
Distinguished Lecturer Presentation

“Cancer Engineering Integrating Science & Engineering Principle to Improve the Oncology Landscape”


Distinguished Lecturer: Dr. Larry A. Nagahara, Ph.D.

Bio:
Dr. Nagahara has been actively involved in advanced technologies for over 20 years, most notably novel scanning probe microscopy development, carbon nanotube applications, molecular electronics, nanoenergy, and nanosensors. Dr. Nagahara is an Associate Director in the Division of Cancer Biology at the National Cancer Institute (NCI)/National Institutes of Health (NIH). He directs and coordinates the NCI’s Physical Sciences in Oncology Initiative that brings research activities related to expanding the role of the physical sciences and engineering in cancer research, which includes the Physical Sciences – Oncology Centers (PS-OC) Program. Before joining NCI, he was a Distinguished Member of the Technical Staff at Motorola and led their nanosensor effort. Dr. Nagahara has published over 95 technical papers, 3 book Chapters, and over 25 patents issued/filed in these fields. He is currently an adjunct professor (Department of Physics) at Arizona State University and an Associate Editor for IEEE Sensors Journal. He is also a Fellow of the American Association for the Advancement of Science (AAAS), American Physical Society (APS), IEEE, and a former member of Motorola's Scientific Advisory Board.

Abstract
More than 40 years ago, the U.S. government declared a “war on cancer” and committed to investing in laboratory and clinical research in order to understand the causes of cancer and thereby aid its diagnosis, treatment, and cure. Despite enormous advances and important improvements in the diagnosis and treatment of many cancers, the “war” progressed in a significant ways less than originally hoped. The complexity of the disease is evident by the dynamic and evolving course the disease takes during its progression and response treatment. Building on progress in the molecular sciences and advanced technologies, the exploration of physical laws and engineering principles that shape and govern the emergence and behavior of cancer at all scales may provide a complementary perspective. In an attempt to bring in different perspectives into cancer, the National Cancer Institute (NCI) launched the Physical Sciences in Oncology Initiative in 2008 with goal of exploring opportunities to advance cancer research by integrating physical scientists/engineers and their approaches with the more traditional research effort in cancer biology and clinical oncology. In this talk, examples of blending physical sciences/engineering perspectives with oncology will be presented to illustrate that fostering the development of innovating and promising approaches could lead to a paradigm shift in the way we understand and ultimately and treat this disease.