

# Karl Friedrich Bonhoeffer Lecture

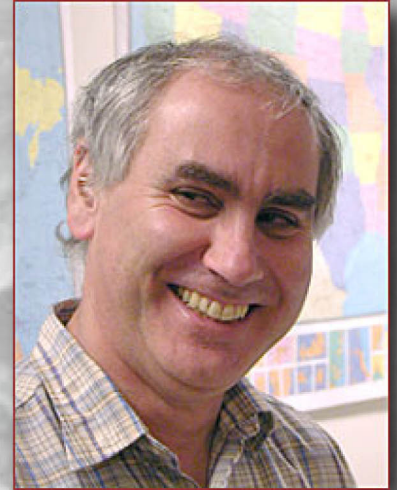
Donnerstag, den 22.09.2005 - 17:15 Uhr

Manfred-Eigen-Hörsaal

Max-Planck-Institut

für biophysikalische Chemie

Am Fassberg 11, 37077 Göttingen



**Prof. Tom A. Rapoport**

Professor of Cell Biology, Harvard Medical School, Boston

## **"Molecules and mechanisms that shape the tubular endoplasmic reticulum"**

How is the characteristic shape of a membrane-bound organelle achieved? We have used an in vitro system to address the mechanism by which the tubular network of the endoplasmic reticulum (ER) is generated and maintained. Based on the inhibitory effect of sulfhydryl reagents and antibodies, we demonstrate that network formation in vitro requires the integral membrane protein Rtn4a/NogoA, a member of the ubiquitous reticulon family. Both in yeast and mammalian cells, the reticulons are largely restricted to the tubular ER and excluded from the continuous sheets of the nuclear envelope and peripheral ER. Upon overexpression, the reticulons form tubular membrane structures. The reticulons interact with DP1/Yop1p, a conserved integral membrane protein that also localizes to the tubular ER. The simultaneous absence of the reticulons and Yop1p in *S. cerevisiae* results in disrupted tubular ER. We propose that these proteins stabilize ER tubules by utilizing a common hairpin structure to partition into and stabilize highly curved membranes.