Seminário

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Phosphorylation / dephosphorylation reactions and diffusion

Prof. Sergio Alonso

UPC Barcelona
Universitat Politècnica de Catalunya
Espanha

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Prédio Eng. Itamar Franco

Resumo

Kinases and phosphatases are enzymes which, respectively, add and remove a phosphate group to proteins. These two processes, i.e. phosphorylation and dephosphorylation of proteins, are common mechanisms of activation and deactivation which regulate many cellular processes. Both mechanisms have been usually described in well mixed environments by the Goldbeter-Koshland kinetics. Such mechanisms is based in two coupled Michaelis-Menten processes, and produces a biochemical switch. If the medium is not well mixed, both reactions may occur in different regions of the cell (e.g. membrane and cytoplasm), and the spatial aspects of the processes may modify significantly the properties of the biochemical switch and produce the formation of patterns inside the cell. An example of such dynamics is the phosphorylation of MARCKS proteins at the membrane of the cells and its dephosphorylation in the cytosol.

Informações
Secretaria da pós-graduação
Campus Universitário - Bairro Martelos
Juiz de Fora – MG - 36036-330
Tel: (32) 2102-3481

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