

## **Development of microfluidic 'organ on chip' platforms**

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Microfluidics, also known as Lab on a Chip, is an emerging technology in which tiny volumes of liquid are manipulated inside a device containing interconnecting networks of micron sized channels. Microfluidics is a multidisciplinary technology and has found many applications in medical diagnostics, forensic and environmental analysis and chemical and biochemical synthesis. More recently, microfluidics has been employed for advanced tissue engineering in which tissue or whole organ mimics have been developed inside micro-devices in order to study tissue function, disease progression or rapid drug screening. Examples include 'lung on a chip,' 'brain on a chip' and 'Gut on a chip' and have been described as the future in medical research for personalised medicine but also for minimising animal testing.

The project overview:

This project will involve the development of cutting edge 'cancer on a chip' microdevices for the study of disease and assessment of novel therapeutics. Part of the project in the first instance will be to identify and establish suitable disease model in collaboration with colleagues in the School of Medicine, Faculty of Medicine and Health. The research will cover different levels of tissue complexity, from single cell systems to full 'tumour on a chip' models investigating behaviours such as metastases and invasion to rapid screening of novel therapeutics. The project will involve aspects of fluid modelling and microchip design and microfabrication as well as cell handling and culturing.

We are looking for PhD student with a degree in physics, chemistry or related physical science and with a particular interest in microfluidics, biophysics and nanotechnology.