SIGMA XI McGill Montréal

The McGill-Montreal Chapter

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The Annual SigmaXi Banquet and Lecture

Watching the choreography of life...modern microscopy imaging of living cells and neurons

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PUBLIC LECTURE

When:

Friday
18th April 2008
6 P.M.

Where:

McCord Museum
690 Sherbrooke Street W.
Montreal, Quebec H3A 1E9

BANQUET
7:30 P.M.
LeCaveau
2063 Victoria Street
Montreal, Quebec

The optical microscope has played a central role in the development of our modern understanding of the biological cell starting with the father of optical microscopy, Anton van Leeuwenhoek, to the seminal work of Robert Hooke who coined the term "cell", and the prescient work of Ramon Cajal in neuroscience. Light microscopy provided early scientists with a vista on the dynamic living world inside cells. Currently, there is a great deal of interest in being able to optically resolve the choreography of the dynamic dance of life inside cells down to the level of individual macromolecules. However, there is a limit in the spatial resolution obtainable by optical microscopy imaging due to the diffraction properties of light. In this seminar, I will describe a number of modern light microscopy approaches for imaging cells and neurons, including confocal laser-scanning microscopy, nonlinear microscopy and total internal reflection fluorescence (TIRF) microscopy. I will describe applications of these methods for imaging living cells and neurons with a focus on trying to understand the mechanisms these cells use to actively migrate. I will describe two approaches for circumventing the conventional resolution limit set by the diffraction of light. In one case, I will describe how we use fluctuations in the light detected in images to map transport of proteins inside living cells. As well, I will highlight how we can track the movement of macromolecules with a precision far below the optical diffraction limit by using single molecule methods in combination with optical microscopy.

english français

BANQUET COSTS: $30 Students & New Members $50 For Members
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vavassis@alcor.concordia.ca Details at www.sigmaxi.mcgill.ca