



<i>Project Title:</i>	Development of multiplex assays for the detection of ischemic stroke biomarkers
<i>Project Short description</i>	<p>Ischemic stroke is a large public health problem requiring an early detection system to reduce the number of human disability and deaths worldwide. Thrombolytic therapy with rtPA is the only pharmacological drug approved for FDA in this disease, which is efficient, but tightly restricted in its therapeutic window (< 4.5 hours from stroke onset). Moreover, this thrombolytic treatment has side effects such as the chance of suffering a severe hemorrhagic transformation (HT). The identification of individuals that are likely to benefit (or not) from a particular treatment is dependent of an accurate classification system. To achieve this, the health-care providers and organizations need a system for the rapid identification and stratification of ischemic stroke patients during the time-window from stroke onset. Studies have shown that the presence of a set of stroke biomarkers in blood at certain levels can accurately predict if a patient has (or not) a high risk of developing the negative side effects associated to thrombolytic therapy. Adding this information to a point-of-care (POC) diagnostic/prognostic tool will facilitate patient classification enabling a more efficient therapy.</p> <p>The present project proposes the application and validation of a portable POC bioanalytical device – a magnetoresistive (MR) biochip platform, which goal is to adapt the technology, already developed by INESC-MN and INESC-ID, for the simultaneous detection and quantification of six relevant stroke biomarkers associated to HT development in thrombolytic treatment. The work will involve the development/optimization of a detection system based on multiple immunoassays. Assays will be performed in serum samples provided by our partners - physicians/researchers of the Health Research Institute of Santiago de Compostela (IDIS). Through this collaboration we have access to samples of patients admitted in an acute stroke unit, which allow large measurements trials, and apart from that we can have a better awareness of the existent needs on stroke diagnosis and a clinical prospective. Limits of detection (LOD) will be analyzed for quantitative assays, and used as a reference in clinical trials. The results obtained with the proposed detection platform will be compared with standard and commercialized techniques.</p>
<i>Expected Start/end date</i>	Open
<i>Required degree and Background knowledge of students, minimum grade point average, etc...</i>	Background in Biology, Biochemistry, Biotechnology or Nanotechnology. Applicants with any other degree will be asked to send a justification of the reasons why he/she are good candidates to work in this field. Fluent English language and laboratory experience is required for this project.

Supervisor at INL

Name:	Paulo Freitas/Elisabete Fernandes
Position:	Scientific Director/Research Fellow
email:	elisabete.fernandes@inl.int