



### **WAI YAN LAM**

Oregon Health & Science University, School of Medicine, Biomedical Engineering

### **Degree:**

B.A. Biology and Statistics, Mount Holyoke College

### **Advisor:**

Tania Vu, Ph.D.

### **Scholar Award Donor:**

Barbara and Phil Silver

### **About the Scholar:**

Wai Yan is developing imaging technology to elucidate molecular signaling in breast cancer pathways. Particularly, she hopes to understand how upstream and downstream effectors are spatially and temporally coordinated during PI3K signaling propagation and how this signaling becomes dysregulated in breast cancer. At the moment, she is using quantum dot live imaging to look at receptor dynamics of HER2, a protein overexpressed in invasive breast cancer. In her spare time, Wai Yan enjoys reading, cooking, and crafting.

### **Benefits to Society:**

Understanding the spatiotemporal coordination of signaling molecules at the single-molecule level will reveal the molecular interactions that drive tumorigenesis. Specifically, aspects of how HER2 transmits signaling to downstream effectors are not well-understood. Several drugs targeting HER2 are currently available, but how they work to inhibit tumor growth, and more importantly the mechanism by which cells become resistant to them remains a mystery. Wai Yan's research will unravel the complex interactions of signaling proteins and the mechanics of how drug-resistant proteins drive breast cancer growth. Ultimately, this increased understanding will reveal alternative approaches for more effective targeting of drugs for improved tumor inhibition.

### **Awards and Honors:**

Best Poster - OHSU Cellular Imaging at the Nanoscale Symposium, 2013

### **Publications and Posters:**

"Live Imaging of HER2 Receptor Trafficking and Downstream Spatial Signaling Distribution of Akt in Breast Cancer Using Quantum Dots" **Wai Yan Lam**, Damien Ramunno-Johnson, Koei Chin, Joe Gray, Tania Vu. - Poster presented at *OHSU Research Week*, OHSU, Oregon, May 2014.

"Measurement Science in the Circulatory System" Casey M. Jones, Sandra M. Baker-Groberg, Flor A. Cianchetti, Jermy J. Glynn, Laura D. Healy, **Wai Yan Lam**, Jonathan W. Nelson, Diana C. Parrish, Kevin G. Phillips, Devon E. Scott-Drechsel, Ian J. Tagge, Jaime E. Zelaya, Monica T. Hinds, Owen J. T. McCarty. *Cellular and Molecular Bioengineering*. 2014.

"Spatial Distribution of Single Akt Signaling Complexes in Breast Cancer Cells Using Quantum Dot Imaging" **Wai Yan Lam**, Damien Ramunno-Johnson, Alec Bowcock, Koei Chin, Joe Gray, Marcel Bruchez, Tania Vu. Poster presentation *OHSU Cellular Imaging at the Nanoscale*, OHSU, Oregon, June 2013.