Laboratoire Joliot-Curie

Virgile Adam - Phototransformable fluorescent proteins : new tools for cell biology

par Ruard Maryline - 8 novembre 2013

Speaker : Virgile Adam, Université Grenoble Alpes, Institut de Biologie Structurale (IBS), CNRS, CEA, DSV, 38027 Grenoble, France

E-mail : virgile.adam@ibs.fr

When : thursday 14th november at 11 am

Where : Amphi I ENS de Lyon

Title : Phototransformable fluorescent proteins : new tools for cell biology

Phototransformable fluorescent proteins (PTFPs) are powerful markers in cell imaging. They are homologous to the GFP (Green Fluorescent Protein) but their photochromic properties and/or of photoconversion offer new prospects to track molecules of interest in living cells, to develop super-resolution optical imaging or to create biophotonic systems. Apart from the photoactivation to a fluorescent form, one distinguishes two types of phototransformations : the reversible photocommutation between a fluorescent and a non-fluorescent form and the irreversible photoconversion from a color to another. We combined X-ray crystallography, modeling and in-crystallo spectroscopy in order to characterize the phototransformation mechanisms of IrisFP, first fluorescent protein capable of combining these two types of phototransformations. This protein and variants we have engineered open the door to new types of multicolored imaging with a sub-diffractionnal spatial resolution. Moreover, we have identified structural modifications related to photobleaching, a general problem of fluorescent proteins. Beyond the specific conclusions of these results, this work shows the importance of combining techniques to collect the maximum of mechanistic information about how biomolecules work.

Dans la même rubrique :

- **Francesca Di Nunzio - HIV-1 docking at the nuclear pore, nuclear import and integration, concerted steps of HIV-1 infection**
- **Boudewijn van der Sanden - Microscopie intravitale pour les neurosciences, un monde interdisciplinaire pour explorer les cellules du système nerveux central dans l'animal entier**
- **Marcus Buschbeck - MacroH2A contributes to the establishment and stabilization of differentiated epigenomes**
- **Pierre-Alix dancer - Descriptif du Fluobeam et ses applications**
- **Vincent Calvez - Un modèle biomécanique pour l'interdigitation des sutures crâniennes.**
- **Daniel Riveline - Examples of phenomena in cell physics : cell motility and cell division**
- **Karine Monier / Xavier Gaume : Super-resolution microscopy**