

Meeting report: 3rd Meeting of the Biosensor Workgroup of the GDR2588

Exploring the vast complexity of biological processes taking place in living organisms is a daunting task but the development of fluorescent reporters and biosensors has opened new avenues for exploring and following specific biological activities in their physiological environment: intracellular variations of signaling molecules such as calcium and cyclic AMP, changes in ATP levels and production of redox metabolites, dynamics of enzyme activation, modulation of gene expression and protein translocation can now be followed in real time *in cellulo*, in tissues and even in whole organisms, including plants, nematodes and mouse models. Fluorescent biosensor technology is incredibly powerful yet raises experimental, technical and methodological issues that need to be overcome to monitor biomolecules in a sensitive fashion.

The **French Biosensor Workgroup** was launched in June 2011 by **Pierre Vincent** (CNRS UMR7102, Paris) and **Franck Riquet (Lille1 University)** within the framework and sponsorship of the **CNRS Research Group GDR-2588** "Groupe de Recherche – Microscopie du Vivant". The objective of this group is to exchange knowledge, expertise and know-how on fluorescent biosensors at the national level, as well as to share experience in order to improve communication, nurture collaborations, promote transfer of expertise, and establish standards between scientists.

The first meeting held by the French Biosensor Workgroup in October 2011 took place at the CNRS IRI USR3078, in Villeneuve d'Ascq-Lille, gathering 35 participants, including biologists, physicists, and chemists, whose diversity contributed to the multidisciplinary spirit of this first meeting. Right from the start, the emphasis was set on sharing positive results, but also experimental artifacts,



Photo of participants attending the 3rd Meeting of the Biosensor Workgroup

discussing pitfalls, and drawbacks, and suggesting alternatives to solve specific issues. The first session opened with the presentation of specific examples of biosensor applications; this was followed by a session dedicated to the properties and features of different fluorescent probes; the third session focused on kinase activity measurements using either genetically encoded or peptide-based biosensors. The initiative of this first meeting was much appreciated by the French biosensor community, and immediately called for another.

The second meeting took place in Montpellier in March 2012, hosted by **May Morris** (CNRS-UMR5237) at the CNRS campus DR13. 70 scientists attended this second gathering, with a similar two-day conference format including plenary lectures, short talks and poster sessions. Presentations were divided into three sessions, so as to focus on specific topics of interest related to biosensor technologies: biosensor design, engineering and applications; signal analysis and in-

terpretation – quantification and reliability; non-genetic biosensors, delivery strategies, and applications for biomedical imaging and screening applications.

The third biosensor meeting took place in Marseille on March 28th and 29th 2013, and was organized by **Anne-Marie Lellouch** (INSERM-U1067, CNRS-UMR7333, Luminy-Marseille), at the CNRS Campus Joseph Aiguier. This third edition opened up to gain international dimension, through invitation of two renowned international scientists, **Carsten Schultz** (EMBL, Heidelberg, Germany) and **Eugenio Vazquez** (CIQUS, University Santiago de Compostela, Spain) and participation of non-French scientists. This event included plenary lectures from our invited speakers and shorter presentations from a broad panel of selected speakers, focusing on novel chromophores with improved properties, strategies to create or improve biosensors, examples of biosensors for studying biomolecules that regulate funda-

mental signaling pathways in development, immunology and neuroscience, redox processes, cell cycle progression and programmed cell death, and application of biosensors for multiplexed biosensing and high-throughput screening for drug discovery. Selected presentations from this meeting are included in this special issue of *Biotechnology Journal*.

The meetings held by the French Biosensor Workgroup aim to bring together researchers from different horizons and scientific backgrounds, with a common interest in fluorescent biosensor technologies and their application. The purpose of these meetings is to enable scientists in the field to meet and network, to exchange experience, tools and technologies and to spur active collaborations at the na-

tional and international level. Moreover, the Biosensor Workgroup strongly encourages presentations from students and postdoctoral fellows, thereby aiming to spread the use of this technology in their laboratories, and to help younger scientists gain sufficient experience for its application in their future career.

Meetings are organized on an annual basis by the Biosensor Workgroup Committee, together with the energetic action of scientists hosting the event locally, and thanks to the support of the CNRS, sponsors of the GDR2588 and of the local event.

A fourth Biosensor Meeting is to be held in Bordeaux on May 22nd & 23rd 2014 (see announcement in *BiotechVisions*). We look forward to welcoming scientists developing fluo-

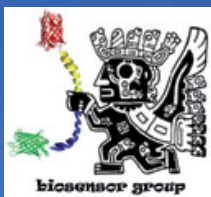
rescence imaging technologies and biosensors, as well as any participants from all horizons interested in some fundamental or applied aspect of this technology. Why not you?

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GDR 2588
Microscopie et Imagerie du Vivant



4th Biosensor Meeting

Bordeaux, May 22nd-23rd 2014

Invited Speakers:

Olivier Pertz
(University of Basel)

David Lawrence
(University of North Carolina)

Oliver Griesbeck
(Max Planck Institute of Neurobiology)

Meeting Objectives:

Facing the complexity of any biological process, we wish to promote the development and implementation of real time biosensor imaging approaches to decipher the spatio-temporal dynamics and underlying regulatory mechanisms of signaling cascades, kinase activities, protein-protein interactions and more... from single cells to complex biological systems including tissues, whole embryos and adult animals.