



Thematic Actions

Coordinating Universities for the Proposal: UCM and UPM

Title of Action	Creation of the Laboratory for New Nano-Magnetic Markers and Radioactive Tracers		
Participating partners	UCM, UPM, CIEMAT	Other participants	PET Technological Institute
Personnel involved (indicate institution)	UCM, UPM, CIEMAT		
Start date	2010	End date	2012
Cluster	i-Health (i-Medicine)	Other clusters	
Areas of action	Research / Knowledge Transfer		
Location	UCM		
Infrastructures involved	UCM Research Support Centres, ICTS for Biomedical Imaging, ICTS for Microscopy, PET Technology Institute.		
Keywords	Molecular imaging; PET tracers; MRI contrast agents		
<p>Objectives:</p> <p>To create a laboratory for developing new radioactive tracers and nano-particle and biocompatible biomaterials, with contrast agent properties in molecular imaging by positron emission tomography (PET), magnetic resonance imaging (MRI), computed tomography (CT) and optical imaging.</p> <p>To design joint lines of work to serve as a catalyst for research in this area and to increase synergies to tackle complex problems.</p>			
<p>Description of the action:</p> <p>The creation of the laboratory will enable the synthesis of new biofunctionalised materials and their use to solve biomedical and imaging issues using a multi-modal approach of great importance for the development of the participating UCM, UPM and CIEMAT groups. The activity will include collaboration with the PET Technological Institute – a pioneer in the production of PET radiopharmaceuticals in Spain.</p> <p>The project consists of the creation of a laboratory for the synthesis of PET tracers and MRI contrast agents with optimised relaxivity and selectivity properties. It will be located in an 80 m² area adjoining the PET Technology Institute, and will be equipped with its own infrastructure and staff specialising in organic synthesis. An international expert in the field will also be hired for this project.</p> <p>In the case of PET tracers, the cold synthesis of new molecules is performed in the laboratory, while the stage involving the incorporation of the radioactive isotope will be conducted at the PET Technology Institute, where the performance of the synthesis and purity of the tracer will be established. Subsequently its in vivo bio-distribution will be analysed using micro PET imaging for small animals.</p>			
<p>Key planned results:</p> <p>Planned results include the synthesis of new tracers and contrast agents and an improvement in existing synthesis procedures, which will lead to publications in prestigious journals, international patents, and the possible establishment of biotech-based companies.</p>			
<p>Rationale for the action:</p> <p>Within the Moncloa Campus there is a concentration of infrastructures and groups specialising in molecular imaging techniques including MRI and PET. This action will enable the coordination of the activities of the different groups in order to develop joint projects and applications. Moreover, the project will enable the enormous potential of imaging and nanotechnology projects to be exploited in terms of publications and patents.</p>			



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International aspects: Advances in molecular imaging techniques will allow the use of more specific tracers for studying the molecular processes of diseases. In this regard, recent reports published in the United States on the market prospects of contrast agents in medical imaging have undergone a dramatic increase.	
Planned impact: Coordinating the work of different groups with shared interests will lead to resource optimisation and better quality research. New compounds formulated can also be directly applied to improving the detection, treatment and monitoring of diseases with a high prevalence and social impact, such as cancer, and cardiovascular and neurodegenerative diseases. Thus, in addition to generating knowledge, this action will benefit society as a whole insofar as it involves research ultimately intended for clinical application.	