



Institute colloquium

# IST Colloquium: Cellular protein self-organization

**Karsten Kruse**

University of Saarland

Host:

To understand the emergence of spatiotemporal structures in biological systems remains a major challenge to this day. Self-organization of a limited number of different agents has been found to account for structure formation in sea shells, slime mold aggregation, and bee colonies. On a subcellular level, however, the importance of self-organization of proteins and other molecules for forming vital structures is still debated. In this talk, I will discuss recent experimental and theoretical advances indicating that self-organization plays an important role in cellular processes like cell division and cell locomotion. Specifically, I will discuss in detail patterns formed by the Min proteins in the bacterium *Escherichia coli* in vivo and in vitro. These patterns constitute an important step in the selection of the cell division site. I will then indicate how similar processes can account for cytoskeletal polymerization waves observed in animal cells and speculate about their role for cell locomotion. Together these results show how physical concepts and methods can help us to understand vital cellular processes.

**Monday, September 17, 2012 04:30pm - 05:30pm**

Raiffeisen Lecture Hall, Central Building



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: <https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.