SEMINARIO DE IMÁGENES Y VISIÓN

INSTITUTO DE OPTICA (CSIC)

Multidimensional fluorescence imaging. A quest for contrast

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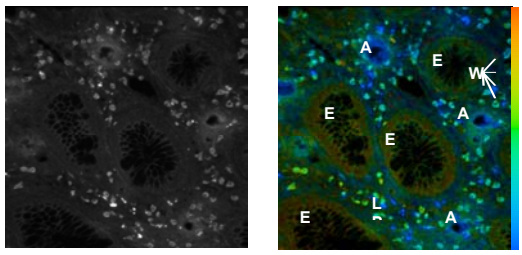

Fluorescence intensity (left) lifetime map (right) of a colonic polip

ABSTRACT

The study of biological phenomena requires tools that allow functional imaging to be performed with high specificity and sensitivity. Fluorescence lifetime imaging (FLIM) can provide information not only concerning the localisation of a specific fluorophore but also about the fluorophore local environment. It is also relatively immune to intensity artefacts. It may be implemented in scanning confocal or multi-photon microscopes, or in wide-field microscopes and endoscopes. When applied to biological tissue autofluorescence, FLIM reveals intrinsic contrast between different types and states of tissue. When applied to the imaging of inter and intra-cellular processes, FLIM is sensitive to molecular conformation, association and local environment, and it may be combined with Förster Resonance Energy Transfer (FRET) providing a means to perform biochemistry in the cell.
This talk will review our recent progress in developing FLIM technology and its applications to the study of biological phenomena with an emphasis on strategies for high-speed microscopy and endoscopy.

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