Ching-Hwa Kiang, J Biosens Bioelectron, 2:4
http://dx.doi.org/10.4172/2155-6210.S1.02

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference and Exhibition on
Biosensors & Bioelectronics

May 14-16, 2012 Embassy Suites Las Vegas, USA

Ching-Hwa Kiang

Department of Physics & Astronomy and Bioengineering, Rice University, USA

Force biomarker for detecting dynamic states of proteins and DNA

Single-molecule manipulation studies open a door for a close-up investigation of complex biological interactions at the molecular level. We used an atomic force microscope (AFM) to pull poly(dA) molecules and found that poly(dA) has two states when highly stretched, and the unique base interaction of poly(dA) makes it more stable at large extensions. We have also studied the dynamic states of von Willebrand Factor, a key protein in blood coagulation. These results suggest that single-molecule manipulation technique has potential to be developed into a general tool for studying the dynamics of protein and nucleic acid complexes, as well as a tool for drug screening.

Biography

C.H. Kiang is an associate professor of Department of Physics & Astronomy and Department of Bioengineering at Rice University. She received her Ph.D from California Institute of Technology while performing experiments at the IBM Almaden Research Center. She works in the area of nanomanipulation of single biomolecules and carbon nanotubes. She and her co-workers at IBM discovered single-walled carbon nanotubes in 1993. This discovery has opened a door for modern nanoscience development. Her current research focuses on single-molecule manipulation and nanobiology, focusing on understanding and quantification of the force measurements and its application to medicine. She uses atomic force microscope to stretch proteins and DNA to study their dynamic states and interactions. She is the recipient of the 2007 Best of Small Tech Researcher of the Year award and is an elected fellow of the American Physical Society. More information about Prof. Kiang and her research can be found at http://www.chkiang.rice.edu.

chkiang@rice.edu