



**Western University**  
**Department of Physics and Astronomy**

## **PHYSICS & ASTRONOMY COLLOQUIUM**

**Date:** **Thursday, 9<sup>th</sup> November 2017**  
**Time:** **1:30 p.m.**  
**Location:** **Physics & Astronomy Seminar Room 100**

**Dr. Eugene Wong**  
Department of Physics & Astronomy  
Western University

### ***“Cancer metastasis, dormancy and recurrence from the physics perspective”***

#### **ABSTRACT**

We have made substantial progress on the cancer problem during this past decade. Early detection and treatment have led to improved survival rates. In addition, there has been major technological advances in clinical imaging as well as gene sequencing and molecularly targeted drugs. However, after seemingly successful initial treatment, cancer often recurs, after a period of dormancy. Such recurrences, either locally or in distant sites, are what cancer patients succumb to. In this talk, I will summarize my research findings from both the clinical and pre-clinical work. From the clinical side, I will review radiotherapy planning and treatment outcomes of liver metastases, most commonly arising from colorectal cancer. I will review the role of radiation in the treatment of brain metastases from breast cancer, and surprising findings from the pre-clinical work. Along the way, I will highlight the role physics played in the different scale of this research: from patient imaging and treatment down to the mechanism of cell division. While most of the above research is focused on the cancer (seed), I will describe our current efforts in using microfluidic devices to control the micro-environment (soil) and examine its role on the entrance and exit of cancer dormancy in metastatic sites. Such integrated clinical and pre-clinical understanding of metastasis is needed not only for developing novel practical treatments to prevent cancer recurrences, but also for selecting the right patient for the right treatment.

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