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**Wednesday, Oct 19, 2011  
12:00pm  
in LSC3**

**Life Sciences Centre  
2350 Health Sciences Mall**

## **“Understanding and Controlling Blood Coagulation Using Models, Materials and Devices”**

Having just begun my independent career at UBC, the purpose of this talk will be to give an overview of the technologies and problems I previously solved, discuss the problems my lab will address in the near future, and help initiate ideas for collaborations. Understanding the spatial dynamics of biochemical networks is important for understanding life at the systems level and has practical implications for Medicine, Engineering, Biology, and Chemistry. The complex network of hemostasis consists of over 100 coupled reactions, and has the death-defying function of regulating blood clotting.

This talk will focus on our efforts to understand the spatial dynamics of coagulation and develop therapies that locally prevent the formation of clots. We developed biomimetic systems that could reproduce and predict dynamics of coagulation. We created a synthetic chemical model that mimicked the kinetics of the coagulation reactions and microfluidic devices that mimic aspects of the vasculature. This system made non-intuitive predictions that were confirmed in vitro and in vivo.

For example, this system helped uncover a “quorum acting” mechanism by which *B. anthracis*, the anthrax causing pathogen, initiates blood coagulation. We have also developed new functional materials to prevent the formation of clots at diseased regions of the vasculature. We synthesized adhesive hydrogels that can be painted on the inside of blood vessels by mimicking the adhesives of marine mussels. These hydrogels can be permanently coated on atherosclerotic plaques in vivo, and reduce characteristics of vulnerable plaques. This “vasculature paint” should be widely applicable for locally delivering drugs to diseased vessels.

This Seminar is sponsored by:



*Host: Dr. Ed Prydzial, Clinical Professor Pathology and Laboratory Medicine & Centre for Blood Research*



Refreshments will be served 10 minutes before the seminar  
Seminar information: 604 822 7407

