**UW Laboratories Participating in the B³ Program**

Dr. Buddy Ratner: The Ratner lab asks if healing and performance of implanted biomaterials might be engineered to be similar to the healing of normal wounds. To do this, they study the basic biology of wound healing in collaboration with colleagues who are expert in these areas.

Dr. Patrick Stayton: The Stayton lab is interested in the fundamental mechanisms of biomolecular recognition and applying the unique capabilities of biological molecules to biotechnologies. The lab develops new biohybrid molecular materials designed to "talk" and "listen" and is also studying how to control vascularization around tissue engineering matrices and tissue regeneration materials.

Dr. Cecilia Giachelli: Dr. Giachelli's research is focused on improving tissue regeneration/healing related to prosthetic and tissue engineered biomedical devices, wounds and cardiovascular disease settings using molecular biotechnology and biomimetic approaches.

Dr. David Castner: The research projects in the Castner laboratory emphasize the detailed surface structural information that can be obtained when a multi-technique approach is used to characterize a range of different surfaces (metals, oxides, polymers, etc.) with and without immobilized biomolecules (peptides, proteins, DNA oligomers, lipids).

Dr. James Bryers: The Bryers lab focuses on processes governing bacterial adhesion and biofilm formation as manifested in biotechnological and biomedical applications.

Dr. Daniel Ratner: With an emphasis on interdisciplinary and translational research, Dan Ratner's lab is exploring the roles played by glycans in biological systems—focusing specifically on how pathogens bind to sugars on the surface of our cells.

Dr. Wendy Thomas: The Thomas lab studies the mechanical regulation of adhesive proteins and includes both basic science and translational work in engineered materials.

Dr. Paul Yager: The Yager lab has research interests in microfluidic devices for chemical and biochemical measurement, the development of point-of-care diagnostic instruments, microfabrication technologies for microfluidics and the development of microfluidic-specific methods of analysis of biological samples.

Dr. Valerie Daggett: The Daggett lab studies protein folding, dynamomics/bioinformatics, extremophile proteins, protein modulators, protein design, unfolding diseases, protein complexes, and single nucleotide polymorphisms.

Dr. Kim Woodrow: The Woodrow lab is interested in studying the biological trafficking of functionalized micro- and nanomaterials for applications in infectious disease and cancer. Our long-term goals are to use engineered materials to enhance understanding of pathogen transport at mucosal surfaces to design multifunctional materials for disease applications and to develop health technologies for low-resource settings.

Dr. Shaoyi Jiang: The Jiang lab studies molecular-level nonfouling mechanisms using both experimental and molecular simulation techniques, protein orientation and conformation on surfaces, and cell behaviors on micro- and nano-patterned surfaces. Development of biosensors for the simultaneous and quantitative detection of multiple analytes in complex media for food safety monitoring and early cancer diagnostics is also ongoing.
Dr. Miqin Zhang: The Zhang lab focuses on protein, cell, and biomaterial interactions, biocompatibility assessment; protein and cell micropatterning for biosensing and BioMEMS applications, biomaterials for tissue engineering and regenerative medicine, controlled drug delivery; nanotechnology for cancer diagnosis and therapy.

Dr. Deok-Ho Kim: The Kim Lab spans the disciplinary boundaries between biomaterials, nanotechnology, and cell mechanobiology with an emphasis on their applications to tissue engineering and regenerative medicine. Through the use of enabling multiscale tools and techniques, they focus on the development and applications of biomimetic cell culture models and functional tissue engineering constructs for high-throughput drug screening, stem cell-based therapies, disease diagnostics, and medical device development.

Updated: April 21, 2011