**Nano-jornada *"Biosensores. Diseños y sus aplicaciones"***

*El jueves 7 de noviembre tenemos una oportunidad poco frecuente: dos investigadores invitados que nos hablarán sobre biosensores y nanomateriales*

## 14 h. - Yoann Roupioz (Grenoble Francia)

*French National Scientific Research Center (CNRS)*

**Título**: Engineering of biosensors for the fast identification of bacteria

**Resumen**: The fast detection and identification of bacteria in samples presumed to be un-contaminated, or sterile such as blood, is of high importance in several domains. For instance, in the case of biomedical applications, the rapid diagnosis of pathogenic bacteria enables the set-up of appropriate antibiotic treatment and better survival rates. Besides clinical issues, there are many other domains, such as food processing or packaging, drug manufacturing, water supply facility controls, etc. where the strict absence of any pathogenic bacteria has to be assessed. In this presentation, I will present some of the results we obtained during the last decade on a label-free optical detection method of bacteria, faster than standard methods. I will describe the use of a series of biomolecules we engineered to be arrayed on micro-arrays by assaying different surface chemistries. I will also show how these biosensors have been operated for a one-step identification of a large panel of bacterial targets present in foodstuff or blood.

## 15 h. - Marcelo Kogan (Santiago, Chile)

*Facultad de Farmacia, Universidad de Chile y Centro Avanzado de Enfermedades Crónicas*

**Título**: From the nanomaterials fabrication to the development of strategies for therapy and diagnosis of chronic diseases.

**Resumen**: The advent of nanotechnology has radically changed the way we diagnose, image and treat diseases, with novel nanoplatforms capable clinically important functions, including detecting cancer at its earliest stages and location, as well as delivering therapeutics specifically to specific sites in the body. The nanotechnology approach to chronic diseases has focused on three main avenues: early detection; imaging for diagnostics or assessment of targeted delivery. Also multifunctional therapeutics are of interest, whereby nanoplattforms are loaded with multiple functional moieties capable of selective targeting, imaging and delivery of specific drugs to malignant cells (1,2,3). In relation with this is possible to mention the so called theranostics which consist in the diagnostic and treatment of pathologies in a unique procedure (4,5).
In the talk will be discussed the fabrication of nanomaterials of different compositions (gold, magnetic, liposomes, cyclodextrins, silica, proteins, etc) for drug delivery, diagnostic, therapy and theranostics of cancer (1), cardiovascular (6) and Alzheimer's diseases (4). For the preparation of the nanoplatforms different methodologies as 3D impression have been used (7). To evaluate efficacy and safety, in vitro systems as microfluidics (8) and Blood Brain Barrier on a chip (9) and in vivo assays have been assayed. Will be discussed the steps to reach the clinical applications of the developed nanomaterials.