



VI Escuela de Verano en Sistemas Complejos

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Abstract

Course
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In vivo cellular and molecular dynamics: towards a multiscale reconstruction of animal embryogenesis

Investigation of multi cellular systems and organisms should lead to an integrated understanding of their intrinsic complexity. This should be achieved through the reconstruction of multi scale dynamics from the in vivo observation and spatio temporal measurement of relevant parameters at all levels of organization. Our approaches are based on a virtuous cycle between the living system and relevant models through prediction and experimentation. We expect to provide the basis for a renewed approach of living systems physiology opening the way for new therapeutic strategies. Such a goal requires developing investigation methods to observe and record the in vivo spatio temporal dynamics at different scales in order to achieve the tracking of single molecules as well as single cells in their physiological environment. Deciphering of emergent properties at different scales including stability and robustness, should lead to the understanding of the transition to pathological states.

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