



EDUCATION & OUTREACH PROGRAMS

Professional Development for Educators



Research Experience for Teachers (RET) The RET allows teachers to spend seven weeks on the UW-Madison campus in the summer to develop a classroom lab or activity related to bioenergy. Participants work with their mentor scientist to learn about the research and techniques used, and then collaborate with the mentor and the E&O staff to create a related activity to be used in a school setting.

Bioenergy Institute for Educators This one-week Institute at UW-Madison, designed primarily for 6-12 grade educators, will allow teams of teachers to explore bioenergy development use and applications, issues around biofuel sustainability, and development of inquiry-based classroom materials.



Environmental Literacy Project Our goal is to integrate Environmental Literacy into contemporary K-12 curriculum. We have four working groups, each of which is working on different strands of environmental literacy: carbon cycle, water cycle, biodiversity and evolution, and connecting actions. Groups consist of university-based researchers and K-12 teachers. Major products of past work are: (a) research papers addressing student conceptions of environmental issues; (b) assessments that can be used with elementary, middle, and high school students.

Wisconsin Fast Plants Over the past 20 years the Wisconsin Fast Plants Program has worked with teachers, scientists and other educators to demonstrate the importance of understanding life cycles, plant biology, genetics and its relationship to the environment through data collection and analysis, using a model organism, *Brassica-rapa*. Working in partnership with GLBRC, the Wisconsin Fast Plants Program staff will broaden our available instructional materials and research data sets to support building teacher and student understandings with relationship to fundamental bioenergy concepts.



Undergraduate Opportunities

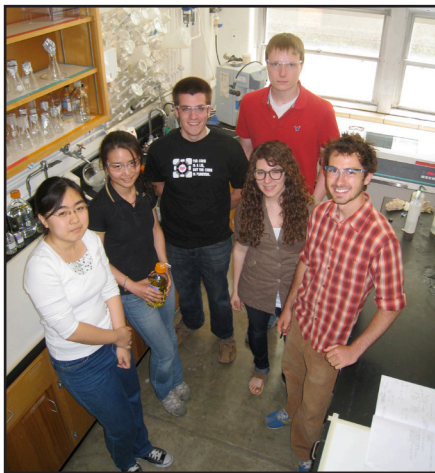


Integrated Biological Sciences Summer Research Program This program provides undergraduate students with an opportunity to conduct research as well as interact with peers in an interdisciplinary learning community over the summer at the UW-Madison campus. Participating students spend ten weeks in a laboratory conducting full-time research in areas such as microbial conversion of biomass to biofuels, genomics, enzymology, molecular biology, plant breeding, or sustainability analysis.



Kellogg Biological Station Summer Research Experience for Undergraduates This summer undergraduate research program at the Kellogg Biological Station (KBS), Michigan State University, focuses on the sustainability of biofuels. In addition to working with a mentor on an individual research project, students participate in weekly discussions focusing on environmental, ecological, and economic implications of alternative biofuel practices. Students also meet researchers working on different aspects of biofuel production, from engineering systems to molecular biology, and take field trips to production facilities. Students present their research findings in a community-wide poster session at the end of the program.

Summer Research Experience in Bioenergy This ten-week program is designed to give students experience in the theory and practice of bioenergy in the areas of biology, chemistry, chemical engineering and computational sciences, as a part of the Plant Genomics Internship experience at Michigan State University. It includes a variety of projects and participating laboratories and will collaborate with the field-oriented KBS summer research experience (described above) for common experiences.



International Genetically Engineered Machines (iGEM) Competition Team The underlying, long-term goal of the iGEM Competition team at UW-Madison is to promote education and research in biological engineering. The iGEM undergraduate competition was established at the Massachusetts Institute of Technology in 2004 to address whether simple biological systems might be constructed from standard, interchangeable parts in living cells. The competition is designed to enable the systematic engineering of biological systems by bringing together teams from around the world and providing a forum for the open development and sharing of biological protocols, reagents, and tools. Participating students span a range of disciplines covering engineering, genetics, biochemistry, mathematics, microbiology, and immunology.

Introductory College Sustainable Biofuels Course "Bioenergy: Sustainability Opportunities and Challenges" is a three-credit undergraduate course that explores a wide range of interdisciplinary issues associated with bioenergy. There is a strong focus on systems perspectives and understanding the complexities that are involved in modern scientific and technological challenges. The potential for future biofuels as a renewable energy source and to mitigate global climate change is highlighted. This course is a part of the UW-Madison FIG program (First-Year Interest Group), and all the students also take 1st semester General Chemistry and Environmental Studies: People and Resources.

