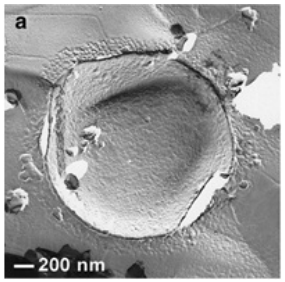
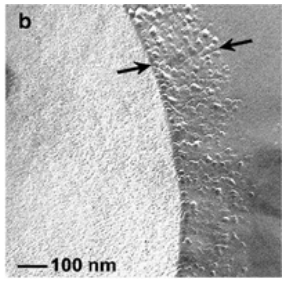
The project has received funding from the European Community's Seventh Framework Programme under Grant Agreement FP7-NMP-2009-LARGE-3
Start date 1 May 2010 - End date 30 April 2013

Three modality contrast imaging using multi-functionalized microballoons





Freeze facture TEM image of the section of an intact polymer shell

3MiCRON IS AN AMBITIOUS PROJECT WHICH GATHERS SOME OF THE MOST ADVANCED EUROPEAN MEDICAL AND TECHNICAL INSTITUTIONS TOGETHER TO ADDRESS THE DESIGN OF NEW STRATEGIES IN DIAGNOSTICS, AND TO PUSH THE POTENTIAL OF MEDICAL IMAGING BEYOND THE STATE-OF-THE-ART. *IN VIVO* MULTIMODALITY IMAGING IS A FAST GROWING FIELD IN MEDICAL RESEARCH AND, ALTHOUGH THE ACHIEVEMENTS AT CLINICAL LEVEL OF THIS DIAGNOSTIC METHOD ARE RECENT, IT IS ALREADY ONE OF THE MOST PROMISING APPROACHES IN THE DIAGNOSIS OF DISEASES IN MANY RESEARCH ADDRESSED MEDICAL CENTRES.

Partners

KTH – Kungliga Tekniska högskolan (Coordinator)
UNITV – Universita degli studi di Roma Tor Vergata
NUID UCD – University College Dublin
KI – Karolinska Institutet
INT – Fondazzione IRCCS – Instituto Nazionale dei Tumori
Surflay – Surflay Nanotec GmbH
UBT – Universitaet Bayreuth
Esaote – Esaote SPA
Sintef – Stifelsen Sintef
DKFZ – Deutsches Krebsforschungszentrum

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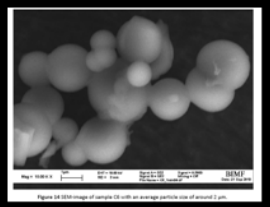
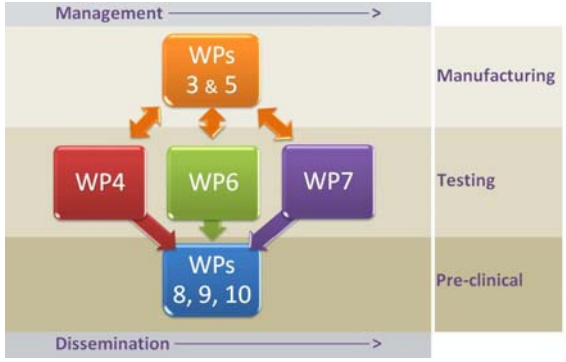


About 3MiCRON

In 3MiCRON, a multi-modal contrast agent will support different imaging and diagnostic approaches simultaneously with special reference to ultrasound (US), magnetic resonance imaging (MRI) and nuclear medicine (e.g. SPECT). 3MiCRON will develop and validate tools and technologies that will make possible the production of new knowledge and its translation into practical applications in the area of healthcare and medicine. New imaging and diagnostic devices will be used for training purposes with multi-modal phantoms as model of human body parts enabling combined ultrasound, MRI and CT imaging approaches. This practice will enhance the quality of the training of personnel in health services centres and hospitals throughout Europe.

Work Plan



Aims & Objectives

The objectives for the 3MiCRON project are:

- To test how the microballoons perform in an imaging ultrasound modality with particular emphasis on shadowing properties, distortion of the returning signal, and determination of whether the physical properties change with introduction of paramagnetic material

- To scale up the production procedure from laboratory scale to a limited fabrication production

- To perform distribution studies in both small animals and a pig model, while also testing the imaging ability of the balloons

- To monitor the biocompatibility and distribution of the degradation products following uptake and bio-distribution of the microballoons

- To perform pre-clinical testing using different imaging modalities (targeting specific diseases, e.g. cardiovascular and inflammatory diseases).

MB³
3MiCRON