

Iowa Biotech Educator

A newsletter of the Iowa State University Office of Biotechnology • Volume 19 • Number 2 • Spring 2011

Register for Biotechnology Education Summer Workshops by May 27

Register by May 27 to reserve your place at one or more of the biotechnology education workshops offered by the Office of Biotechnology at Iowa State University. Educators in public or private schools or those who work with youth in 4-H or other community programs can update their biotechnology and bioethics teaching skills while they earn professional development or ISU graduate credits.



Don't miss the summer 2011 biotechnology workshops! Register online or use the form on p. 5.

The workshops, instructed by biotechnology outreach education coordinator Mike Zeller and bioethics program director Clark Wolf, will be held in the Biotechnology Outreach Education Center (BOEC) on the Iowa State campus in Ames. Iowa teachers can receive stipends of \$50 per day to help cover their costs of attending. ISU Extension educators or personnel can receive travel reimbursements of up to \$50 per day to help cover their expenses. Upon completion of any of the workshops, Iowa teachers are eligible to receive free supplies and equipment for specific lab protocols from the Office of Biotechnology.

IOWA STATE UNIVERSITY
Helping educators become their best.

Special Thanks to the Iowa Biotechnology Association

Materials and stipends for the workshops are funded by Iowa State's Office of Biotechnology and by the Iowa Biotechnology Association. The BOEC greatly appreciates the Iowa Biotechnology Association's continuing support.



For More Information

For more information about the biotechnology education workshops, see the descriptions that follow, contact Mike Zeller or Lori Miller toll-free in Iowa at (800) 643-9504, or e-mail mzeller@iastate.edu or lorimill@iastate.edu. For more information about the bioethics workshop, please contact Clark Wolf at (515) 294-3068 or e-mail jwcwolf@iastate.edu.

To register for any workshop, please contact Lori, complete and mail the form on p. 5, or use the online registration or pdf forms available at www.biotech.iastate.edu/ed_resources/regis_form_summer2011.html. Please submit your registration to arrive by May 27, 2011.

June 13-16 Biotechnology Education Workshop I for Science, Agriculture, and Family and Consumer Sciences Educators

Iowa State University, Ames, Iowa
2 professional development credits - \$25
1-2 ISU graduate credits - \$416 per credit
\$200 stipend for Iowa schoolteachers (\$50 per day)
Travel reimbursement available for ISU

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Information and Free Lab Supplies for Iowa Educators
Lori Miller
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Expert Answers to Questions
Mike Zeller
Biotechnology Outreach Education Coord.
mzeller@iastate.edu

Extension educators/personnel (up to \$50 per day)

Registration deadline - May 27, 2011

This workshop course is directed at science, agriculture, and family and consumer sciences educators who want to gain the basic knowledge and laboratory skills necessary to teach biotechnology in their classrooms. Teachers will learn how to prepare and instruct the laboratories in DNA extraction and quantification from various sources, DNA transformation, DNA fingerprinting, bioinformatics, and more. Educators will prepare and perform the lab protocols as the students would do in class.



June 20-23

Bioethics Workshop I

Iowa State University, Ames, Iowa

2 professional development credits - \$25

2 ISU graduate credits - \$416 per credit

\$200 stipend for Iowa schoolteachers (\$50 per day)

Travel reimbursement available for ISU Extension educators/personnel (up to \$50 per day)

Registration deadline - May 27, 2011

This course is designed for educators who are interested in discussing bioethics with their students or extension audiences. The focus will be on ethical issues in science education, focusing especially on agricultural biotechnology, but other topics relevant to both agriculture and human health will be covered. Participants will work through activities and case studies that they can take home and use in their classes. Pedagogical issues in teaching bioethics will also be covered, including appropriate objectives for bioethics units; various approaches to bioethics pedagogy; how to relate bioethics issues to personal ethical issues familiar to students; how to help students identify ethical issues; how to address bioethics while respecting diversity of views in the classroom; and assessment for bioethics units.



June 27-30

Biotechnology Education Workshop II – Advanced Workshop for Science, Agriculture, and Family and Consumer Sciences Educators

Iowa State University, Ames, Iowa

2 professional development credits - \$25

1-2 ISU graduate credits - \$416 per credit

\$200 stipend for Iowa schoolteachers (\$50 per day)

Travel reimbursement available for ISU Extension educators/personnel (up to \$50 per day)

Registration deadline - May 27, 2011

This advanced workshop is open to science, agriculture, and family and consumer sciences educators who have

attended one of the previous biotechnology workshops.

Educators will learn how to prepare and instruct advanced biotechnology laboratories in their classrooms. Activities will include marker assisted selection, DNA isolation, recombinant DNA techniques, DNA amplification, restriction analysis of DNA, bioinformatics, sequencing, genomics, and more. Educators will prepare and perform the lab protocols as their students will do in class.

— Educational Opportunities —

Cytogenetics Crash Course for High School Students

Iowa State University is offering high school students the opportunity to participate in a one-week crash course in cytogenetics to be held in Ames from June 6-10, 2011. This course is supported by a grant from the National Science Foundation. There is no charge to students.

The course will be co-taught by Professor Emeritus David F. Weber (Illinois State University) and Professor Thomas Peterson (Iowa State University). Drs. Weber and Peterson are experienced researchers with complementary expertise in cytogenetic and molecular genetic theory and techniques.

The crash course will provide students with an excellent foundation in cytogenetic analysis. This experience can be valuable preparation for college coursework and research. Students will receive a certificate of completion upon successful completion of the course. High school teachers may also be admitted to the course at no charge, pending space availability.

For further information or to receive an application form, please contact program director Dr. Adah Leshem-Ackerman at (515) 294-8453, adah@iastate.edu, or Dr. Thomas Peterson at (515) 294-6345, thomasp@iastate.edu.

— Lab Notes —

Before You Leave for the Summer...

This is the last issue of the *Iowa Biotech Educator* for the 2010-2011 school year. Please check your lab supplies before leaving for summer vacation. Thank you for your help and have a great summer!

Please Recycle ISU Lab Supplies

Before leaving for the summer, please recycle any free biotechnology lab supplies that you ordered from the ISU Office of Biotechnology during this school year. The 10X

TBE bottles, Carolina Blu DNA Stain, and unused pipette tips and boxes are refilled or reused for other teachers. To help keep costs down, please return these items to Lori Miller, Office of Biotechnology, 1210 Molecular Biology Building, Iowa State University, Ames IA 50011-3260. Please empty and rinse the 10X TBE bottles before you return them.

Your Help Is Needed to Maintain DNA Fingerprinting Kit Supplies

Iowa educators who use the DNA fingerprinting kits provided by the Office of Biotechnology at Iowa State can help keep the contents up-to-date. The kits should have certain equipment and supplies in them at all times. Follow the link provided under the heading "Lab Equipment" at www.biotech.iastate.edu/publications/ed_resources/Supplies.html to see what should be in the kit. If you checked out a kit this year and found that an item was missing or broken, please contact Lori Miller at the Office of Biotechnology, phone toll-free in Iowa (800) 643-9504, or e-mail lorimill@iastate.edu.

The kits can be checked out by contacting local Area Education Agencies or the Office of Biotechnology. Educators who obtained the kits in the past from their regional ISU Extension offices should contact Lori Miller to determine their current availability.

Grants/Competitions

State Science and Technology Fair

The 2011 State Science and Technology Fair of Iowa (SSTFI) was held in Ames on Friday and Saturday, April 1-2. The SSTFI is affiliated with the Intel International Science and Engineering Fair.

As one of the fair sponsors, the Iowa Biotechnology Association (IBA) made five scholarship awards at the 2011 fair. The IBA scholarships were awarded to the five students who exhibited the best use of biotechnology with their projects. All Iowa high school students who exhibited at the fair were eligible for the IBA scholarships, which are \$2,000 if used at an Iowa school of higher education or \$1,000 if used at an out-of-state institution of higher education.

The 2011 winners were Chase Gross, Solon High School; Surekha Mullangi, Burlington Community High School; Crystal Owens, Valley High School, West Des Moines; Meghana Pagadala, Rivermont Collegiate, Bettendorf; and Daniel Weinand, Burlington Community High School.

For more information, visit www.sciencefairofiowa.org/ or contact fair director Andrea Spencer, phone (515) 460-5559, e-mail aspence@iastate.edu.

Biotechnology Outreach Education Center



By Mike Zeller
BOEC Coordinator

With the melting snow, spring breaks, and the return of warm weather, we all start preparing for the final day of the school year and, of course, a relaxing summer break. It is also time to think about professional development opportunities here at the Biotechnology Outreach Education Center at Iowa State University. Beginning June 13th, three biotechnology workshops will be held on-campus in Ames (see p. 1). This year's workshop schedule will be completed before the July 4th weekend. Past workshop attendees have found it useful to attend a workshop as a refresher to learn new content and to update knowledge of materials and techniques. Or plan to go to the advanced workshop that you have wanted to attend before now but could not because of other summer obligations. Please pass this information along to colleagues who might be interested in bringing the newest life science principles and techniques into their classrooms, while earning professional development and licensure credits or ISU graduate credits.

BOEC in Action

To date, 50 different groups, several with multiple days, will take advantage of the on-site and outreach components offered by the BOEC. With more groups scheduling every day, it will continue to be busy. Groups and events scheduled to visit the BOEC since the last newsletter include St. Augustin Middle School and Dowling High School in Des Moines, Ballard High School, ISU Science Bound from Des Moines, ISU Toying with Technology and students from the Agronomy 114 course, Guthrie Center Middle School, Vinton-Shellsburg High School, Alta Middle School, St. Theresa Middle School in Des Moines, Howe Elementary in Ogden, and South Tama Middle School.

Presentations to groups at sites other than the BOEC included Walnut Creek Alternative High School in West Des Moines, two days at Brody Middle School in Des Moines, three days at Parkview Middle School in Ankeny, two presentations to ISU's Program for Women in Science and Engineering, East Mills High School in Malvern, two presentations to Iowa science and engineering fairs at ISU, Davenport North High School, and two presentations to Project Share with Area Education Agency 267 in Marshalltown.

If you plan to visit the BOEC or want the BOEC to come to your school before the end of the school year, there are dates left in April and May. To schedule a date, e-mail Lori Miller or me (lorimill@iastate.edu or mzeller@iastate.edu)

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or call our Iowa toll-free number at 800-643-9504. Budgets could be very tight next year and schools' opportunities to come to Ames to visit the BOEC much more difficult. If that is the case for your school, consider having the BOEC come to you. Contact me and I can work with you to bring biotechnology to your classroom free of charge.

Electronic Iowa Biotech Educator Newsletter

The Office of Biotechnology, like many, has cut costs. One expense that could be reduced is for the printing and mailing of this newsletter. If you find it more convenient to have the *Educator* e-mailed to you (pdf format), please contact Lori Miller with your e-mail address. I would encourage you to use this delivery method by placing your entire school's/district's life science staff on the list to receive the *Educator*. Remember to contact us if your e-mail and/or mailing address have changed. Any printing costs we save potentially could return to you in free supplies. Thank you in advance for considering this option.

Summer 2011

This summer, the BOEC will be full of workshops and course offerings through July 1. I hope to see some of you in the workshops or around campus with other ISU programs. I especially look forward to helping everyone bring biotechnology into your classrooms starting again this fall.

The next issue of the *Iowa Biotech Educator* will greet you as you arrive back at school in August. That issue will announce all curriculum materials, familiar and new, and hopefully our expanded state outreach opportunities that could be available for you during the 2011-12 school year. Have a great summer!

Biotech on the Internet

DNATube Features Biological Concepts

www.dnatube.com

DNATube is a scientific website where video based studies, lectures, seminars, PowerPoints, and flash animations can be viewed to help explain biological concepts. Selections can be made from more than 35 categories, including biochemistry, cell biology, bioinformatics, developmental biology, ecology, genetics, microbiology, molecular biology, and molecular genetics.

Flinn Scientific BioFax

www.flinnsci.com/pr/biofax2011.asp

Flinn Scientific, Inc., has added two more science demonstrations to its collection for biology and life science teachers: *Rain Forest Biodiversity* and *Isolating DNA from Fruits*. These new resources and others are available to science teachers who complete and submit the website form.

Genetics Education Websites from University of Utah

<http://learn.genetics.utah.edu>
<http://teach.genetics.utah.edu>

The Learn.Genetics™ website of the University of Utah's Genetic Science Learning Center provides basic information about DNA and genes, protein synthesis, heredity and traits, and the cell. Genetic technology topics include stem cells, cloning, gene therapy, and transgenic mice. The materials on stem cells have been updated to discuss the nature of stem cells and their roles in the body; new methods for unlocking stem cell potential; less controversial sources of stem cells, including using a patient's own; and the changing ethical landscape of stem cell research. Virtual labs on the site feature DNA extraction, polymerase chain reaction (PCR), gel electrophoresis, and DNA microarray analysis. The site also explores epigenetics, the science of addiction, and genetics and health. Teachers can access related lessons, labs, and activities at <http://teach.genetics.utah.edu>, a new website that correlates with the genetics learning website.

Online Biology Education Resources from Nature Publishing Group

www.nature.com/scitable

The Nature Publishing Group's Scitable website provides free teaching resources for the life sciences, including libraries of peer-reviewed readings about important experiments and key concepts in genetics, cell biology, and ecology; high quality genetics and cell biology textbooks; and information about scientific communication and career planning. Educators can link to these freely accessible resources directly from an online syllabus or classroom page, or they can create their own Scitable classroom group for their students. Educators can customize their Scitable classroom group by building their own reading list, uploading their own material, and configuring science news feeds.

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Registration Form for 2011 Biotechnology Education Summer Workshops

Registrations are due by **MAY 27, 2011**, for all workshops.

Name _____

School district or extension area _____

Subject areas taught _____

Home (summer) mailing address _____

Work phone _____ E-mail _____ Home phone _____

I would like to register for the following Biotechnology Education Workshop(s) to be held at Iowa State University in Ames:

_____ June 13-16 Biotechnology Education Workshop I
for Science, Agriculture, and Family and
Consumer Sciences Educators

_____ June 27-30 Advanced Biotechnology
Education Workshop II for Science,
Agriculture, and Family and Consumer
Sciences Educators

_____ June 20-23 Bioethics Workshop I



Credit available: 2 professional development credits AND/OR
1-2 graduate credits
(See workshop descriptions on p. 1-2.)

Credit payment and local hotel information will be sent
to you when your registration is received.

Register early! Class sizes are limited. Return this registration form by mail or fax before the deadline to:

Lori Miller
Office of Biotechnology
1210 Molecular Biology Building
Iowa State University
Ames, Iowa 50011-3260

Fax: (515) 294-4629 • Phone: (515) 294-9818 or toll-free in Iowa 1-800-643-9504 • E-mail: lorimill@iastate.edu

Online registration available at www.biotech.iastate.edu/ed_resources/regis_form_summer2011.html



Publicity/Image/Voice Permission

The Office of Biotechnology normally takes photographs, video, and/or tape recordings of our programs. During these workshops, a photograph or video/audio recording may be taken of you. Unless you request otherwise, your application will be considered permission for Iowa State University and the Office of Biotechnology to photograph, film, audio/video tape, record and/or televise your image and/or voice for use in any publications or promotional materials, in any medium now known or developed in the future without any restrictions. If you object to ISU using your image or voice in this manner, please notify the Office of Biotechnology, in writing, at the time of your application.

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About the ISU Public Education Program in Biotechnology. . .

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