I SEMINARI DI

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12:00

Prof. Carlos B. Duarte

Center for Neuroscience and Cell Biology, and Department of Life Sciences, University of Coimbra, Portugal

mRNA translation in space and time: role in synaptic regulation

Biography

Carlos B. Duarte is Full Professor at the Department of Life Sciences and Leader of the group Neuronal Signaling at the Center for Neuroscience and Cell Biology, University of Coimbra. His research has been focusing on the elucidation of the cellular and molecular alterations underlying learning and memory, and on the study of synaptic alterations in different diseases of the nervous system (e.g, stroke). He has published more than 150 research articles, review articles and book chapters, with more than 5500 citations. Carlos Duarte is presently Associate Editor of several journals (Frontiers in Synaptic Neuroscience, Frontiers in Molecular Neuroscience and Neurochemical Research), and member of the Editorial Board of other publications (Molecular and Cellular Neuroscience, Journal of Molecular Neuroscience, Biology). He is also reviewer for several international funding agencies, and Treasurer of the European Society for Neurochemistry

Abstract

Neurons are highly polarized cells and the distal region of the dendrites and axons is located far away from the cell body, where the nucleus is located. Throughout evolution, the synthesis of proteins became decentralized allowing rapid changes in the local protein composition away from the cell body. This requires the local availability of the translation machinery and the delivery of specific mRNAs, which are transported in RNA granules along neurites. In particular, the synthesis of proteins at the synapse, where neurons communicate with neighbour cells, is associated with rapid changes in the local proteome to strength synaptic communication in response to certain patterns of neuronal activity. The work from many laboratories has shown that the neurotrophin brain-derived neurotrophic factor (BDNF) is an important mediator in the activity-dependent enhancement of neuronal communication in different brain regions.

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