

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 1 October 2009.

Eligibility: Australian citizen and permanent resident.

Collaborators: Sansom Institute and IMVS.

Main Contact

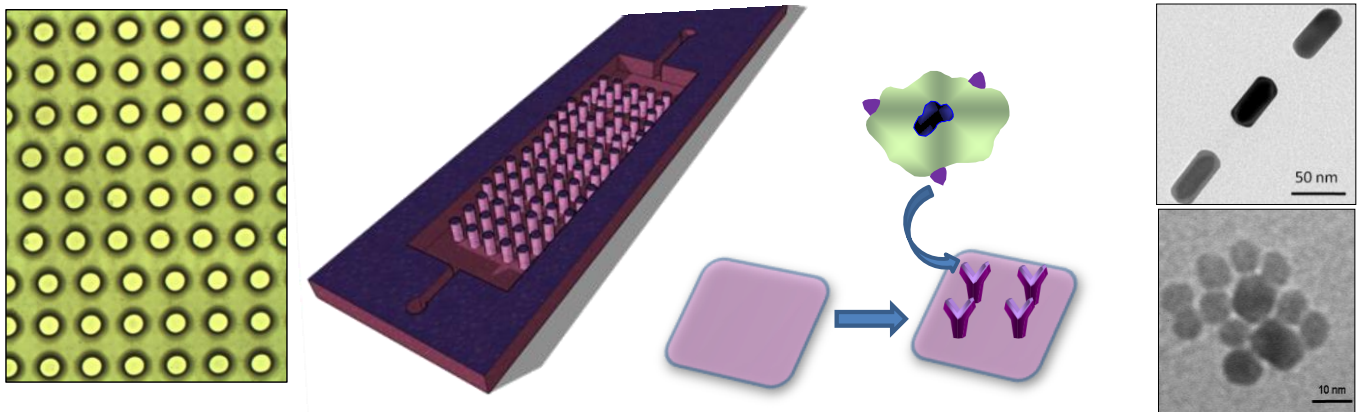
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Project Description : Microfluidic Detection of Circulating Cancer Cells

Background: While the presence of CTCs in blood has been known since the mid-1800s, their capture for diagnostic and mechanistic purposes has remained an elusive goal, mostly due to the absence of reliable technologies able to isolate these cells which are present at ratios as low as 1 to 10 per a billion blood cells. The capture and molecular analyses of these cancer cells offers unique possibilities to achieve a better and personalized understanding of the disease pathophysiology and to monitor its evolution. The recent demonstration of the outstanding capabilities of microfabricated devices to isolate CTCs has generated the hope of a **real paradigm shift in cancer diagnostic, prognostic and mechanistic studies**.

Overall Aim: Taking advantage of the unique new facilities at the Wark of the SA node of the Australian National Fabrication Facility, the aim of this project is to develop a microfluidic platform technology for the immuno-specific capture and molecular profiling of circulating cancer cells (CTCs) from blood. Through the integration on these CTC capture devices of advanced nanotechnology-enabled detection methods and molecular profiling capabilities such as FISH and RT-PCR, this project also aim to deliver **practical and noninvasive strategies to determine the molecular signature of metastatic malignancies**.



For more information:

Pantel K, Brakenhoff RH, Brandt B: Detection, clinical relevance and specific biological properties of disseminating tumour cells. *Nat Rev Cancer* 8:329-40, 2008. Nagrath S, Sequist LV, Maheswaran S, et al: Isolation of rare circulating tumour cells in cancer patients by microchip technology. *Nature* 450:1235-9, 2007