



HBIGS Lecture

by

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„Maintaining Cellular Organization: Are Rab GTPases Master Regulators of Golgi Organization?“

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Start of Lecture: 17:00 s.t.

Venue: INF 282 (ZMBH), R001

Abstract:

Within eukaryotic cells, the Golgi apparatus or Golgi complex is the central organelle of the secretory pathway. How this organelle is maintained as a series of stacked membranes remains controversial. We propose that specific protein machines recruited by Rab GTPases are key regulators of Golgi structure. To test this hypothesis, we have applied a genetic approach using a phenotype suppression assay to identify dominant roles of individual Rab proteins and their candidate effectors in regulating Golgi apparatus organization. In this assay, individual Rab proteins and effectors are tested for their ability to suppress Golgi apparatus disruption in response to tether protein depletion or physiological stimuli. We find that Rab6, in particular, is a dominant regulator of the number and continuity of Golgi cisternal membranes and the transport of Golgi vesicles. Together with Rab33b, Rab6 appears to coordinate a potential Rab conversion/cascade sequence important to intra-Golgi transport. In addition, we find that the most important candidate effector proteins are modulators of Golgi associated motor proteins. We are in the process of scaling up our phenotype suppression assay to a high throughput basis. In conclusion, these studies reveal the participation of a potential Rab cascade in regulating Golgi apparatus organization and illustrate how genetic approaches can position a set of functionally related and novel protein machines within an ordered pathway.