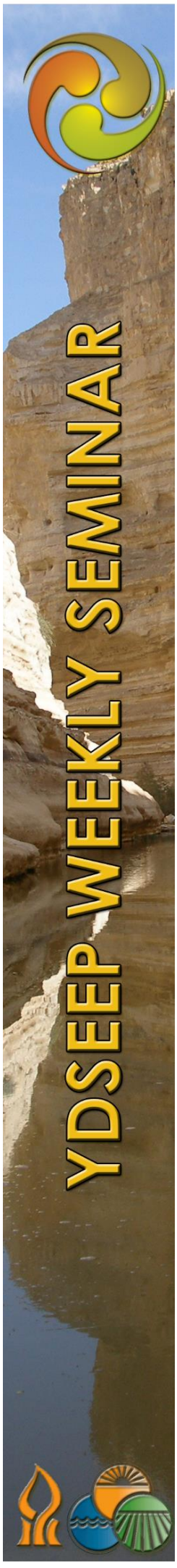

Ben-Gurion University of the Negev
Blaustein Institutes for Desert Research
The Swiss Institute for Dryland Environmental and Energy Research
Alexandre Yersin Department of Solar Energy and Environmental Physics

Title:

Mechanical Aspects of *Hydra* Morphogenesis

Speaker:
Prof. Kinneret Keren, Department of Physics
Technion

Abstract:

Morphogenesis is one of the most remarkable examples of biological self-organization. The collective dynamics of numerous molecular building blocks, spanning several orders of magnitude in space and time, lead from the rapid dynamics of individual nanometer-sized components to the development of functional multicellular organisms. The principles governing morphogenesis, which involve an intricate interplay between biophysical processes and biochemical reactions, are still poorly understood. We focus on the mechanical aspects of morphogenesis using *Hydra,* a small multicellular fresh-water polyp, as a model system. *Hydra* has a simple body plan with uniaxial symmetry and is famous for its remarkable regeneration properties.

Using this relatively simple model system, we study how mechanics influences the development of the body plan. I will discuss our recent results showing that structural inheritance of the actomyosin cytoskeletal organization and its dynamics direct body-axis formation during *Hydra* regeneration. Morphogenesis is then stabilized by dynamic cytoskeletal reorganization induced by the inherited structure. These results highlight the flexibility-robustness duality of morphogenesis, suggesting that mechanical feedback integrates with biochemical processes to establish viable patterns and ensure robust morphogenesis.

Date & Location:
Tuesday, Nov. 14, 2017, 11:00-12:00
Lecture room, Physics Building (ground floor)