You Are Invited to Attend 2010 Summer Workshops

Office of Biotechnology
1210 Molecular Biology Building
Ames, Iowa 50011-3260
515 294-9818
FAX 515 294-4629

Dear Science, Agriculture Education, and Family and Consumer Sciences Educators:

You are invited to attend one or more of the biotechnology or bioethics workshops offered at the Biotechnology Outreach Education Center in Ames this summer. 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 at the workshops.

The workshops, instructed by Clark Wolf and myself, 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. Materials and stipends for the workshops are funded by Iowa State's Office of Biotechnology and by the Iowa Biotechnology Association. 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. For workshop details and registration information, see the article below.

Please feel free to share this invitation with your colleagues. I hope to see you in Ames this summer!

Sincerely,
Mike Zeller
Biotechnology Outreach Education Coordinator

Workshop Descriptions
For more information about the biotechnology education workshops see the descriptions on the next page, 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.

The deadline for registering for the 2010 summer workshops offered by the Office of Biotechnology at Iowa State University is May 28. To register for any workshop, please contact (continued on p. 2)
June 28-July 1
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 - cost to be announced
$200 stipend for Iowa schoolteachers ($50 per day)
Travel reimbursement available for ISU Extension educators/personnel (up to $50 per day)
Registration deadline - May 28

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.

Lori, complete and mail the form on p. 7, or use the online registration or pdf forms available at www.biotech.iastate.edu/ed_resources/regis_form_summer2010.html. Please submit your registration to arrive by May 28.

June 7-9
Bioethics Workshop I
Iowa State University, Ames, Iowa
1 professional development credit - $25
1 ISU graduate credit - cost to be announced
$100 stipend available for Iowa schoolteachers ($50 per day)
Travel reimbursement available for ISU Extension educators/personnel (up to $50 per day)
Registration deadline - May 28

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 biotechnology, especially agricultural biotechnology, but other topics relevant to both agriculture and human health will be covered. Students will work through activities and case studies that they can take home and use with 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 14-17
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 - cost to be announced
$200 stipend for Iowa schoolteachers ($50 per day)
Travel reimbursement available for ISU Extension educators/personnel (up to $50 per day)
Registration deadline - May 28

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.

Would You Prefer to Receive This Newsletter Online or By E-Mail?

If you are receiving your issues of the Iowa Biotech Educator as printed copies through the mail, would you prefer to go electronic? You can read each issue online at www.biotech.iastate.edu/publications/IA_biotech_educator/default.html or you can receive each issue by e-mail as a PDF attachment. If you would like to discontinue your print subscription and receive future issues by e-mail, please notify Lori Miller (lorimill@iastate.edu) in the Office of Biotechnology. Please include your e-mail address in the communications with Lori. Thanks.
### Educational Opportunities

#### Summer Research Internship for 7-12 Grade Biology Teachers

Iowa State University is offering 7-12 grade biology teachers the opportunity to participate in a seven-week training and research internship in molecular biotechnology and genomics to be held in Ames from June 7 - July 23, 2010. No prior biotechnology training is necessary to be accepted into this program. Teachers will be expected to complete a week-long theory and technique training workshop, after which they will conduct an independent research project under the supervision of an ISU faculty member. Curriculum and instruction staff at ISU will help teachers develop classroom activities in molecular biotechnology and genomics.

The internship program is supported by the National Science Foundation, and stipends of $5,600 will be given to successful candidates. Participants who live farther than 30 miles from the ISU campus will be offered furnished housing at University Village at no additional cost. Participants will receive up to $500 to cover travel expenses. For further details, please visit [www.eeob.iastate.edu/plantgenomeoutreach/7-12teachers.htm](http://www.eeob.iastate.edu/plantgenomeoutreach/7-12teachers.htm) or contact program director Dr. Adah Leshem-Ackerman at (515) 294-8453 or e-mail her at adah@iastate.edu. Applications are being accepted on a first-come, first-served basis.

#### Summer Cytogenetics Training for High School Students

Iowa State University is offering high school students the opportunity to participate in a one-week training course in cytogenetics to be held in Ames from June 7-11, 2010. This course is supported by a grant from the National Science Foundation. There is no charge to students. However, students will be responsible for their own transportation to and from the course and for their lunches. The course will begin at 8:30 a.m. and conclude at 4:30 p.m., with a 90-minute lunch break.

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. Lectures will cover chromosome biology and cytogenetic theory in various model organisms and humans. Specific topics will include compound microscopy, mitosis, meiosis, chromosome structure, euploidy, and aneuploidy. The lab component will emphasize maize (corn) cytogenetics. Each student will be provided with a compound microscope and materials for preparation and examination of propiocarmine-stained maize meiotic samples. Students will learn to identify specific meiotic stages, and they will study the meiotic behavior of normal and aberrant chromosomes. Prior completion of AP Biology is recommended.

The 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](mailto:adah@iastate.edu), or Dr. Thomas Peterson at (515) 294-6345, [thomasp@iastate.edu](mailto:thomasp@iastate.edu). Class size is limited. For full consideration, please submit your application to arrive by March 1, 2010.

### From Classroom to Career

#### Career Conferences for Young Women on April 8, 15, 22

Taking the Road Less Traveled career conferences sponsored by Iowa State University's Program for Women in Science and Engineering (PWSE) are scheduled for this April. Young women in grades 6-12 can interact with professional women who have careers in science, engineering, math, and technology. The spring conference dates for the middle school conferences are April 15 and 22. For high schoolers, the spring conference date is April 8. Mike Zeller, Iowa State's biotechnology outreach education coordinator, is a regular presenter at many of the career conferences.

Registration forms and details are available on the PWSE Web site at [www.pwse.iastate.edu/trlt.html](http://www.pwse.iastate.edu/trlt.html). The Web site also has pre- and post-conference activity ideas for teachers, information about need-based registration fee scholarships for students, and how to arrange a possible meeting for your students with a female Iowa State student from your community who is majoring in a science, technology, engineering, or math-related area. For details, e-mail Carol Heaverlo at [heaverlo@iastate.edu](mailto:heaverlo@iastate.edu) or phone (515) 294-5883.

### Grants/Competitions

#### Ames Lab/ISU Science Bowls

The Annual Regional High School Science Bowl hosted by the U.S. Department of Energy's Ames Laboratory and
Iowa State University is scheduled for Saturday, January 30, 2010, on the Iowa State University campus in Ames. During the competition, teams of four students, plus one alternate, answer questions from categories such as astronomy, biology, chemistry, mathematics, physics, and earth and general sciences. The regional winning team is awarded an all-expenses-paid trip to compete in the Department of Energy’s National Science Bowl® in Washington, D.C., from April 29 to May 4, 2010. The 2009 champion of the Regional High School Science Bowl was Central Academy (Des Moines). Home Schools of Eastern Iowa was the runner-up, and Ames finished third.

The Annual Middle School Science Bowl for grades 6-8 will be Friday and Saturday, February 26-27, 2010, on the Iowa State University campus in Ames. The event is hosted by the U.S. Department of Energy’s Ames Laboratory and Iowa State University. On Friday, student teams will race solar cars constructed at their schools. On Saturday, participants will compete in a question-and-answer contest about math and earth, physical, life, and general sciences. The winning academic team of the 2010 competition will receive an all-expenses-paid trip to the National Middle School Science Bowl® in Washington, D.C., to compete from April 29 to May 4. A team from Eleanor Roosevelt School in Dubuque were the academic champions in the 2009 Middle School Science Bowl. Johnston was second, and Home Schools of Eastern Iowa was third. Pella Christian won the 2009 fuel-cell challenge championship, with IKM Manning finishing second.

For more information about the science bowls, visit www.external.ameslab.gov/education/sciencebowl/sciencebowl.html or contact Deb Samuelson at (515) 294-9557, debsam@ameslab.gov.

State Science and Technology Fair on March 26-27

The 2010 State Science and Technology Fair of Iowa (SSTFI) will be held in Ames on Friday and Saturday, March 26-27. The SSTFI is affiliated with the Intel International Science and Engineering Fair.

All high school exhibitors at the fair are eligible for college scholarships. In addition, the top biological and physical high school projects will represent the SSTFI at the Intel International Science and Engineering Fair in San Jose, California, in May. All exhibitors in grades 6-12 are eligible for trophies, medals, and other special awards.

As one of the fair sponsors, the Iowa Biotechnology Association (IBA) will be making five scholarship awards at the 2010 fair. The IBA scholarships will be awarded to the five students who exhibit the best use of biotechnology with their projects. All Iowa high school students who exhibit at the fair are 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 2009 winners were Erin Brasser and Ryan Brasser, South O’Brien High School; Luke Boeck, Central Lee High School; and Emily Brehm-Stecher and Peter Yin, Ames High School.

Volunteers are being recruited to judge at this year’s event. Professional scientists and engineers with degrees or majors in a science, science education, engineering, mathematics, or computer science area can serve on judging teams. To register online to be a judge, go to www.sciencefairofiowa.org/judges.html. For more information, visit www.sciencefairofiowa.org or contact fair director Andrea Spencer, phone (515) 460-5559, e-mail aspence@iastate.edu.

Awards for Iowa Educators

Three major award programs for which Iowa educators are eligible are featured below. For other award, competition, and grant opportunities for educators or their students, visit the Office of Biotechnology’s educational funding Web site. Brief descriptions of each opportunity and links to more information are online at www.biotech.iastate.edu/publications/ed_resources/Ed_funding.html.

Iowa Academy of Science Excellence in Science Teaching

For more than 40 years, the Iowa Academy of Science has recognized outstanding science teachers in Iowa’s K-12 schools through the Excellence in Science Teaching Awards Program. Iowa teachers of all grade levels in all science areas are eligible to be nominated by administrators, colleagues, or by self-nomination. The six nomination categories are physical science, life science, earth/space/environmental science, general/multiple science, middle/junior high science, and elementary education. Winners receive $200, a plaque, and recognition at the Iowa Academy of Science annual meeting in April. The 2009 winner was...
Joshua Hanna, Muscatine High School, in the category of Life Science.

Applications are accepted from February 1 through the following January 31. Nominations will be considered for two consecutive years. For more information, e-mail iascience@uni.edu, phone (319) 273-2021, or visit the Web site at www.iacad.org/recognize.html.

**National Association of Biology Teachers Outstanding Biology Teacher**

The Outstanding Biology Teacher Award program of the National Association of Biology Teachers (NABT) wants to honor an outstanding biology educator in grades 7-12 every year in each of the 50 states; Washington, D.C.; Canada; Puerto Rico; and overseas territories. Awardees are not required to be NABT members, but they must have been teaching biology/life science for at least three years in public, private, or parochial schools. Award recipients are honored at a special event during the NABT Professional Development Conference and receive binoculars and microscopes from award sponsors, certificates, and a complimentary one-year membership in NABT. A recent Iowa recipient was Mark McDermott, Iowa City West High School.

To nominate yourself or a colleague, follow the nomination instructions found in the Awards and Opportunities section of the NABT Web site at www.nabt.org. The deadline for 2010 nominations is March 12. For more information, contact Cherin Lee at the University of Northern Iowa, (319) 273-2499 or e-mail cherin.lee@uni.edu.

**National Science Foundation Seeks Nominations for Presidential Teaching Awards**

The National Science Foundation is accepting online nominations of math and science teachers working in grades K-6 for the 2010 Presidential Awards for Excellence in Mathematics and Science Teaching. Enacted by Congress in 1983, this award is the highest recognition that a mathematics or science teacher in the United States can receive. The competition alternates each year between elementary (2010) and grades 7-12 teachers (2011). The award includes $10,000, a citation signed by the President of the United States, a paid trip for two to Washington, D.C., and more. Recent Iowa winners were Mary Black from Dubuque and Michelle Harris from Anita.

For details, e-mail info@paemst.org or visit the Web site at www.paemst.org. The deadline for nominators is April 1, 2010, and the application deadline is May 3, 2010. Online nominations of teachers should be done early enough to allow the nominated teacher time to thoroughly prepare an application before the deadline. State coordinators Yvette McCulley (K-6 and 7-12 science) and Judith Spitzli (K-6 and 7-12 mathematics) in the Iowa Department of Education are available to answer questions about the awards program and provide assistance and mentoring to the nominees and awardees. Contact Yvette McCulley, (515) 281-3966, e-mail yvette.mcculley@iowa.gov, or Judith Spitzli, (515) 402-8600, e-mail Judith.spitzli@iowa.gov.

---

**Outreach News**

**Biotechnology Outreach Education Center**

The December weather has already been memorable even before the official start of winter. As you struggle to make up missed days, I want to remind you that the Biotechnology Outreach Education Center (BOEC) is here to help you meet your biotechnology curriculum needs. Just contact Lori Miller or myself when you need supplies, equipment, to schedule a visit, and/or need questions answered.

Some of you have been concerned about how budget cuts have affected the BOEC programs. With very few exceptions, it is business as usual. Supplies, equipment, class visits to campus and my visits to schools will continue at the same level. Make sure you order supplies as soon as your schedule allows for your spring classes. If you are planning to take advantage of the BOEC's unique on- and off-campus education program, please contact Lori or myself to schedule a date. Typically, the BOECs on- and off-campus programs will have contact with over 1,000 students between late March and the end of May.

This fall, two milestones were achieved – the Biotechnology Public Education Program has trained over 2,100 educators, and 200,000 Iowa residents (mostly students) have benefited from the program's workshop instruction and free supplies and equipment.

**BOEC at Home and on the Road**

This fall, we were kept busy hosting groups and visiting schools in Iowa. Nearly 1,100 students representing 27 groups took advantage of the BOEC programs. Some of the ISU groups that visited the BOEC included the freshman honors program; the pre-service teacher classes in agricultural education and family and consumer science; the Curriculum and Instruction Department's biology section CI 593C; Toying with Technology pre-service for elementary teachers; and the Program for Women in Science and Engineering's Taking the Road Less Traveled conferences. Schools that visited the BOEC included Hampton Home School group, Marshalltown Middle and High School, West Marshall of State Center, GMG Community School of Green Mountain and Garwin, Newell-Fonda High School,

(continued on p. 6)
Biotech on the Internet

New History Book Details 25 Years of Biotechnology at Iowa State

As part of last year's celebration of the 25th anniversary of the Office of Biotechnology, Walter R. Fehr has authored a book titled *The First 25 Years of the Office of Biotechnology, Iowa State University, 1984-2009.* Fehr is a Charles F. Curtiss Distinguished Professor in Agriculture and Life Sciences in the Department of Agronomy who was the director of the office and chair of the Biotechnology Council from 1984 until June 30, 2009.

The 12 chapters of the 175-page book describe how Iowa State's biotechnology program began and how it has helped support the university's life sciences in the areas of faculty recruitment, research grants and instrumentation, graduate and undergraduate education, faculty development events, technology transfer, bioethics efforts, and outreach to K-12 and ISU Extension educators. Fehr's book may be viewed online as a PDF file at the Web address given above.

Make Plans Today

Remember, if you are planning a visit to the BOEC or would like the BOEC to come to you, contact Lori Miller or myself as soon as you can to reserve a date. The spring schedule traditionally fills up fast, so please plan ahead. I hope you will let the BOEC and the Office of Biotechnology assist you in bringing biotechnology into your classroom.

Have a great spring semester.

---

**Biotech on the Internet**

---

**New History Book Details 25 Years of Biotechnology at Iowa State**

[www.biotech.iastate.edu/25celebrationbook.html](http://www.biotech.iastate.edu/25celebrationbook.html)

As part of last year's celebration of the 25th anniversary of the Office of Biotechnology, Walter R. Fehr has authored a book titled *The First 25 Years of the Office of Biotechnology, Iowa State University, 1984-2009.* Fehr is a Charles F. Curtiss Distinguished Professor in Agriculture and Life Sciences in the Department of Agronomy who was the director of the office and chair of the Biotechnology Council from 1984 until June 30, 2009.

The 12 chapters of the 175-page book describe how Iowa State's biotechnology program began and how it has helped support the university's life sciences in the areas of faculty recruitment, research grants and instrumentation, graduate and undergraduate education, faculty development events, technology transfer, bioethics efforts, and outreach to K-12 and ISU Extension educators. Fehr's book may be viewed online as a PDF file at the Web address given above.

**The Science of Investigation for Grades 3-8**


The Public Broadcasting Service's television series *Dragonfly TV* has an online forensics lesson that helps students in grades 3-8 learn some of the tools of forensics. Activities include dusting, lifting, and matching fingerprints; comparing fiber samples; reading words in a note that have been scratched out; DNA analysis of saliva samples; examining tire tread patterns; and analyzing how splashes and splatters are made. An online video shows how two young student detectives examine a wrecked birthday party "crime scene" to examine evidence, narrow the field of suspects, and identify the culprit(s).
Registration Form for 2010 Biotechnology Education Summer Workshops

Registrations are due by MAY 28, 2010, 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 7-9 Bioethics Workshop I

____ June 14-17 Biotechnology Education Workshop I for Science, Agriculture, and Family and Consumer Sciences Educators

____ June 28-July 1 Advanced Biotechnology Education Workshop II for Science, Agriculture, and Family and Consumer Sciences Educators

Credit available: 1-2 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_summer2010.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.

Iowa State University does not discriminate on the basis of race, color, age, religion, national origin, sexual orientation, gender identity, sex, marital status, disability or status as a U.S. veteran. Inquiries can be directed to the Director of Equal Opportunity and Diversity, 3280 Beardshear Hall, (515) 294-7612.
About the ISU Public Education Program in Biotechnology.

Iowa State University's Public Education Program in Biotechnology has received support from ISU Extension; Ajinomoto Food Ingredients, LLC/Ajinomoto Heartland, LLC; Bayer CropScience; Cargill; Genencor International, Inc.; Golden Harvest Research; Growmark; The Greater Cedar Rapids Foundation–Diamond V Mills Donor-Advised Fund; the Iowa Biotechnology Association; the Iowa Farm Bureau Federation Agricultural Foundation; the Iowa Soybean Promotion Board; Kemin Americas; MBS Genetics, LLC; Pioneer Hi-Bred International, Inc.; the Roy J. Carver Charitable Trust; Syngenta Seeds, Inc.; West Central Cooperative; and private individuals.

To Contact the Program
Phone: (515) 294-9818 or, toll-free in Iowa, (800) 643-9504
Fax: (515) 294-4629
E-mail: biotech@iastate.edu
WWW: www.biotech.iastate.edu

Public Education Program Personnel
James Reecy, Associate Professor of Animal Science and Director of the Office of Biotechnology
Mike Zeller, Biotechnology Outreach Education Coordinator
Lori Miller, Program Secretary
Glenda Webber, Editor
Joel Nott, Assistant Scientist, Homepage Webmaster