

Virtual practicals & on-line tutorials

N°42: Fluorescence Resonance Energy Transfer - Cell imaging analysis of protein interactions

Teachers:

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Förster (or Fluorescence) Resonance Energy Transfer (FRET) is a physical property of fluorophores that permits the visualisation of inter-molecular interactions, thanks to the development and the use of fusion fluorescent proteins. GFP has been cloned by Chalfie and Tsien in the early 90's (Chalfie, M. et al. Green fluorescent protein as a marker for gene expression. *Science*, 1994 Vol.263(5148), p802, & Heim, R., Prasher, D. C., & Tsien, R. Y. Wavelength mutations and posttranslational autoxidation of green fluorescent protein. *PNAS*, 1994 Vol.91(26), p12501). In less than a decade, fluorescent protein became a major tool in cell imaging and multiple applications of fluorescent proteins have been developed. We propose in the course of this practical to illustrate the interest of FRET to study protein-protein interactions in living cells. Using a combination of photobleaching and imaging analysis, FRET signal can be imaged and further quantified.

The aim of the session is to see in practice how FRET measurements can be performed on living cells using imaging and complementary approaches, in order to analyse protein interactions in cells.