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OPEN POSITION ENGINEER / POSTDOC BIOPHOTONICS

Location: Castelldefels (Barcelona), Spain

Company: COSINGO-Imagine Optic Spain S.L.
R&D Department

Start Date: As soon as possible

Duration: 1 year

Project description: Cancer causes an increased expression of Heat Shock Protein HSP70 in the peripheral blood, at the surface of, and in cancer cells. It was recently demonstrated that tumorigenicity, metastatic potential and resistance to chemotherapy correlated with an increased of expressed HSP70 in cancer cells. On the contrary, HSP70 depletion using combinatorial small peptides called peptide aptamers sensitizes cancer cells to die and could help in cancer therapy.

The core goal of this project is to combine the latest advances of nano-optics, optical manipulation and microfluidics with the ultimate understanding of HSP70 to develop a novel integrated and ultra sensitive sensing platform for early cancer detection. An early detection would benefit to traditional but also new cancer therapies based on peptide aptamers which could be delivered sooner and at lower doses.

The planned sensing device, based on surface plasmon resonances supported by micro and nano-structures, will operate in a microfluidic circuit to minimize the volumes of analytes and increase reproducibility. Enhanced and confined plasmonic fields will be engineered at the nanoscale to implement several sensing schemes: (i) ultra sensitive tracking of HSP70 proteins based on resonance shift, (ii) individual cell optical trapping (exploiting latest generation of plasmonics tweezers) combined with scattering imaging and Surface Enhanced Raman Scattering to monitor the concentration of HSP70 proteins at the membrane surface and achieve systematic cancer cell screening. These transduction mechanisms and plasmonic tweezers will be integrated into a compact platform to operate in a biological laboratory environment.

(European Project FP7-ICT-Call 4 STREP. Acronym: SPEDOC, Surface Plasmon Early Detection of Cancer)

www.spedoc.eu

Activity: Design and production of the microfluidic Optical Detection Platform for cancer detection and follow up. Interface between the scientific partner teams. Commercialization opportunities analysis. Project management and coordination activities.

Profile: PostDoc in biophotonics or Engineer in optics/optronics

Requirements: The project requires strong background in optics: design, modeling and simulation, experimental characterization, as well as good opto-mechanic understanding, electronic, and programming (M/MI) skills. Candidates should offer a problem solving mentality and a hands on approach. Languages: high level of English and Spanish. Basis of French or will to learn well appreciated.

Mobility: Project meetings with European partners and worldwide scientific meetings and conferences.

Contact: Application process: applicants should email a Curriculum Vitae and a cover letter that describes their relevant experience and motivation: info@cosingo.com.
Review of the applications will be ongoing and will continue until position is filled.