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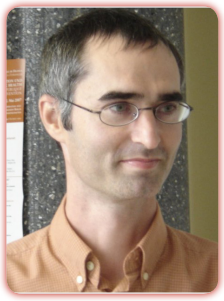

David Pastre

University of Evry, France

Visualization and quantification of protein interactions along microtubules in mammalian cells

The functions of many proteins and their interplay remain elusive, which limits the developments of diagnostic and treatment of many human diseases. To address this issue, methods are currently developed to decipher protein interactions in cells. We recently developed a new technology to probe protein interactions (PPI) along microtubules in specifically engineered mammalian cells by fluorescence microscopy. A bait protein is brought to microtubules and the presence of putative molecular partners, attracted by the bait protein, is then detected on microtubules by fluorescence microscopy. Here, we present the advantages of this technology compared to other approaches and its latest developments. The domain of applications are broad spanning from discovery of new drugs that target protein or mRNA interactions, identifying molecular targets, exploring the consequences of mutations and the possible corrections of pathogenic consequences.

Biography

David Pastre is currently the Head of the SABNP Laboratory (INSERM unit U1204) and Professor at the University of Evry. He after studying Physics and Optics at the University of Montpellier, has developed a set up to collect cathodoluminescence near field. During a Post-doctoral fellowship at the University of Virginia (2000-2001), he designed a method to observe living mammalian cells at high-resolution with a scanning ion conductance microscope. As a Teacher-Researcher at the University of Evry, he deciphered the mechanisms leading to DNA absorption on mica and studied the formation of DNA and RNA/protein complexes on mica by atomic force microscopy. He is currently investigating, at the cellular and molecular levels, the dynamics and structure of RNA/protein complexes involved in the control of protein expression and the mechanisms which regulate microtubule dynamics. He also continues to develop novel methods to explore cellular and molecular processes.

david.pastre@univ-evry.fr

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