

PhD Opportunities in NanoMedicine at the Ian Wark Research Institute

The Ian Wark Research Institute, the Australian Research Council (ARC) Special Research Centre for Particle and Material Interfaces, is seeking highly motivated students with an education in nanotechnology, chemistry, materials sciences, biotechnology and molecular biology to undertake a PhD in NanoMedicine. A particular focus of this research is the application of nanotechnology principles to the medical field, especially in Cancer research and drug delivery. Successful applicants will have their scholarships 'topped up' to \$28,000/year.

Availability: Open for applications from October 1st, 2009.

Eligibility: Australian citizen and permanent resident.

Collaborators: Prince of Wales Hospital (UNSW, Sydney), RAH, Southeast University (China).

Main Contact

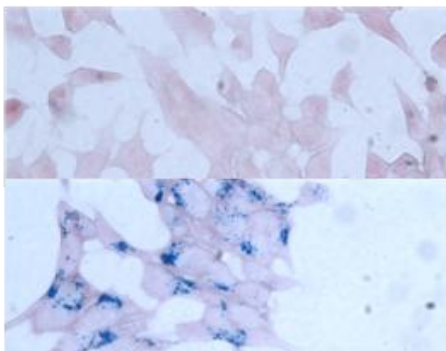
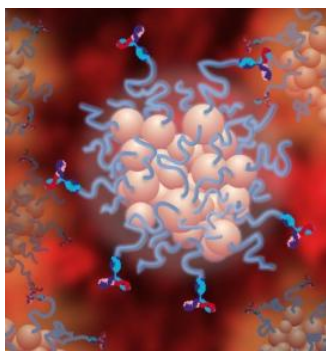
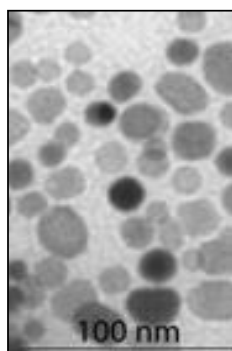
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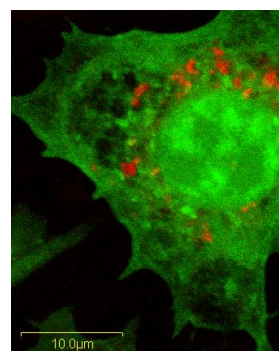
Project Description : Immunotargeted Nanoparticulate MRI Contrast Agents

Background: Current clinical cancer treatments require precise information about the primary tumour and sites of its locoregional or distant spread. While conventional anatomical imaging methods (computed X-ray tomography, MRI, ultrasound) represent the mainstay of modern imaging, reliable detection of cancers is only possible when they are >1cm in diameter. New technologies to allow early detection and to monitor lesions in real time in a cancer specific manner are crucial to formulate and individualise treatments. Magnetic nanoparticles are a major class of nanoscale materials with the potential to revolutionize current clinical diagnostic and therapeutic techniques. They are being actively investigated as the next generation of magnetic resonance imaging (MRI) contrast agents.

Overall Aim: Extending the expertise of the Wark in the synthesis and engineering of functional nanoparticles, this project aims to design a new generation of immunotargeted MRI nanoparticulate contrast agents towards the improved detection and imaging of cancer.



Superparamagnetic nanoparticles
immunotargeted to prostate cancer cells



Nanoparticles mediated
magnetofection (GFP)

For more information:

Weissleder R, Pittet MJ: Imaging in the era of molecular oncology. *Nature*. 2008;452(7187):580-9Sun C, Lee JS, Zhang M.: Magnetic nanoparticles in MR imaging and drug delivery. *Adv Drug Deliv Rev*. 2008 ;60(11):1252-65.