



Western University
Department of Physics and Astronomy

PHYSICS & ASTRONOMY COLLOQUIUM

Date: THURSDAY, 5th April 2018
Time: 1:30 p.m.
Location: Physics & Astronomy Seminar Room 100

Dr. Mark Daley

Department of Computer Science
Western University

"What does a computer scientist know about getting hit in the head?"

ABSTRACT

Traumatic brain injury (TBI) directly impacts the lives of millions of people worldwide every year. In spite of these significant human, and economic, tolls, the physiological mechanisms of TBI remain obscure and our diagnostic criteria rely heavily on subjective symptom reporting. Attempts to better understand TBI using siloed, within-discipline, approaches have yielded only modest results. The secret to understanding TBI may only be discovered with fundamentally new approaches to science.

The 2011 manifesto "Convergence: The Future of Health", authored by Jacks, Hockfield, and Sharp laid out a bold new vision for deeply integrated research that transcends simple transdisciplinarity. I will open the lecture with a brief outline of this vision, and why I think it is critical to the future of the global research endeavour.

The remainder of the lecture will describe my experiences, and contributions, as a computer scientist working as part of a TBI-focussed convergence science team including critical care and sports medicine physicians, microbiologists, cell biologists, neuroscientists, medical imagers, biomechanical engineers, surgeons, statisticians, physiologists and neurologists. I will focus on our recent discovery of an accurate metabolomics-based blood test for concussion, and novel neuroimaging results that help paint a clearer picture of the what happens in the concussed brain.

COFFEE + light snacks will be available in the Atrium, 2nd floor, at 1:15 p.m.