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Cellular Neurophysiology

GluR7 is an essential subunit of presynaptic kainate autoreceptors at hippocampal mossy fiber synapses

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Paulo Pinheiro is a postdoctoral fellow at the laboratory "Physiologie Cellulaire de la Synapse" at the Bordeaux Neuroscience Institute (directed by Christophe Mulle) since 2006, where he also performed part of his PhD studies in a collaboration with the Center for Neuroscience and Cell Biology of Coimbra from 2001 to 2006. During his PhD and postdoctoral work he was interested in the function and mechanisms of action of presynaptic glutamate receptors of the kainate type. He made important contributions to the field by unveiling the presynaptic function of GluR7 kainate receptors which had, until then, no known function in the brain. His studies also helped refining new biochemical techniques for the study of the subsynaptic localization of neurotransmitter receptors. During his postdoctoral work he was also involved in technological developments at the Bordeaux Neuroscience Institute, mainly related to presynaptic calcium dynamics techniques and high-speed two photon imaging coupled to electrophysiology. At present, his work is focused on clarifying the pharmacology of kainate receptors, an area where little effort has been made in recent years due to the general lack of tools, and in the implementation and application of cutting edge techniques, like recordings from presynaptic boutons, to study the function of presynaptic kainate receptors. His work led to the publication of scientific articles in high impact international peer reviewed journals, including PNAS and Nature Reviews Neuroscience (in preparation) and also several collaboration articles in journals such as FASEB Journal and Journal of Neurochemistry.