



Centre for Biosystems Science and Engineering Seminar

Nano-scale Microbial Tissue Engineering

11:00 AM, 23rd May 2016,
Seminar Hall, MRDG, Biological Sciences Building.

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Advances in microarray and microfluidic technologies have revolutionised cell and tissue culture applications. In this era of miniaturisation, the massive increase in cell culture densities over the past two decades appears to follow the Moore's law of microelectronics, and is already transforming the world we live in. In this talk, the speaker will describe recent work on the development of a novel nano-scale microbial cell culture platform, and some of its applications. The microbial chip consists of single and mixed 1200 bacterial (*S. aureus*, *P. aeruginosa*) and fungal (*C. albicans*) cultures at 30 nL volume encapsulated in a three-dimensional matrix. The design and operating conditions of the chips were optimised such that the nano-cultures form biofilms, which display extensive spatio-temporal organization similar to those found in the tissues of higher organisms. These chips were used identify biofilm inhibitors by single and combinatorial screening of small molecule libraries. The speaker will also demonstrate the suitability of the nano-culture chips for rapid, convenient, and cost-effective antimicrobial susceptibility testing in diagnostic clinical labs.

About the speaker

Anand Ramasubramanian is an Associate Professor and the Director of Undergraduate Program in Biomedical Engineering at the University of Texas at San Antonio. He received his BE from Annamalai University, ME from IISc in Chemical Engineering; PhD in Bioengineering from Rice University, Houston; and post-doctoral training in Chemical Engineering at UC Berkeley. His current research interests are micro scale assay development, and vascular mechanobiology. He has received \$2.5M in funding, has co-authored 40+ articles and 2 patents, and his work was instrumental in the recent FDA approval of cold-stored platelets for transfusion in active haemorrhage.