Chemistry-Biology Interface

is an opportunity to

meet colleagues from various departments with similar scientific interests

harness the synthetic, mechanistic and analytical powers of chemistry to tackle cutting-edge problems in biology

earn your own funding from the NIH

participate in the CBI community

CBI Faculty

Surita R. Bhatia, Chemical Engineering
Structure and elasticity of biocompatible gels; cell and drug discovery

James Chanters, Chemistry
Study native proteins using covalent tagging, observation and perturbation

Peter Chen, Biochemistry & Molecular Biology
Regulated protein degradation in bacteria

Neil S. Forbes, Chemical Engineering
Modeling tumor heterogeneity and metabolism; targeted therapies

Scott C. Garman, Biochemistry & Molecular Biology
Structural biology of glycoproteins in human diseases

Lila M. Gerasich, Biochemistry & Molecular Biology, Chemistry
Biophysical approaches to protein folding and localization

Jeanne Hardy, Chemistry
Design of allosteric switches in apoptotic proteins; X-ray crystallography

Daniel N. Hebert, Biochemistry & Molecular Biology
Protein folding and maturation in the cell

Alejandro Heuck, Biochemistry & Molecular Biology
Transmembrane pore-forming proteins, fluorescence spectroscopy

Matt Holian, Chemistry
Model cell membrane transport and networks

D. Joseph Jerzy, Veterinary & Animal Sciences
Regulation of p53 function

Igor A. Kaltashov, Chemistry
Biopolymer structure and function by mass spectrometry

Michael J. Knapp, Chemistry
Enzymology of metallo-oxynuclease, inorganic chemistry

Michael J. Maroney, Chemistry
Nickel metallo-biochemistry; X-ray crystallography

Craig T. Martin, Chemistry
Protein-nucleic acid interactions; RNA polymerase enzymology

Murugappan Muthukumar, Polymer Science & Engineering
Assembly and dynamics of macromolecular complexes

Susan C. Roberts, Chemical Engineering
Cellular engineering; plant secondary metabolism; cell encapsulation

Vincent M. Rotello, Chemistry
Biomedical applications of nanoparticles and polymers

Maria M. Santoro, Polymer Science & Engineering
Proteins and membranes in biomaterials; biometrica; bioadhesion

Nathan Schnarr, Chemistry
Engineering biosynthetic assemblies of metabolites, bio-organic chemistry

Danny Schnell, Biochemistry & Molecular Biology
Protein targeting and organelle biogenesis

Lianghong Sun, Chemical Engineering
Protein engineering, synthetic biology and metabolic engineering

Gregory N. Tew, Polymer Science & Engineering
Bio-inspired macromolecules and materials

S. Thayumanavan (Thal), Chemistry
Biomimetic macromolecules

Karin W. Theis, Biochemistry & Molecular Biology
Molecular machines that repair DNA; X-ray crystallography

Lynmarie K. Thompson, Chemistry
Membrane receptors and transporters; solid-state NMR

Richard W. Vancet, Chemistry
Biological mass spectrometry; metal ions in biological systems

Robert M. Weiss, Chemistry
Transmembrane signaling; membrane structure

Robert A. Zimmermann, Biochemistry & Molecular Biology
Ribosoma structure and function; protein-RNA interaction
The CBI Program

CBI is a training program at the University of Massachusetts which is funded by the National Institutes of Health (NIH) and aimed at bridging the gap between traditionally chemical and biological disciplines. It includes research groups from the following graduate programs:

- Chemistry
  www.chem.umass.edu
- Chemical Engineering
  www.ecs.umass.edu/che
- Molecular & Cellular Biology
  www.bio.umass.edu/mcb
- Polymer Science & Engineering
  www.pse.umass.edu

The Benefits of CBI

CBI participants are eligible for traineeships funded by the NIH. Selected students earn a two-year traineeship, including stipend, travel and book money.

The CBI Students

CBI students study multi-disciplinary problems and benefit from training in both biology and chemistry. Areas of interest of CBI students and faculty include:

- Artificial Enzymes
- Chemical Biology
- Drug Development & Delivery
- Metabolic Engineering
- Membrane Proteins & Biophysics
- Structural Biology
- Signal Transduction
- Metalloproteins/Metalloenzymes
- Protein Folding
- Protein/Nucleic Acid Machines
- Biomimetic Materials
- Protein Design
- Molecular Recognition

The CBI Requirements

Chalk Talk

Once per month students and faculty gather over a pizza lunch to hear presentations from one or two research labs.

Course Work

Students complete the requirements of their home department as well as take a few interdisciplinary courses. Among these are a drug design course in which representatives from pharmaceutical companies provide weekly lectures, a student seminar, and a scientific ethics course.

For more information

Dr. Lynmarie K. Thompson
Director of the CBI Program
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www.umass.edu/cbi