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UNIVERSITÄT GREIFSWALD
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Das **Institut für Biochemie** lädt gemeinsam mit dem Ortsverband der **Gesellschaft Deutscher Chemiker** zu einem

K o l l o q u i u m der GDCh/BiOx

Kleiner Hörsaal des Instituts für Biochemie (HS II)

Felix-Hausdorff-Str. 4, Greifswald

Montag, 18. Dezember 2017, 16 Uhr c.t.

Dr. Víctor Agmo Hernández

Department of Chemistry-BMC, Uppsala University, Schweden

spricht zum Thema:

The role of Coenzyme Q10 in the mechanical stability of lipid membranes

Abstract:
Coenzyme Q10 (ubiquinone-10, or simply, Q10) is a component of biological membranes mostly known for its role as electron and proton carrier in aerobic cellular respiration and its function as a powerful lipid soluble antioxidant. Recent evidence suggests that, in addition to these well-characterized roles, Coenzyme Q10 increases the mechanical strength of lipid membranes. In this presentation, experimental results will be presented showing that membranes enhanced with Q10 are indeed less susceptible to rupture, less permeable to small solutes and more resistant against the action of surfactants. The molecule is even more effective than cholesterol in enhancing these properties. These effects are illustrated both in simple lipid membrane models as well as in more complex membranes mimicking the lipid composition of the inner mitochondria membrane and of plasma membranes of gram negative bacteria. These membranes are known for their particularly high content of Coenzyme Q10 and their lack of sterols. Our results show that the molecule stabilizes all the studied membranes, although the actual stabilization mechanism varies depending on the lipid species present in the membrane. Generally, soft membranes are stabilized by a mechanism involving the quinone headgroup of Q10, while in more tightly packed membranes only the hydrophobic tail of the molecule is relevant.Taken together, our results show that Coenzyme Q10 may be a substitute for cholesterol in natural membranes, and can potentially be used for the design of cholesterol-free liposomes and other self-assembled lipid structures with high stability.

Einladender

Prof. Dr. Fritz Scholz

PD Dr. Heike Kahlert
Vorsitzende des Ortsverbandes der GDCh