

COLLOQUIA in Membrane Transport

Venue: Max F. Perutz Laboratories, Vienna Biocenter 5, Hörsaal A, Strukturchemie/Strukturbiologie, Dr. Bohr-Gasse 9 (VBC 5), 1030 Vienna

(How to get there: Tramway 71 from Schwarzenbergplatz to St. Marx or tramway 18 from U3 Schlachthausgasse to Viehmarktgasse, or bus 74A from Landstrasser Hauptstraße to Viehmarktgasse.

Parking is possible for maximal 2 hours and is not free of charge or call in advance Ms Klaus for reservation 01 4277 61806)

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Friday 19.10.2012 14:00 c.t. **Robert Konrat** (Host: K. Kuchler)
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“Physico-Chemical Biology & Applications in Biomedical Research”

Robert Konrat (robert.konrat@univie.ac.at)

Abstract.

Theoretical concepts as much as methodological developments determine and even define the framework in which scientific investigations are performed as well as the questions possibly being addressed. Physico-chemical biology combines chemical rigour with an enthusiasm for biology and offers valuable opportunities in biomedical research. For example, although it has already been acknowledged that an increasing number of proteins are lacking stably folded tertiary structures and that this intrinsic flexibility has significant impact on biological functionality, an appropriate scientific conceptualization is still missing. In the lecture I will show that the existing binary order-disorder conceptual framework can be overcome by our recently introduced meta-structure approach. By adapting concepts from theoretical physics a higher level of description is obtained in which intrinsically disordered proteins reveal many more of their intricate physico-chemical properties and their relevance for biological functions. The theoretical predictions are validated with a diverse set of experimental data obtained on several proteins implicated in cell cycle regulation, tumour growth and metastasis. Additionally, it will be demonstrated that the combination with information-rich NMR spectroscopy offers unique tools for rational lead discovery in hitherto unaddressed protein systems and significantly extend the realm of rational drug discovery programs.