FACULTY MENTORS FOR INDEPENDENT RESEARCH PROJECTS
(BCMB 4960L/H, BCMB 4970L/H)

Potential Projects for Spring, 2015

Dr. Michael W.W. Adams (Life Sciences, Rm. B218. Tel: 542-2060. adams@bmb.uga.edu)
1. Physiology, metabolism and enzymology of microorganisms growing near 100°C from marine volcanic vents including biochemical, genetic- and genomics-based approaches. 2. Metabolism and enzymology of thermophilic microorganisms and their metabolic engineering for biomass conversion and bioenergy production. 3. Roles of metals and metalloenzymes in the bioremediation of nitrate.

Dr. Fikri Y. Avci (Complex Carbohydrate Research Center, Riverbend Road, Room 3064. Tel: 542-3831. avci@uga.edu)
(1) Identification of molecular interactions involved in uptake and presentation of carbohydrate antigens by antigen presenting cells (APCs), (2) Isolation and characterization of T cells and their epitopes generated from model carbohydrate antigens, (3) Understanding the basis for cellular and humoral immune responses induced by carbohydrate presentation and recognition that enable eradication of disease-causing agents.

Dr. Maor Bar-Peled (Complex Carbohydrate Research Center, Riverbend road; Tel: 542-4496. peled@ccrc.uga.edu)

Dr. Carl W. Bergmann (Complex Carbohydrate Research Center, Riverbend Road. Tel: 542-4487. cberg@ccrc.uga.edu)
1. Combination of biochemistry, surface plasmon resonance spectrometry, and mass spectrometry for investigation of the structure and function of the proteins that interact with anionic extracellular matrix polysaccharides in plants and animals.

Dr. John Brewer (Life Sciences, Rm. A316. Tel: 542-1773. brewer@bmb.uga.edu)
1. Protein folding/subunit dissociation in proteins using sedimentation equilibrium and/or differential scanning calorimetry.

Dr. Russell W. Carlson (Complex Carbohydrate Research Center, Riverbend Road. Tel: 542-4439. rcarlson@ccrc.uga.edu)
1. Characterization of bacterial surface glycoconjugates in determining the virulence of bacterial pathogens (and symbionts) of plants and animals.

Dr. Harry A. Dailey (Coverdell Building. Tel: 542-2690. hdaley@uga.edu)
1. Structure - function studies of the enzymes of heme biosynthesis 2. Regulation of mammalian heme biosynthesis

Dr. Stephen Dalton (Coverdell Building. Tel: 583-0480. sdlalton@uga.edu)
The biology of embryonic stem cells and their differentiation into cell types that have applications for curing diseases such as diabetes.

Dr. Jeffrey F.D. Dean (Life Sciences, Rm. B316. Tel: 542-1710. jeffdean@uga.edu)

Dr. David J. Garfinkel (Life Sciences, Rm. A130. Tel: 542-9403. djgarf@bmb.uga.edu)
1. Functional organization of Ty1 antisense RNA effector regions that interfere with retrotransposition and determine copy number control. 2. Cellular genes involved in RNA metabolism and P-body function. 3. Creating a Ty1-less strain of S. cerevisiae using knockout technology. 4. Evolution of Ty1 antisense RNA interference.

Dr. Claiborne Glover III (Life Sciences, Rm. A410. Tel: 542-1769. glover@uga.edu)
Protein phosphorylation in the budding yeast, Saccharomyces cerevisiae, using biochemical, molecular, genetic, and genomic approaches.

Dr. Michael G. Hahn (Complex Carbohydrate Research Center, 315 Riverbend Road; Tel: 542-4457. hahn@ccrc.uga.edu)

Dr. Stephen Hajduk (Life Sciences, Rm B128. Tel: 542-1676. shajduk@bmb.uga.edu)

Dr. Takahiro Ito (Coverdell Building. Tel 542-0197. ito@bmb.uga.edu)
Mechanism and regulation of self-renewal cell division in tissue stem cells and cancer development.

Dr. Natarajan Kannan (Life Sciences. Tel: 542-7326. kannan@bmb.uga.edu)
Comparative genomics; bioinformatics; computational structural biology; metagenomics

Dr. Eileen J. Kennedy (Pharmacy South Rm 342. Tel: 542-6497. ekennedy@rx.uga.edu)

Dr. William N. Lanzilotta (Life Sciences, A130. Tel: 542-1573. wlanzilo@bmb.uga.edu)
1. Structure/function investigation into the mechanism of heme uptake and transport by enteric pathogens. 2. The role of iron-sulfur clusters in radical chemistry: Biochemical and structural analysis of the1,3-propanediol pathway from Clostridium acetobutylicum.

Dr. Paula Lemons (Life Sciences, Rm. C116. Tel: 542-9616. plemons@uga.edu)
1. Problem-solving among undergraduate students enrolled in biology and biochemistry courses using social science methods (e.g., reviews of student work, interviews); 2. Supporting faculty who want to reform their teaching strategies using social science methods (e.g., interviews, video recordings of classroom activities, surveys, review of class materials).

Dr. John Lee (Life Sciences, Rm. A120A. Tel: 542-1764. jlee@uga.edu)

Dr. Amy E. Medlock (Coverdell Building. Tel: 542-7843. medlock@uga.edu)
1. Heme synthesis and intracellular trafficking. 2. Organismal heme homoeostasis.
Dr. Debra Mohnen (Complex Carbohydrate Research Center, 315 Riverbend Road. Tel: 542-4458. dmohnen@ccrc.uga.edu)
1. Characterization of glycosyltransferases involved in pectin biosynthesis, a plant cell wall polysaccharide required for plant growth with beneficial effects on human health and commercially important functions in the food industry. 2. Studies on the role of the GAUT1-related gene family in plant cell wall synthesis and implications for enhancing biofuel production. 3. Studying the molecular basis for the anti-cancer effects of pectin.

Dr. Kelley Moremen (Complex Carbohydrate Research Center, 315 Riverbend Rd., Rm 3055 Tel: 542-1705. moremen@uga.edu)
1. Expression and characterization of mammalian enzymes and lectins involved in glycoprotein biosynthesis and degradation. 2) Structure-function studies on glycoprotein processing enzymes. 3. Transcript analysis and gene regulation of glycan-related genes.

Dr. Ron Orlando (Complex Carbohydrate Research Center, 220 Riverbend Road. Tel: 542-4429. orlando@ccrc.uga.edu)
1. Proteomics. 2. Mass Spectrometry. 3. Identifying post-translational modifications on proteins

Dr. Robert Phillips (Chemistry, Room 313. Tel: 542-1996. rphilips@chem.uga.edu)
1. Isolation of wild-type and mutant enzymes and comparison of kinetic properties, and site-directed mutagenesis to prepare new mutant enzymes.

Dr. James Prestegard (Complex Carbohydrate Research Center, 220 Riverbend Road. Tel: 542-6281. jpresteg@ccrc.uga.edu)
NMR spectroscopy with applications to proteins and carbohydrates. Projects involve protein expression and protein purification, NMR of carbohydrates, and development of new media for NMR studies.

Dr. Michael Pierce (Life Sciences, Rm. B314B. Tel: 542-1702 email: hawkeye@uga.edu)
1. Investigation of members of a new family of animal lectins that have physiological functions in humans. 2. Effects of glycosylation on tumor cell adhesion, invasion, and tumorigenicity. 3. Discovery of of novel glycosyltransferases.

Dr. John Rose (Life Sciences, Rm. B204B. Tel: 542-1750. rose@bcl4.bmb.uga.edu)
Structural Biology, structure function studies of the Augmenter of Liver Regeneration and its cellular partners; structure function studies of the oxytocin receptor; structure function studies of HIV "host protein complexes; soft x-ray phasing of macromolecular structures

Dr. Robert Sabatini (Life Sciences, Rm A128B. Tel: 542-9806. rsabatini@bmb.uga.edu)

Dr. Walter K. Schmidt (Life Sciences, Rm. A416. Tel : 583-8241. wschmidt@ccrc.uga.edu)
1. Characterization of Rce1p, a protease having a regulatory role in cellular transformation/cancer. 2. Characterization of Ste23p, the yeast ortholog of a protease involved in Alzheimer's disease.

Dr. Richard Steet (Complex Carbohydrate Research Center, 315 Riverbend Road, Rm. 3034 Tel: (706) 583-5550. rsteet@ccrc.uga.edu)
1. Pathogenesis of lysosomal storage disorders using zebrafish models. 2. Mechanisms of altered glycoprotein trafficking using chemical biology approaches. 3. Improvement of enzyme replacement therapy for lysosomal storage disorders

Drs. Michael and Rebecca Terns (Life Sciences, Rm. A326. Tel: (706) 542-1703/1896. mterns@bmb.uga.edu/rterns@bmb.uga.edu)
RNA-based prokaryotic immune systems, host-viral interactions and development of biotechnological tools.

Dr. Michael Tiemeyer (Complex Carbohydrate Research Center, 220 Riverbend Road, 542-2740, mtiemeyer@ccrc.uga.edu) 1. Structure and function of carbohydrates that direct cell-cell interactions during nervous system development in Drosophila. 2. Genetic control of tissue-specific glycan expression. 3. Comparative glycomics and proteomics of model organisms.

Dr. Jeffrey Urbauer (Life Sciences, Rm. A310, Tel: 542-7922. urbauer@chem.uga.edu)


Dr. Lianchun Wang (Complex Carbohydrate Research Center, 315 Riverbend Road, Rm. 3005. Tel: 542-6445. Lwang@ccrc.uga.edu)
The role and structure-function relationship of heparan sulfate in vascular development and blood coagulation.

Dr. Lance Wells (Complex Carbohydrate Research Center, 220 Riverbend Road, 542-7806. lwells@ccrc.uga.edu) 1. Insulin Signal Transduction and Type II Diabetes, 2. Nutrient Sensing and Oncogenesis, 3. Proteomics and Site-Mapping by Mass Spectrometry of Post-translational Modifications in Disease States.

Dr. William B. Whitman (Biological Sci., Rm. 541. Tel: 542-4219. whitman@uga.edu)
1. Isolation and characterization of soil bacteria. 2. Genetics and physiology of methanogenic archaea.

Dr. Zachary Wood (Life Sciences, RM A428, Tel: 583-0304. zac@bmb.uga.edu)

Dr. Robert J. Woods (Complex Carbohydrate Research Center, 220 Riverbend Road, 542-4454. rwoods@ccrc.uga.edu).
Molecular simulations of proteins and carbohydrate-protein complexes of immunological relevance.

Dr. William S. York (Complex Carbohydrate Research Center, 220 Riverbend Road, 542-4628. will@ccrc.uga.edu)
1. Bioinformatics of cell surface glycans in developing animal cells. 2. The roles of complex cell wall polysaccharides in plant development.

Dr. Ying Xu (Life Sciences, Rm A110, Tel: 542-9779, xyn@bmb.uga.edu)

Dr. Shaying Zhao (Life Sciences, Rm. B316. Tel: 542-9147. szhao@bmb.uga.edu)
1. Microsatellite instability detection in cancer samples. 2. Gene expression alternation in cancer development and progression. 3. Gene expression alternation due to genomic rearrangements during evolution.

(MWA 09/03/14)