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MAJOR RESEARCH INTERESTS

Our human body is constantly exposed to physical stresses and strains throughout life. These physical interactions can occur not only at the musculoskeletal, but also cellular and molecular levels, and can directly affect the health and function of the human body. With the recent developments in biomechanics and nanotechnology, it is now possible to study and quantify these mechanical influences on biological structures not only as small as cells but also biomolecules. Here, we can seek to correlate the structures of cells and biomolecules to their mechanical properties and physiological functions by investigating the mechanics governing their biophysical interactions. It is hoped that through this study, one can obtain important information on their natural structure-property-function relationship, gain further insight into important physiological functions, and establish possible connections to human diseases such as malaria and cancer.

Dr Lim is the Head of the Nano Biomechanics Lab which uses innovative biophysical techniques to investigate the mechanics of biological structures and biomaterials at the nano and micrometer scale. The research group actively collaborates with researchers both locally from the Faculties of Medicine, Science and Dentistry, and research institutes as well as overseas including Duke University, Harvard University, Institut Pasteur, Monash University and MIT. The areas of research includes: Cell and molecular mechanics approaches to studying malaria and cancer, Mechanotransduction, and Nanobiomaterials.

Dr Lim is an Associate Editor of the International Journal of Nanoscience as well as the Molecular and Cellular Biomechanics journal. He has more than 200 scientific publications in international journals and conference proceedings, 11 invited review articles, 4 international granted or pending patents and gave more than 80 invited lectures in international conferences and institutions. He has also won several best research paper and poster awards including an Outstanding Paper Award at the MRS Fall Meeting in Boston in 2004.

RECENT REPRESENTATIVE PUBLICATIONS

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