys.* 35, 327-367.
12. Bechinger, B. & Weik, M. (2003). Deuterium solid-state NMR investigations of exchange-labelled oriented purple membranes at different hydration levels. *Biophys. J.* 85, 361-369.
13. Weik, M. (2003). Low-temperature behavior of water confined by biological macromolecules and its relation to protein dynamics. *Eur. Phys. J. E* 12, 153-158.

14. Weik, M., Vernede, X., Royant, A. & Bourgeois, D. (2004). Temperature-derivative fluorescence spectroscopy as a tool to study dynamical changes in protein crystals. *Biophys. J.* 86, 3176-3185.
15. Gabel, F., Weik, M., Doctor, B., Saxena, A., Fournier, D., Brochier, L., Renault, F., Masson, P., Silman, I. & Zaccai, G. (2004). The influence of solvent composition on global dynamics of human butyrylcholinesterase powders: A neutron scattering study. *Biophys. J.* 86, 3152-3165.
16. Weik, M., Schreurs, A.M.M., S. Leiros H.-K., Zaccai, G., Ravelli, R. & Gros, P. (2005). Super-cooled liquid-like solvent in trypsin crystals: Implications for crystal annealing and temperature-controlled X-ray radiation damage studies. *J. Synchrotron Radiat.* 12, 310-317.
17. Berntsen, P., Bergman, R. Jansson, H., Weik, M. & Swenson, J. (2005). Dielectric and calorimetric studies of hydrated purple membrane. *Biophys. J.* 89, 3120-3128.
18. Weik, M., Lehnert, U. & Zaccai, G. (2005). Liquid-like water confined in stacks of biological membranes at 200 K and its relation to protein dynamics. *Biophys. J.* 89, 3639-3646.
19. Gabel, F., Weik, M., Masson, P., Renault, F., Fournier, D., Brochier, L., Doctor, B., Saxena, A., Silman, I. & Zaccai, G. (2005). Effects of inhibition and of structural differences on cholinesterase molecular dynamics: A neutron scattering study. *Biophys. J.* 89, 3303-3011.
20. Colletier, J.-P., Fournier, D., Greenblatt, H., Sussman, J.L., Zaccai, G., Silman, I. & Weik, M. Structural insights into substrate traffic and inhibition in acetylcholinesterase. *Submitted.*
21. Colletier, J.-P., Sanson, B., Nachon, F., Gabellieri, E., Fattorusso, C., Campiani, G. & Weik, M. Conformational flexibility in the peripheral site of *Torpedo californica* acetylcholinesterase revealed by the complex structure with a bifunctional inhibitor. *Submitted.*

#### *Contributions to books*

22. Weik, M., Lehnert, U. & Zaccai, G. (2001). Super-cooled water flows between biological membranes at 200 K, ILL Annual Report 2001 (Scientific Highlights).
23. Lehnert, U. & Weik, M. (2005). Relating protein dynamics to function and structure – the purple membrane. In *Neutrons in Biology - Techniques and Applications* (Eds. J. Fitter, T. Gutberlet, J. Katsaras), Springer Verlag, Berlin, *in press.*
24. Bourgeois, D. & Weik, M. (2005). New perspectives in kinetic crystallography using caged compounds. In *Dynamic Studies in Biology: Phototriggered, Photoswitches and Caged Biomolecules* (Eds. M. Goeldner, R. Givens), Wiley-vch, Germany, *in press.*