



Integrating Biotechnology into your Curriculum...

June 19-21, 2007

Iowa Lakes Community College, Emmetsburg, Iowa

Tuesday, June 19

8:00 Registration & Welcome (8:30):
Continental Breakfast, Room 3210, Technology Bldg.

9:00 – 10:00 Room 3200 “Building Partnerships” Kacia Cain, East Des Moines High School. Kacia teaches an *Intro to Biotechnology* course for dual credit with DMACC. She’ll share her experience and strategies for partnering with industry to assist with program support.

9:00 – 10:30 Room 3201 “Fun with Pipets and Micropipets – Mastering Volume Measurement” Ellyn Daugherty, One of the most important and basic lab skills is measuring and dispensing volumes. It is quick, easy, and fun to teach students how to make more accurate measurements using graduated cylinders, pipets and micropipets, using a few simple steps. In this hands-on workshop, participants will learn how to teach students how to measure small volumes and check their measurements. Discussion of how and where to teach volume measurement will be included. Participants will receive copies of the PowerPoint® presentation and lab activities.

10:10 – 11:10 Room 3200 “Biotechnology in the High School Classroom” Gail Kunch, Holy Trinity School District This session focuses on how to incorporate biotechnology themes and labs in all levels of learning in the life science curriculum including: middle school introduction, high school level lab techniques and discussions and advanced class work with gene isolation, bacterial transformation techniques and bioethics discussion. The presentation will also introduce how to incorporate real world scenarios into classroom learning with the help of outside industries and community involvement, as well as, look to future involvement and cooperation with the community colleges. Resource availability and outreach programs for secondary classrooms will also be discussed.

10:45 – 12:15 Room 3201 “Biotech: Good for Every Body - How to Start a Biotech Program” Ellyn Daugherty, Biotechnology courses are an opportunity to teach science in a way that more closely duplicates what real researchers and technicians do. At the same time, biotech courses can prepare students to make the best academic and career choices. Ellyn Daugherty is helping teachers at

Tuesday, June 19, Continued...

community colleges and high schools throughout the country develop units or courses that focus on biotechnology laboratory skill development and career exploration.

In this talk, Ellyn shares how to overcome some of the obstacles to starting a biotechnology program at a high school or community college. She will share examples of how many schools have developed programs that meet the needs of students from virtually all academic levels, preparing them for future college and industry opportunities. Ellyn will share ideas for creating appropriate facilities, evaluating and implementing curriculum, using authentic assessment to evaluate student proficiency, finding funding, recruiting students, gaining administrative, industry and community support, and creating workplace experiences including job-shadows and industry internships. Participants will receive copies of the PowerPoint® presentation.

11:20 – 12:20 Room 3200: “Swine Embryo Transfer” Steven L. Terlouw, Ph. D. from Minitube of America, Verona, WI.

11:20 – 12:20 ICN Room 20 “Biotechnology Workshop” Chris Tuggle, Professor Molecular Genetics, Associate Chair Bioinformatics and Computational Biology, Iowa State University.

12:30 Lunch in Room 3210, Keynote Speaker: Ellyn Daugherty, Author of *Biotechnology: Science for the New Millennium curriculum* “Authentic Assessment in Lab-Based Classes”

2:00 – 4:30 Farm Lab: “Bovine Embryo Transfer” Dr. Vince Collison.

2:00 – 4:30 Room 3201 “ELISA - Show me the Money!” Ellyn Daugherty. DNA is the “SHOW” but proteins are the “DOUGH” of biotech. But, most proteins are colorless and all are submicroscopic. How do biotechnologists know they have a particular protein and how do they know how much they have? Scientists assay (test) for protein presence, activity and concentration using indicators and spectrophotometry. One assay that very specifically identifies a protein of interest is called an ELISA. ELISAs utilize antibody-antigen recognition and binding,

Tuesday, June 19 (Continued)...

colorimetric changes and detection through spectrophotometry.

ELISAs are used routinely to identify and quantify proteins. In this workshop, participants will learn how to conduct a qualitative ELISA that will recognize cross species contamination in meat products. An overview of other protein assays will also be given. Participants will receive copies of the PowerPoint® presentation and lab activities.

- 5:00 Golf Outing: Wild Rose Golf Course...9-hole Best Ball Escapade.** Opportunity to network with other instructors and have FUN...**Cost: \$20 Pre-registration required, includes cart rental.**

Wednesday, June 20

8:30 – 9:30

- Room 3200: “Ultrasound: Bovine”** Randy Muller.

- Room 3201 “Forensic Chemistry”** Dr. Robert Klepper, Iowa Lakes Community College

9:40 – 10:40

- Room 3200: “Putting it together: Biology and Chemistry Combine for powerful student outcomes”** Dr. LaRoy Brandt & Jack Hayes, State Fair Community College, Sedalia, MO.

- Room 3201 “Seed Genetics”** Al Schmitz, Gold Country Seed

10:50 – 11:50

- Room 3200: “Genetics and Swine Breeding”** Clint Schwab, National Swine Registry.
- Room 3201 “Technology Integration: Classroom Jeopardy”** Gary Otto, VP of Business Development, Educators Outlet, Inc.

12:00 Lunch: Room 3210, Networking...

- 1:30 – 4:00 Room 150 “Bio-Rad Forensic DNA Fingerprinting Kit”** Julie Mathern, Bio-Rad. Assume the role of a forensic scientist in this hands-on workshop. Use DNA restriction analysis and gel electrophoresis (popularly known as DNA Fingerprinting) to manipulate and analyze biological evidence found at a crime scene and to determine who committed the crime. (2.5 hrs)

Wednesday, June 20 (Continued)...

- 1:30 – 2:30 Farm Lab: “Ultrasound imaging of marbling in swine”** Clint Schwab, National Swine Registry.

- 2:40 – 4:00 Farm Lab: “Tissue Harvest”** Dr. William Safely

4:00 - 6:00 Vendor Discussions and Networking Opportunities, Cafeteria

- Little Swan Winery: Vitaculture at its “best”.** Bus departs 6:10 p.m.

Thursday, June 21

- 8:30 – 10:00 Room 150 “Genes in a Bottle (DNA Extraction techniques – make own DNA necklace from cheek cells)”** (1.5 hours) Julie Mathern, BIO-RAD

- 8:30 – 9:30 Room 3201: “Microscopy”** Chris Johnson, LEEDS Scientific.

- 9:40 – 10:40 Room 3201 “Bioeconomy”** Norm Olson, Iowa Energy Center, BECON, Transformation from oil-based to farm-based society

- 10:20 – 11:50 Room 150 “ELISA Immuno Explorer (Agriculture focus – BSE testing, GMA testing, health care: disease outbreaks and other diagnostic tests [e.g. HIV/AIDS])”** Julie Mathern, BIO-RAD

- 10:50 – 11:50 Room 3201 “Operation of a high-throughput genetics lab for plant breeding”** Seth Dorbin, Monsanto Representative

12:00 Lunch: Room 3210, Keynote Speaker, Iowa Soybean Association

- 1:30 – 2:30 Room 3201 “Where are we going...”** Soybean Association presentation

- 1:30 – 4:00 Room 150 “GMO Investigator (agriculture focus – analyzing foods for GMOs using PCR)”** Julie Mathern, Bio-Rad.

- 2:40 – 3:40 Room 3201 “Reinforce DNA and Gene expression learning outcomes”** Dr. LaRoy Brandt & Jack Hayes, State Fair Community College, Sedalia, MO

- 4:00 – 4:30 Conference Wrap Up...**