

**Project title: BIO-ANALYTICAL SYSTEM BASED ON CARBON NANOMATERIALS FUNCTIONALIZATION WITH IONIC LIQUIDS FOR SELECTIVE DETECTION OF TUMOR BIOMARKERS**

**Project code: PD\_180**

**Program:** Human Resources

**Project Type:** Postdoctoral Research Projects

**Contracting Authority:** Executive Unit for Financing Higher Education, the Research, Development and Innovation (UEFISCDI)

**Coordinator:** University of Bucharest

**Project Director:** CS III dr. Ana-Maria GURBAN

**Resume:**

This project aims to develop an inovative bioanalytical system based on modified sensors with nanocomposite materials, for putrescine detection as tumor biomarker for different types of cancer. Thus, it is in the functionalisation of carbon nanomaterials (eg. nanofibers, nanotubes and graphenes) with ionic liquids and the modification of screen-printed electrodes with the obtained nanocomposit and putrescine oxidase enzyme. Putrescine with cadaverine, spermidine and spermine are considered biochemical markers for cancer, diabetes, arthritis and cystic fibroids. These biologically active polyamines, plays an important role in proliferation, differentiation and physiological and Neoplastic transformation of cells, of particular importance in the metabolism of nucleic acids and protein synthesis. Putrescine determination in clinical samples is important for early diagnosis of tumors and for monitoring the efficiency of treatment (radio- or chemotherapy) applied to the patient. Electrochemical biosensors in combination with nanomaterials have become simple and efficient tools for measurement of analytes of clinical interest and beyond.

**Project duration:** 24 months

**Start date:** 28/07/2010

**End date:** 28/07/2012