



TECHNISCHE
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INSTITUT FÜR
ANGEWANDTE PHYSIK
Institute of Applied Physics
vormals/formerly
Institut für Allgemeine Physik



Wiedner Hauptstraße 8-10/E134, 1040 Wien/Vienna, Austria – Tel: +43 1 58801 13401 / Fax: +43 1 58801 13499 – E-mail: office@iap.tuwien.ac.at / <http://www.iap.tuwien.ac.at>

IAP-SEMINAR

ANNOUNCEMENT

- Date: **Tuesday, 1.12.2015**
Time: **16:00 p.m.**
Location: **Technische Universität Wien, Institut für Angewandte Physik, E134**
yellow tower „B“, 5th floor, Sem.R. DB gelb 05 B (room number DB05L03)
1040 Wien, Wiedner Hauptstraße 8-10
- Lecturer: **Prof. Dr. Martin Hof**
Department of Biophysical Chemistry, J. Heyrovsky Institute of Physical
Chemistry, Academy of Sciences of the Czech Republic, Prague/CZ
- Subject: **Sphingomyelin specific triggering of in-membrane oligomerization
of β -amyloid and the inhibitory effect of monosialoganglioside GM1**
- Abstract: Oligomers of the β -amyloid (A β) peptide are thought to be implicated in Alzheimer's disease. The plasma membrane of neurons may mediate the oligomerization of A β present in brain. Using the single-molecule sensitivity of fluorescence, we address the oligomerization of A β monomers on lipid bilayers containing essential components of the neuronal plasma membrane. We find that Sphingomyelin triggers the oligomerization of A β and that physiological levels of GM1, organized in nanodomains, do not seed oligomerization. Moreover, GM1 prevents oligomerization of A β counteracting the effect of Sphingomyelin. We discuss the molecular explanation for the above observations using all-atom molecular dynamics simulations. Our results establish a preventive role of GM1 in the oligomerization of A β suggesting that decreasing levels of GM1 in brain, e.g. due to aging, could lead to reduced protection from the oligomerization of A β and contribute to Alzheimer's onset.

*All interested colleagues are welcome to this seminar lecture
(45 minutes presentation followed by discussion).*

*U. Diebold e.h.
(Seminar-Chairperson)*

*H. Störi e.h.
(LVA-Leiter)*