JOB PROPOSAL

Subject:
Characterization of novel sample method using nanoparticle-loaded into porous polymer matrix: proteomic analysis of harvested biological fluid.

Location : Grenoble, France
Type of contract : temporary
Duration: 1 year (possibly extended another year)
Application deadline : June 2010
Job starting date: September 2010
Working contract type: private

Description:
CEA is a French government-funded technological research organization. With 15 000 employees, a total budget of 3300 millions €, 9 research centres, 350 patents filed per year, CEA is a prominent player in Europe in three strategic areas: energy, information and health technologies.

CEA has initiated several transversal projects focused on human disease diagnosis improvement. Recent works concern the development of minimally invasive micro-systems for sample and protein biomarkers identification in small volumes of complex biological fluids (such as blood, urine or cerebrospinal fluid). Use of micro-nanotechnologies seems to be a very promising approach to develop new tools more adapted and more sensitive and could overcome some major drawbacks of current techniques and systems.

At the CEA/ LETI, an innovative method has been developed for biological fluids sample. This method is based on the entrapment of magnetic nanoparticles in intregrated polymer matrix for sampling. This system could therefore allow selectively targeting and fixing several small biomolecules of interest, such as peptides or proteins. After sampling, nanoparticles will be collected and subsequently harvested proteins will be further analyzed using classical biochemistry techniques (electrophoresis, Bradford protein assay, ELISA, UV/visible and fluorescence spectroscopies…) and others more dedicated to proteomics such as mass spectrometry techniques (SELDI, nanoLC-ESI-MS).

The aim of this proposed post doctoral fellow is to perform biological characterization and proteomic analysis of magnetic nanoparticles. Several more and less complex biological model fluids will be used.

This work is part of inNaBioSanté establishment-funded project, named Innobiocapture. The post-doctoral position will take place in the Technologies for healthcare and biology division of LETI located in Grenoble. Biologists and clinicians from the Grenoble Institute of Neurosciences will be involved and the candidate will work with them in close collaboration.

Requirements:

The candidate should hold a PhD degree in biochemistry or proteomics. Knowledge in fields of nanoparticles and/or nanoparticles characterization methods would be an asset. This project will involve not only physicists and chemists from the laboratory but also other partners (biologists, clinicians…). Adaptability and good communication skills are therefore strongly required to share information and results in this multidisciplinary context.

Contacts:

Fabrice Navarro/ CEA LETI MINATEC-DTBS/SBSC/LFCM

17 rue des martyrs 38054 Grenoble Cedex 9 France

Tel : +334 387 803 67/ e-mail : fabrice.navarro@cea.fr

Marie Line Cosnier/ CEA LETI MINATEC-DTBS/SBSC/LCIV

17 rue des martyrs 38054 Grenoble Cedex 9 France

Tel : +334 387 865 66/ e-mail : mlcosnier@cea.fr