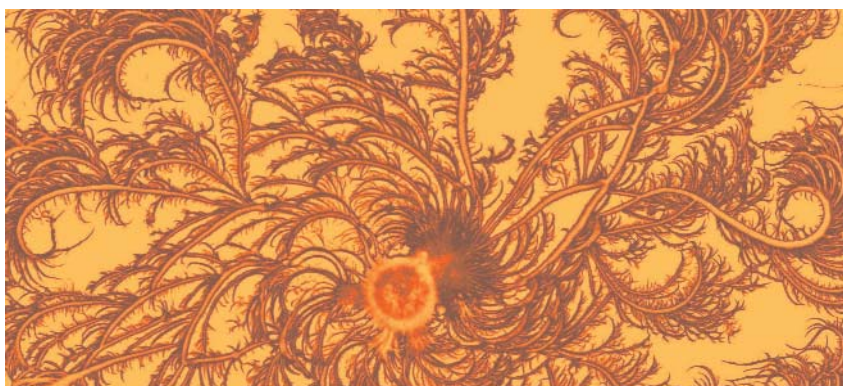


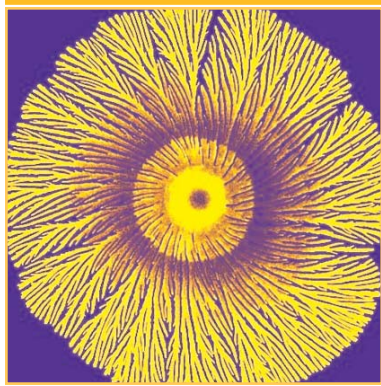


## Colloquium



**Prof. Eshel Ben-Jacob**  
Tel Aviv University

### Why Bacteria go Complex - Higher Flexibility for Better Adaptability

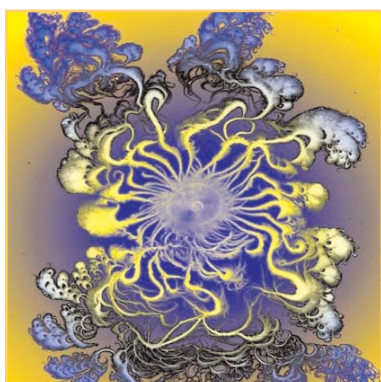
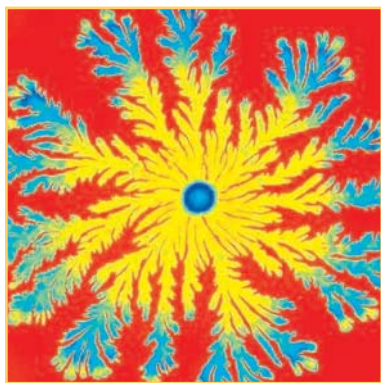


Bacteria are not the solitary simple organisms as they are usually perceived.

In nature, they are usually self-organize into complex structured colonies with more bacteria than the number of people on earth.

I will present a wealth of beautiful patterns formed during colony development in the lab when natural conditions are mimicked. The emerged patterns reflect some novel survival strategies invented by the bacteria. To decipher these secret strategies we invoke ideas from studies of non-living complex systems together with model simulations.

Using the models, I will demonstrate how communication enables colonial self-engineered organization via cooperative behaviour of the cells. By talking to each other, bacteria can cooperatively glean information from the environment and from other organisms, interpret the information in a meaningful way, develop common knowledge, and learn from past experience. The colony behaves much like a multicellular organism, or even a social community with elevated complexity and plasticity that afford better adaptability to whatever growth conditions might be encountered.



**EXYSTENCE Thematic  
Institute From Many-  
Particle Physics to  
Multi-Agent Systems**

July 19 - September 17, 2004  
at the **MPI-PKS**

**23. August 04**



**Informationen unter:**

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**16:15 Kaffee + Tee**

**16:30-17:30 Vortrag**

**Seminarraum 1 - 2**