

3rd International Conference on **Integrative Biology**

August 04-06, 2015 Valencia, Spain

Towards a total integrated lab-on-a-chip system for food safety

Dang Duong Bang

Technical University of Denmark, Denmark

More than 200 known diseases transmitted through food and food products. In 2011, USA Center Diseases Control and Prevention (CDC) estimated that 1 in 6 Americans (48 million people) get sick with food borne diseases resulting in 128,00 hospitalization and 300 deaths. The globalization of agro-food trade is becoming more and more elongated. Foods move across borders and continents in shorter time frames. Consequently, contaminated foods have often been consumed before authorities. Conventional culture methods have been the main workhorses for food safety control, they are expensive, time consuming require sample treatment and inability for onsite testing therefore establishing traceability via cost-efficient rapid and accurate methods for detecting of food borne pathogens in the entire food chain are urgent need. Micro-fabrication and miniaturisation of biological assays in a so call Lab-on-a-Chips (LOCs) have well known advantages such as greatly reduced reagents consumption, shorter times, faster mixing, high automation, high-throughputs, all leading to reduction of costs. LOCs have been applied in many different contexts (genomics, proteomics, cellomics, immunology etc). However, the fully integrated Lab-Chip remains the main challenge. Recently, via number of national and EU funded projects different total integrated LOC systems for at site rapid detection and identification of food-borne pathogens were developed at DTU. By integrating all the steps from on chip PCR reagents storage, sample preparation to PCR detection in the LOC systems, the pathogens can be on-line or at site rapid detection and identification at sub-species.

Biography

Dang Duong Bang received his MSc (1990) and PhD (1995) in Molecular Biology from Leiden University, Leiden, Netherlands. Since 1998 he worked as a Research Scientist at National Veterinary Institute and was promoted as senior scientist and leader of Laboratory of Applied Micro and Nanotechnology (LAMINATE) at National Food Institute Technical University of Denmark (2002). He was promoted as Professor at National Food Institute, Technical University of Denmark in 2014. His research focuses on host-bacterial pathogens interaction and applied micro-nanotechnology for rapid detection and identification of pathogens (virus and bacteria). He has worked on several EU and national projects on development of Lab-on-a-chip systems for DNA analysis. These include: DNA array for detection of pathogens (*Campylobacter spp.*, *Salmonella spp.*, *Avian Influenza* etc), solid phase PCR array for early detection of Colon cancer, magnetic, nano and biosensor for sample preparation and nucleic acid isolations and development of total integrated Lab-on-a-chip PCR based systems for on line at site rapid detection and identification of pathogens (virus and bacteria) in food and animal productions chains as well as in clinical diagnostics.

doba@food.dtu.dk

Notes: