

Posters presentations

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NEW FINDINGS ON THE CELLULAR EFFECTS OF NEWLY SYNTHETIZED HISTAMINE IN MAMMALIAN CELLS

F. Sánchez-Jiménez, J. Caro-Astorga, I. Fajardo, J.L. Urdiales

Histamine (HIS) is the most multifunctional biogenic amine. It is synthesized by histidine decarboxylase (HDC) in a reduced set of mammalian cell types. Mast cells and histaminergic neurons store HIS in specialized organelles until the amine is extruded by exocytosis; however, other immune and cancer cells are able to produce but not store HIS. The intracellular effects of HIS are still not well characterized, in spite of the physiopathological relevance of the amine. Multiple functional relationships exist among HIS metabolism/signaling elements and those of other biogenic amines, including growth-related polyamines. In a previous work, we obtained the first insights for an inhibitory effect of newly synthesized HIS on the cell cycle of non-fully differentiated mammalian cells. In the present work, we describe progress on this line. HEK293 cells were transfected to express active and inactive versions of GFP-human HDC. Cells expressing GFP fusion proteins were sorted by flow cytometry and their relative levels of protein expression related to cell signaling were measured using an Antibody Microarray. Experimental results were analyzed in terms of protein-protein and functional interaction networks. Key facts were experimentally validated by different approaches. The analyses uncover cross-talk mechanisms among biogenic amine-related pathways and provide new clues on the molecular mechanisms underlying the regulatory effects of intracellular newly synthesized HIS on cell proliferation/survival, cell trafficking and protein turnover. This information is especially interesting for emergent and orphan immune and neuroinflammatory diseases.

Granted by CIBERER (ISCIII, Spain), SAF2011-26518 (MINECO, Spain) and CVI-6585 (Junta de Andalucía).

Email: kika@uma.es