ICFO+ Bio Lecture STEFAN WIESER 'Advanced Lectures in Cell Biology and Biophysics'

STEFAN WIESER

April 19, 2017

ICFO+ Bio Lecture, April 19, 2017, 16:00. Seminar Room

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SLN

ICFO-The Institute of Photonic Sciences

Living cells intrinsically reveal dynamic behavior such as shape change, polarization and migration. These dynamic states are actively regulated in embryonic development, tissue homeostasis, immunity and wound healing. Active cell migration is of critical importance to these biological processes and misregulation of cell motility is causative for various pathologies such as inflammation and cancer progression. In this Seminar, I will discuss the spatio-temporal control of cell migration which is influenced by both cell intrinsic and environmental factors, such as adhesion, that regulate migration potential and migration phenotype. While genetic and molecular biology tools have significantly advanced the number of known molecular players dictating dynamic cell behavior, our understanding of how the 3D physical microenvironment affects changes in cellular dynamics is still very limited. Hence mesenchymal motility has been widely studied due to its accessibility in 2D standard culture systems. In contrast, amoeboid migration modes have only recently been described as an alternative migration strategy with high relevance for 3D physiological tissue environments. I will discuss both the text-book view of mesenchymal motility modes and current insight into amoeboid cell motility with a focus on the physical principles of cell movement, requirements for cell adhesion and actin cytoskeleton dynamics.

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