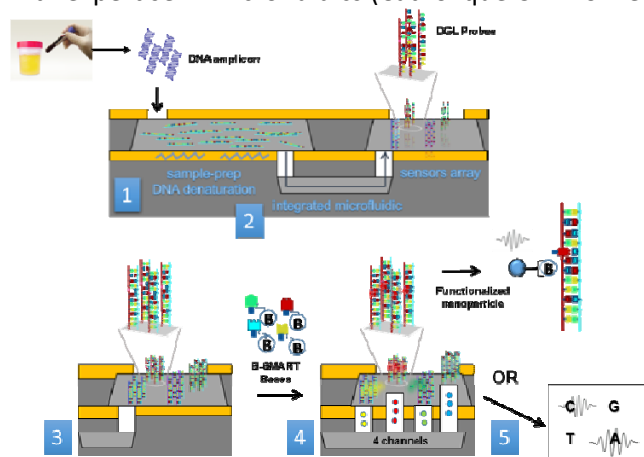


Biosensors Group at the Institute of Molecular Biology and Biotechnology receives two EC grants within Horizon2020 to develop diagnostic platforms for DNA analysis

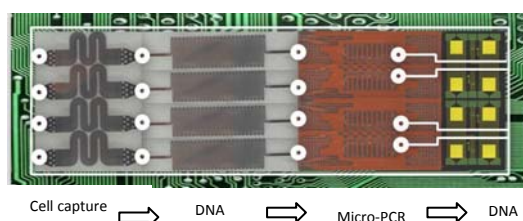
Scientific approaches developed within Biosensors group and patented by IMBB are exploited in two recently awarded EC grants of a total value of **1.25M€** for the Biosensors group and with a duration of 3 years (2016-2019). Both grants were awarded within Horizon2020 and specifically the ICT-28-2015 call entitled “**Cross cutting ICT Key Enabling Technologies**”; awards were made for the development of reliable, low-cost, micro-nano-bio systems for application to the health sector for early, fast diagnosis and monitoring of disease and patient status, or the food sector for quality, safety and process control.

The Head of the group, **Prof. Electra Gizeli**, together with her IMBB-collaborators, **Dr George Papadakis** and **Dr Achilleas Tsortos**, are proposing to use acoustic biophysics and surface acoustic wave devices to detect DNA in complex human and food samples. The award regarding the health sector includes detection of **circulating tumor DNA (ctDNA)**, a project that will be accomplished in collaboration with 2 research driven SMEs (Acoustic Wave Sensors, Spain and Destina Genomics, UK), one innovation management SME (BEABLE, Spain), one clinical partner (San Cecilio University Hospital, Spain) and one research partner with expertise in microfluidics (Catholique Univ. of Leuven, Belgium).



LiqBiopSens concept: ctDNA amplicons produced in chamber 1 are denatured and transferred to the sensors surface via microfluidics 2 where hybridization with DGL probes takes place; mutation-discrimination is carried out during the injection (3) of novel probes which click selectively on the target DNA (4) while acoustic detection exploits functionalized nanoparticles (5).

The food-related project includes **multi-pathogen DNA detection**, namely *Salmonella*, *Listeria*, *E.coli* and *B. Cereus*, and comes as an extension of a previously EC-funded project (Love-Food) coordinated by Prof. Gizeli, with the aim to produce, validate and launch to the market a prototype system. The *LoveFood2Market* project, coordinated by FORTH, includes a consortium of 2 research intensive SMEs (Senseor, France and Jobst Technologies, Germany), 2 research partners (Pasteur Inst., France and Univ. of Pardubice, Czech Republic) and two end users (MEVGAL, Greece and Fresenius, Germany).



LoveFood2Market concept: a Lab-on-Chip system will be developed for multi-pathogen food analysis, including integrated modules to perform automatically cell capture and lysis, followed by DNA purification, amplification and detection.

In both cases, the final outcome is expected to be an integrated platform for the sensitive, simple, fast, cost-effective and automatic analysis of ctDNAs or foodborne pathogens; both projects exploits innovative concepts and are expected to bringing a paradigmatic change in diagnostic technologies.