Abstracts of Sessions

CONCURRENT SESSIONS
C.I.1 The Independent Research Project: An Opportunity for Teaching-On-Demand
Dianne Bell, Avila College
Allied Health and Nursing students take Human Physiology, a required 4 credit course with a 3 hour weekly lab, when they are sophomores. Students are self-assigned to groups of 2-4 investigations with one-half of the laboratory experience assigned as an independent research project. After instruction in experimental design with access to completed projects of earlier students, students submit a full research proposal with a consent form/subject questionnaire. Teaching is then "by demand." Students request instruction with equipment, data management methods, and assays.

C.I.2 Field Investigations on a Shoe String: Do-It-Yourself
Judy Parrish, Millikin University
Taking students to the field is an excellent way to generate interest—and questions. These questions do not necessarily require high-cost technology to investigate, but rather, creative planning on a real-world budget. This workshop will focus on examples of student field projects, especially in aquatic systems. Bring ideas to share!

C.I.3 Workshop for Prospective Authors
Ricki Lewis, W. C. Brown & Company
Learn more about textbook publishing in this interactive session with biology textbook author, Ricki Lewis.

C.I.4 A Reform of Science Education: A Case for Local Action and Global Thinking
Jo Handelsman, University of Wisconsin

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C.II.1 A Day in the Life of the Planet: Collaborative Learning on the Internet
Ann Larson,
University of Illinois at Springfield
A demonstration of a project developed during a BioQUEST workshop using the 3Ps of Problem Posing, Problem Solving and Peer Persuasion in which field data is shared, patterns analyzed, and then used as the basis for collaborative projects between sites. Find out how your students can join in with the first collection day in October.

C.II.2 Emerging Diseases: A Workshop Approach
Marion Fass, Beloit College
This presentation explores the use of contemporary issues to introduce non-majors to scientific problem posing, research and analysis. It also provides examples of linkages of biology and the humanities and social sciences. Non-majors face the challenge of understanding complex scientific issues in the years ahead. The course "Biological Issues: Emerging Diseases," taught at Beloit College, engages students in an analysis of the ecological, evolutionary and political factors which influence the emergence of new diseases. Students analyze World Health Organization (WHO) data on health, development and mortality and develop a class study on upper respiratory disease and flu vaccinations on their campus. Students share independent library research on tropical diseases. "Wet" labs explore basic microbiology and antibiotic resistance. BioQUEST modules mGCK and Epidemiology are used as well for student problem solving.

C.II.3 Fears, Problems, and Successes of Students Conducting Field Investigations
J. H. Kruper and T. L. Derting,
Murray State University
Life is the basic theme of biology, yet all too often life is studied only in artificial laboratory conditions. Despite the inherent appeal of the "outdoors" in young and old alike, the idea of conducting investigations of biological phenomena in the field is met with trepidation. We present a case study of a field ecology class in which groups of students
initiated and completed independent field investigations. Many of these students had no prior field experience. Throughout the course we monitored the feeling, problems, and successes of each group of investigators. We will present the views and thoughts of the students and instructors. We believe that discussion of this information will provide useful insights to instructors and students interested in field investigation in biology.

C.II.4 Making Anatomy Useful for the Health Science Student: Incorporating Clinical Applications with Cadavers
Connie Vinton-Schoepske,
Hawkeye Community College
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C.III.1 Developing a Personal Land Ethic: Aldo Leopold
Tom Davis, Loras College

This interdisciplinary course attempts to connect students to their natural environment as well as to develop a basic understanding of ecology through computer models and research papers. Historical views of how land was and ought to be used including Aldo Leopold’s book titled “A Sand County Almanac” are discussed. Students listen to the land ethics of farmers, soil conservationists, Army Corps of Engineer hydrologists, spokespeople for the Nature Conservancy, The Iowa Natural Heritage Foundation, and local County Conservation officers in an attempt to better build their own relationship to the land. Two field trips, one to Leopold’s Shack and another to a local natural area are included. How this 3 credit sophomore level course in the Honors Program at Loras College is run, its successes and its shortcomings, will be presented.

C.III.2 Arachnophobia: A Service Learning Approach to Biology
Marianne Robertson, Millikin University

During the spring semester of 1996, I received a mini-grant from Illinois Campus Compact for Community Service to incorporate a service learning component into the Animal Behavior course at Millikin University, Decatur, IL. The objectives of this project were to promote inter-disciplinary collaboration between biology, theatre, and education students, expose university students to the real life situation of teaching science in a low-income, diverse community, and provide an ENTHUSIASTIC, interactive learning program and resources to a local elementary school. Students presented their programs to fourth grade students at Washington Elementary School. Animal behavior students each chose a topic of interest in the area of insect or spider behavior and developed oral and visual presentations centered around these themes. Theatre students developed skits and games that supported the science presentations, thus giving the fourth grade students an active role in learning. Education students, with an emphasis in science teaching, taught the animal behavior and theatre students how to present information to younger learners. These students relayed a love of science and an ENTHUSIASM FOR LEARNING that was invaluable. We are currently setting up a science laboratory at Washington Elementary.

C.III.3 AMCBT Revisited
Ed Kos, Rockhurst College, David Fagle, and Norm Jensen, Millikin University

This informal discussion session will focus on AMCBT experiences over the past 40 years. You don’t have to be a founding member to join in! What did the organization set out to do, what have we done, and what are some future directions?

C.III.4 Flow Chart Use and Problem Solving in Anatomy and Physiology
Pat Bowne, Alverno College

Two classes of sophomore students in Human Anatomy and Physiology received different levels of instruction in the use of flow charts to show cause-effect relationships in physiology. The extent to which the students used flow charts on examinations was then compared with their success in correctly solving case-study problems. Flow chart use was more strongly correlated with correctly stating normal physiology than with correctly inferring the consequences of altered physiology.

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C.IV.1 Students Tell Us
Bill Brett, Indiana State University
C.IV.2 Labless Labs
Debbie Lively, Community College of West Kentucky University
Many biology courses for non majors do not have a lab component. Because of a strong philosophical belief that all science courses should include labs, a lab component was introduced into a general biology course which formerly included no labs. Due to lack of budget, lack of space and lack of resources, all of the labs can be done in a classroom setting with a minimum of equipment and with little or no set up and tear down time. These labs are also appropriate for any class size.

C.IV.3 Creative Thinking for Teachers
Alan Nowicki, Highland Community College
Few people recognize the creativity and excitement of science. Certainly most science textbooks and science teaching fail to transmit these aspects to students. This presentation will focus on creativity in scientists and creative ways of helping students learn about science. We will define creative thinking and discuss barriers to and strategies for creativity.

C.IV.4 A Microbiology Lab for Nursing Students: Culture and Sensitivity Techniques
Gopal Krishna,
Moberly Area Community College
Activities discussed include culturing bacteria by streak plate method, observing morphology and identifying by gram staining, performing sensitivity by Kirby Baur Method, and reading the zone of inhibition around the anti-microbial discs. Although our lab room is small and our time limited, we organize these activities so that the group (20+ students) gets everything done within two lab periods. This lab relates to their practical, hospital or clinical experience, so the nursing students tend to enjoy it.

Karen Klyczek,
University of Wisconsin-River Falls
In this hands-on lab session on antibodies as tools, biology participants will try a couple of readily available, rapid antibody-based test kits (pregnancy tests, crop disease tests, etc.) and figure out how they’re set up. Where’s the antibody? the antigen? How is the color produced? Some relatively simple and inexpensive techniques for detecting antigen-antibody binding will be discussed as well as how these immunoassays can be used to develop simulated research problems in any area of biology.

W.II.1 CASE IT! Student Generated Case Studies
Mark Bergland and Karen Klyczek, University of Wisconsin- River Falls
Case It!, a collaborative project conceived at the 1995 BioQUEST Summer Workshop, will enable students to study problems in molecular biology using a case-study approach. These problems can be taken from a variety of disciplines including human genetics, forensics, ecology, evolution, and taxonomy. Participants at this workshop will use Case It! software to filter DNA sequences obtained from GENBANK, and then run restriction analyses and Southern blots of the filtered sequences. For example, participants could use this software to examine differences in DNA sequences between normal persons and persons with sickle-cell anemia, Huntington’s disease, or Duchenne muscular dystrophy, as a means of diagnosing these illnesses. Time will be allowed for participants to explore the GENBANK repository and come up with their own applications for the software. A discussion of how this software could be used in various classroom situations will also be a part of the workshop.

W.II.2 AMCBT/Web Page Construction Workshop
Tim Mulkey, Indiana State University
This workshop will introduce web basics and provide an opportunity for participants to create their own web pages. We will begin by exploring the AMCBT’s own web site.

WORKSHOPS
W.I.2 Antibodies as Tools in Biology Workshop
W.II.3 Generating Gastropod Graphics: Using Fossils, Shells and Computers to Investigate Evolutionary Morphospace
John Jungck, Beloit College

Seashell diversity includes such variant forms as cockles, mussels, cones, oysters, clams, scallops, augers, murexes, tritons, tusks, helmets, cowries, screws, limpets, turbans, tusks, abalones, and, of course, chambered spirals. The famous Yale ecologist, G. Evelyn Hutchinson, asked the question: "Why are there so many kinds of animals?" It would seem that such tremendous neontological and paleontological diversity of gastropod, bivalve, brachiopod, and cephalopod specimens would offer a good empirical collection to examine Hutchinson's thesis. Herein the notion of an "evolutionary morphospace" developed by David Raup at the University of Chicago which demonstrates the counter hypothesis will be demonstrated through computer simulations. Participants will employ a variety of shell and fossil specimens to generate data for input into computer programs (all freeware or shareware used by our undergraduates) that generate quite beautiful graphical models of seashells and be asked to discuss these two contradictory hypotheses.

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W.II.4 Plankton/Diatom Identification and Biology
Dave Czarnecki, Loras College

Using samples collected in morning field trip, up to 20 participants can join us in the laboratory for identification and discussion of these freshwater organisms.

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W.III.1 Environmental Biology and the World Wide Web
Buzz Hoagland, Westfield State College

In colleges and universities today, most students learn biology through one of two processes: (1) reading or listening to lectures about biological discoveries made by other scientists, and (2) conducting experiments. Unfortunately, many teaching institutions lack sufficient equipment, time, or expertise to conduct a wide range of experiments that yield sufficient data for meaningful analyses. Imagine 50 different biology courses conducting the same experiment and making their data available on the WWW? Participants in this workshop will learn how to develop webpages containing data on Macintosh computers. Additionally, participants will learn what WWW resources in Environmental Biology are available and how to access them.

The American Society for Microbiology will sponsor the 4th Undergraduate Microbiology Education Conference 2-4 May, 1997, in Miami, Florida. Presentations and work sessions will focus on improving curriculum options used in microbiology instruction. For more information contact:

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