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Department of Chemistry

Student Seminar Series

9:45 a.m. Thursday, October 27, 2011 • 331 Smith Hall

Professor

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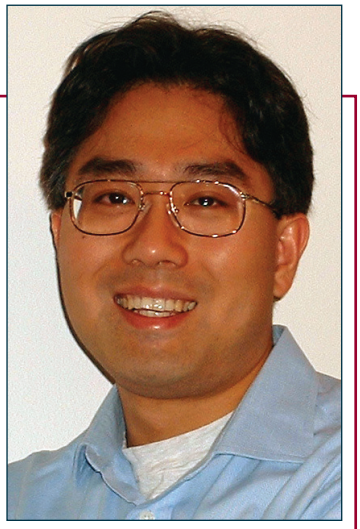
What can we do with and learn from a single cell?

Website:
http://depts.washington.edu/chem/people/faculty/chiu.html

Abstract

A cell is the basic unit of any biological system. A single germ cell, when functioning properly and guided by genetic programming and environmental inputs, can give rise to the complexity of an entire organism. When a single cell malfunctions (e.g., in cancer); however, it can seed the formation of a distant tumor, the source of over 90 percent of cancer mortality. As a scientific community, we are beginning to appreciate that in most cases each cell is different, a fact that has important implications. For example, individual cancer cells, even within a single patient, are different, and these differences are one reason that cancer is such a heterogeneous disease and why cancer is so difficult to treat. Therefore, single cell studies will provide both a fundamental understanding of biology as well as advance our understanding of the etiology of diseases so we can develop new treatments to combat devastating illness. In this presentation, I will describe a range of single-cell experiments that are on-going in our lab.



Daniel T. Chiu is the A. Bruce Montgomery Professor of Chemistry, Endowed Professor of Analytical Chemistry, and Professor of Bioengineering at the University of Washington, Seattle. He obtained a bachelor's degree in neurobiology and a bachelor's degree in chemistry from the University of California at Berkeley in 1993; then a doctorate in chemistry from Stanford University in 1998. After completing postdoctoral research at Harvard University, he started his academic career at the University of Washington. Currently, he is currently a member of the Center for Nanotechnology and the Neurobiology and Behavior Program at the University of Washington as well as a member of the Cancer Consortium at the Fred Hutchinson Cancer Research Center.

His research focuses on the development of new tools that combine ultrasensitive laser-based detection and manipulation methodologies with micro- and nano-fabrication techniques for interfacing with biological systems at the nanometer scale.

Host:
Melissa Maurer-Jones