A MEMS research team led by Assoc Prof Liu Ai Qun from NTU’s School of Electrical and Electronic Engineering (EEE) has collaborated with Dr Eric Yap of Singapore’s Defence Science Organisation National Laboratories to come up with a new biochip that allows live cell cultures to be grown and maintained on it.

The new biochip known as the cell culture array chip, is created by combining microfabrication and microfluidic technologies. As the conventional cell culturing process is costly, laborious and susceptible to contamination, the cell culture array chip which is able to overcome these problems, will potentially be an alternative tool for researchers, scientists and doctors in biological and clinical tests and disease diagnosis in the near future.

Its other advantages include small in size yet efficient and sensitive. It enables integration with other medical equipments for automation and real-time monitoring and has lower contamination risk. The cell culture array chip can also be a platform for early diagnosis of complicated diseases, study of virus behaviour and virus-related diseases, drug screening and detection.

It took the research team more than a year to develop this cell culture array chip and the project was presented by Dr Wu Zhigang at the 3rd Asia-Pacific Conference of Transducers and Micro/Nanotechnology (APCOT06) held on 25 - 28 June. Other research team members are Mr Chin Lip Ket, Mr Song Wuzhou, Miss Yang Qi and Dr Harikrishnan Narayanan Unni from EEE.

The team is currently looking for interested industry partners to commercialise the cell culture array chip.

In 2005, three EEE postgraduate students Dr Zhang Xuming, Mr Liang Xiaojun and Miss Sun Yi also led by Assoc Prof Liu clinched the Asian Wall Street Journal’s 5th Young Inventors Awards for developing a chip-based single living cell detection for diseases diagnosis applications. Building on this invention, the cell culture array chip is developed. Various media had also reported their research impact. Further development on the biochip will be presented at the μTAS 2006 on 5 - 9 November in Tokyo, Japan.