Healthcare Engineering: A Bioengineer’s Perspective

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SYNOPSIS

As our society ages, the need for healthcare also rises as illnesses and disability become more widespread. This not only puts a tremendous strain on our healthcare system, but also has dire socio-economical consequences. How then can we cope with the limited medical facilities and staff in a small country like Singapore? The solution lies in innovating and engineering better healthcare through biomedical technology. The aims will then be to develop technology that will prevent the onset of diseases, detect diseases at an early stage, or provide treatment where recovery is possible. The desired outcomes are shorter hospital stay, faster recovery and reduced hospitalization costs. Already, bioengineers are playing a significant role in doing just that and providing healthcare solutions for a better future.

In this presentation, we will examine the landscape in which healthcare is in greater demand than ever before, the innovative biomedical technologies that bioengineers have developed to meet this demand and a peek into other creative technologies that may come our way. We will also look at some of our own multiple award-winning local technological breakthroughs in disease detection and diagnosis that have been commercialized and are undergoing tests around the world. Ultimately, prevention or early detection rather than treatment, will be the medical mantra of this new era.

BIOGRAPHY

Prof Lim is a Professor of Bioengineering and Mechanical Engineering at the National University of Singapore (NUS). He is also a Principal Investigator of the Mechanobiology Institute at NUS. His research interests include mechanobiology of human diseases and the development of microfluidic biochips for disease detection and diagnosis. In particular, he and his team have recently invented a suite of microfluidic biochips which can detect and diagnose cancer. It has won numerous awards, has been commercialized and is now undergoing tests in hospitals and cancer centers around the world.

Prof Lim has authored more than 205 journal papers (including 30 invited/review articles), 20 book chapters and delivered more than 200 plenary/keynote/invited talks. He is currently on the editorial
boards of 11 international journals. Prof Lim is also an elected Council Member of the World Council for Biomechanics. He has co-founded 3 spin-off companies.

Prof Lim has won numerous research awards and honors including the Credit Suisse Technopreneur of the Year Award, Wall Street Journal Asian Innovation Award (Gold), Wall Street Journal Asian Innovation Audience Choice Award, Innovfest Promising NUS Start-Up Award, TechVenture Most Disruptive Innovation Award and Asian Entrepreneurship Award (First Prize) in 2012, President’s Technology Award and Faculty Research Award in 2011, IES Prestigious Engineering Achievement Award in 2010 and highly cited author awards and best paper awards in international conferences. His research was cited by the MIT Technology Review magazine as one of the top ten emerging technologies of 2006 that will "have a significant impact on business, medicine or culture".