Biology at different scales

Interplay between physics and biology

Application deadline: January 2019

Winter School in Les Houches, France
2019 May 27, June 7

The school will focus on the **interplay between physics and biology** to understand biological processes at different scales, from the molecular level to living organisms. It is aimed at **PhD students and early-stage researchers,** trained in various fields, and with an interest in biology. Participants will be shown how a biological problem can be tackled using an integrated approach. The school also aims at showing how physics and mathematics can contribute to model biological processes.

The interplay between physics and biology will be **illustrated on two research fields**. For each theme, there will be about 12 lectures, accessible to non-specialists of these topics. Lectures, given by researchers chosen for their complementarity, will cover a range of experimental and theoretical approaches.

Plant morphogenesis from genes to flowers

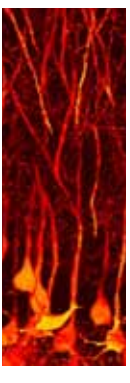
François Parcy (Grenoble) Floral development: bridging atomic and genomic scales (3 lectures)

Christophe Godin (Montpellier) Virtual plants: modeling flower bud (3 lectures)

Olivier Hamant (Lyon) Forces in plant development (3 lectures)

Karin Schumacher (Heidelberg) Plant V-type ATPase (2 lectures)

Edwige Moyroud (Cambridge) Flowers, patterns and insects: a love story (2 lectures)



Exocytosis, morphology and transport at the synapse

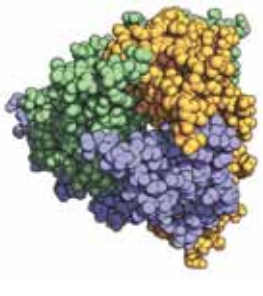
Michael Kozlov (Tel Aviv) Physical models of membrane shaping (3 lectures)

Patricia Bassereau (Paris) Role of proteins in membrane remodeling (3 lectures)

Reinhard Jahn (Göttingen) Molecular mechanisms of neuronal exocytosis (3 lectures)

DJ Slotboom (Groningen) Membrane transporters: structure, dynamics and function (2 lectures)

Seminars including Werner Kühlbrandt (Frankfurt) The revolution in electron microscopy



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