

Structure and Function of Signaling Molecules

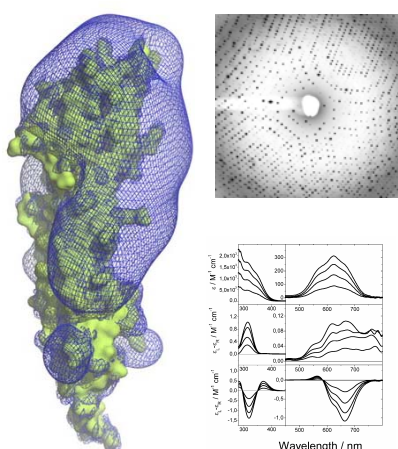
PD Dr. Günter Fritz

University of Freiburg
Department of Neuropathology
Neurozentrum, Breisacherstr.64
79106 Freiburg



E-mail: guenter.fritz@uniklinik-freiburg.de

Research Topics



Our research on signaling proteins, especially such which are activated by Ca^{2+} and Zn^{2+} , require a broad range of techniques to monitor metal-ion binding, conformational changes and target protein binding. Since we express and isolate almost all molecules ourselves, we developed a wide expert knowledge in protein biochemistry and

biophysical characterization (CD, MCD, UV-Vis, FTIR, fluorescence, EPR, SPR). Such analysis is mandatory for crystallization of the proteins to determine their 3D structure by X-ray crystallography.

The major research topics are:

- ◆ Structural studies on the activation mechanism of the **receptor of advanced glycation endproducts** and homologous receptors.
- ◆ Metal ion-binding to **S100 proteins** and structural analysis of active and inactive state of S100 proteins.
- ◆ FeS / Flavin containing enzymes.

Curriculum Vitae

Günter Fritz is born in 1968 in Waldshut, Germany. He finished High School in 1988 and after civilian service he studied from 1990-1996 Biology at the University of Konstanz. In his diploma thesis (grade *sehr gut / excellent*) he studied the properties of human $\text{Ca}^{2+}/\text{Zn}^{2+}$ -binding protein S100A3.

In 1999 he received his doctoral degree *summa cum laude* in Konstanz working with Peter Kroneck on the structure and mechanism of respiratory enzymes of sulfate-reducing bacteria and archaea. Endowed with **fellowships** of the **DFG** and the **Wilhelm-Sander foundation** he spent almost 3 years as a postdoctoral researcher at the University of Zurich, Switzerland. In a collaborative project he studied in the laboratories of Milan Vasak (Institute of Biochemistry) and Claus Heizmann (Dept. of Biochemistry, University hospital of pediatrics) the structure of human S100 proteins. A young researcher award by the **University of Zurich** enabled him to carry on autonomous research.

Since 2002 Günter Fritz is an independent group leader working on the structure of signaling proteins involved in cancer and neurodegeneration. In 2007 he got a lectureship (Privatdozent) for Biochemistry and Biophysics.

In 2009 he received a **Heisenberg-Fellowship** to continue his research at the Dept. of Neuropathology in Freiburg.

Key publications

Ostendorp, T., Leclerc, E., Galichet A., Koch, M., Demling, N., Weigle, B. Heizmann, C.W., Kroneck, P. M. H., and Fritz G. (2007) Structural and functional insights into RAGE activation by multimeric S100B. **Embo J.** **26**:3868-78.
Fritz, G., Mittl, P., Sargent, D., Vasak, M., Grütter, M.G., Heizmann, C.W. The Crystal Structure of Apo Human EF-Hand Protein S100A3 at 1.7 Å. (2002) **J. Biol. Chem.** **277**: 33092-33098
Fritz, G., Roth, A., Schiffer, A., Büchert, T., Bourenkov, G., Bartunik, H.D., Huber, H., Stetter, K.O., Kroneck, P.M.H., and Ermler, U. Structure of adenylsulfate reductase from the hyperthermophilic *Archaeoglobus fulgidus* at 1.6 Å resolution. (2002) **Proc. Natl. Acad. Sci. U S A.** **99**: 1836-1841.