



18  
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🕒 de 13h à 14h

📍 Salle Legay

## SÉMINAIRE

# Emergence and Evolutionary Dynamics of Darwinian Collectives

Guilhem Doucier

Theory and Method in Biosciences (Macquarie University, Sydney, Australia) / Theoretical Biology Department (Max Planck Institute, Plön, Germany)

Evolutionary biology is concerned with adaptation and diversity within nested population of diverse nature (genes, plasmids, organelles, organisms, eusocial colonies...). More abstractly, it focuses on Darwinian populations that are composed of discrete individuals that vary one to another, replicate and give rise to offspring that resemble parental types. A consequence of these Darwinian properties is that populations can display patterns of neutral diversity as well as adaptation through natural selection that are -to some extent- independent of their material substrate. However, the conditions under which these properties emerge in the first place are still elusive. I will describe a research programme centered around the notion of Darwinian properties, their quantification and the study of their emergence. In particular, I will present recent work on ecological scaffolding: a mechanism by which the Darwinian properties of collectives (e.g. multicellular organisms) made of particles (e.g. cells) are a consequence of a meta-population structure with limited migration and patch dynamics. I will advocate that this view can prove fruitful to address challenges in the domains of origin of life studies (i.e. the emergence of the first Darwinian populations), major evolutionary transitions (i.e., multicellularity and division of labour) as well as biological engineering (i.e. through the artificial selection of microbial communities that provide desirable ecosystem services).