You Are Invited to Attend
Summer 2011 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 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.
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

Summer 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
2011 summer workshops offered by the Office of Biotechnology at Iowa
State University is May 27, 2011. (continued on p. 2)
To register for any workshop, please contact 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_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 - cost to be announced
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 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
1 professional development credit - cost to be announced
1 ISU graduate credit - cost to be announced
$100 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.

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

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. However, students will be responsible for their own transportation to and from the course and for their lunches. The course will begin at 9:00 a.m. and conclude at 4:30 p.m., with a 60-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 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 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. An application form is available online at www.biotech.iastate.edu/CytoApplication.pdf. Class size is limited. For full consideration, please submit your application to arrive by March 15, 2011.

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 13 - July 29, 2011 (contingent on unforeseeable snow days!).

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, together with master teachers, 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 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.

Career Conferences for Young Women on April 14, 21, 28

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 21 and 28. For high schoolers, the spring conference date is April 14. 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 website at www.pwse.iastate.edu/trlt.html. The website also has pre- and post-conference activity ideas for teachers and information about need-based registration fee scholarships for students. For more information, e-mail Carol Heaverlo at heaverlo@iastate.edu or phone her at (515) 294-5883.

Awards/Competitions

Awards for Iowa Educators

Three major award programs for which Iowa educators are eligible are featured here. For other award, competition, and grant opportunities for educators or their students, visit the Office of Biotechnology's educational funding.
To nominate yourself or a colleague, follow the nomination from NABT. and receive microscopes from Leica Microsystems, Inc., Development Conference sponsored by Pearson Prentice. Hall and receive microscopes from Leica Microsystems, Inc., and elementary school. Winners receive $200, a plaque, and recognition at the Iowa Academy of Science annual meeting. The 2010 winners included Christy A. Bolt, Longfellow Elementary, Council Bluffs, and Carol Boyce, Orange Elementary; Waterloo, in the area of elementary science; Molly Crock, Monticello High School, in the area of earth/space/environmental science; Melissa Hesner, East Buchanan Community School District, Winthrop, in the area of middle/junior high science; Mary Lestina, City High School, Iowa City in the area of general/multiple science; Traci Maxted, Jefferson High School, Cedar Rapids, in the area of physical science; and Laura L. McCreery, North High School, Davenport, in the area 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 website at www.iacad.org/recognize.html.

National Association of Biology Teachers Outstanding Biology Teacher
Every year, the Outstanding Biology Teacher Award (OBTA) program attempts to recognize an outstanding biology educator (grades 7-12) in each of the 50 states; Washington, D.C.; Canada; Puerto Rico; and overseas territories. Candidates for this award do not have to be NABT members, but they must have at least three years public, private, or parochial school teaching experience. A major portion of the nominee’s career must have been devoted to the teaching of biology/life science, and candidates are judged on their teaching ability and experience, cooperativeness in the school and community, inventiveness, initiative, and student-teacher relationships. OBTA recipients are honored at a special event during the NABT Professional Development Conference sponsored by Pearson Prentice Hall and receive microscopes from Leica Microsystems, Inc., and certificates and a complimentary one-year membership from NABT.

To nominate yourself or a colleague, follow the nomination instructions found in the Awards and Opportunities section of the NABT website at www.nabt.org. The deadline for 2011 nominations is March 15. For more information, contact OBTA Awards Directors Mike Zeller, mzeller@iastate.edu, or Doug Herman, herman.doug@iccsd.k12.ia.us.

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 science. Winners receive $200, a plaque, and recognition at the Iowa Academy of Science annual meeting. The 2010 winners included Christy A. Bolt, Longfellow Elementary, Council Bluffs, and Carol Boyce, Orange Elementary; Waterloo, in the area of elementary science; Molly Crock, Monticello High School, in the area of earth/space/environmental science; Melissa Hesner, East Buchanan Community School District, Winthrop, in the area of middle/junior high science; Mary Lestina, City High School, Iowa City in the area of general/multiple science; Traci Maxted, Jefferson High School, Cedar Rapids, in the area of physical science; and Laura L. McCreery, North High School, Davenport, in the area 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 website at www.iacad.org/recognize.html.

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 7-12 for the 2011 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 grade 7-12 teachers (2011) and elementary teachers (2012). 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 Jessica Gogerty, North High School, Des Moines (Science), and Matthew Miller, George Washington High School, Cedar Rapids (Math).

For details, e-mail info@paemst.org or visit the website at www.paemst.org. The deadline for nominators is April 1, 2011, and the application deadline is May 2, 2011. Online nominations of teachers should be done early enough to allow the nominated teacher time to thoroughly prepare an application before the deadline. According to the website, 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, yvette mcculley@iowa.gov, or Judith Spitzli, (515) 402-8600, judith.spitzli@iowa.gov.

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 29,
The Annual Middle School Science Bowl for grades 6-8 will be Friday and Saturday, February 25-26, 2011, 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 hydrogen fuel cell model 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 2011 competition will receive an all-expenses-paid trip to compete in the Department of Energy's National Science Bowl® in Washington, D.C., from April 28 to May 3, 2011. The 2010 champion of the Regional High School Science Bowl was Des Moines Central Academy.

The 2011 State Science and Technology Fair of Iowa (SSTFI) will be held in Ames on Friday and Saturday, April 1-2. 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 two individuals, the top team project, and their teachers will represent the SSTFI at the Intel International Science and Engineering Fair in Los Angeles, 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 2011 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 2010 winners were Avanthi Ajjarapu and Emily Brehm-Stecher, Ames High School; Ryan Brasser, South O'Brien High School; Mallory McDonald, North Polk High School; and Olivia Rairden, Central Lee High School.

Volunteers are being recruited to judge at this year's event. To register online to be a judge, go to www.sciencefairofiowa.org/judges.html or contact Vicki Speake, phone (515) 294-5738, e-mail speake@iastate.edu.

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

**State Science and Technology Fair**

Happy Iowa winter! Hope the holidays and weather found you in great spirits. Even as you work to complete the first semester and start the second, I want to remind you that the Biotechnology Outreach Education Center (BOEC) is here to help you meet your biotechnology curriculum and resource needs. Just contact Lori Miller or me anytime you need supplies, equipment, to schedule a visit to the BOEC or your classroom, and/or need questions answered. Phone us at the toll free number (800) 643-9504 or e-mail lorimill@iastate.edu or mzeller@iastate.edu.

It does appear that 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 outreach education program, please contact Lori or me to schedule a date. Typically, the outreach programs are very busy in the spring. In past years, between 1,000-1,200 students have visited the BOEC in the spring.

**BOEC at Home and on the Road**

During the fall, we were kept busy hosting 24 groups and visiting schools in Iowa. Some of the Iowa State groups that visited the BOEC included the Freshman Honors Program, the pre-service teacher class in Agricultural Education, Curriculum and Instruction's 593C Biotechnology Education course section, Toying with Technology pre-service elementary teachers, three presentations to the “Taking the Road Less Traveled” conferences offered by the Program for Women in Science and Engineering and another visit from their 4th-6th grade science camp, and ISU Science Bound. The BOEC’s off-campus visitors included Marshalltown Middle and High School; West (continued on p. 6)
Marshall High School from State Center; GMG Schools from Green Mountain and Garvin; Stillwell Middle School from West Des Moines; Harding Middle School and Callanan Middle School from Des Moines; Lincoln High School from Estherville; CAM High School from Anita; Johnston High School; Vinton-Shellsburg High School; and Guthrie Center Middle School's talented and gifted program. In that same time, I made visits to Walnut Creek Middle School in West Des Moines, Des Moines University, and Minnesota State University in Mankato. For more information about classroom and event visits or field trips to the Iowa State campus, please contact Lori Miller or me.

**BOEC State and National Conference Participation**

October and November found me traveling to state and national science education conventions. In October, we made our annual appearance at the Iowa Science Teachers Section (ISTS) of the Iowa Academy of Science at the Cornerstone Church in Ames. Once again, the ISTS conference confirmed why it is considered one of the premier state science education conferences in the nation. It was great to see many of our Iowa teaching colleagues and past workshop participants at our booth and at my presentation. It is always exciting to visit with teachers who are searching for ways to bring biotechnology into their classrooms.

In November, I attended the National Association of Biology Teachers (NABT) convention in Minneapolis, Minnesota. Attending state, regional, and national science teacher conventions gives me an opportunity to gain new knowledge in the most recent science education trends, legislation, standards, and pedagogy. My goal is to gain new ideas, methods, techniques, and activities that I can share with you.

**What's Happening in 2011?**

It's not too early to start talking about our 2011 summer workshop schedule. This edition of the *Iowa Biotech Educator* contains information about this summer's Biotechnology Education Workshops, including how to register (see p. 1).

Every couple of years, we add new activities and speakers to the workshop schedule. New this summer will be the addition of the biorenewable modules (online at www.biotech.iastate.edu under “Outreach Education”) and a GFP transformation. If it has been a few years since you have taken the workshop and feel you need a review, or if you are ready for the advanced workshop, please register as soon as possible and encourage a colleague to attend. You can find the 2011 summer workshops information on our website at www.biotech.iastate.edu/ed_resources/Workshops.html.

**NABT-OBTA News**

Doug Herman, biology teacher at Iowa City West High School, and I have agreed to co-chair Iowa's efforts to recognize outstanding biology/life science teachers through the Outstanding Biology Teacher Award Program of the National Association of Biology Teachers (NABT). This past year, Iowa did not have an awardee. I know from my experience with Iowa's life science teachers that there are many deserving candidates. Please take some time and look around to see if you have one or more of these teachers in your district. You can nominate or encourage your department chair or administrator to submit a nomination. Self-nominations are accepted. Nominations can be submitted online at www.nabt.org/websites/institution/index.php?p=631.

**Make Plans Today**

Remember, if you are planning a visit to the BOEC or would like the BOEC to come to your classroom, contact Lori or me 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.

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**Biotech on the Internet**

**CAST Paper on Animal Biotech Ethics**

[www.cast-science.org](http://www.cast-science.org)

The Council for Agricultural Science and Technology (CAST) has released an issue paper titled “Ethical Implications of Animal Biotechnology: Considerations for Animal Welfare Decision Making.” The authors discuss three broad categories of ethical issues associated with animal biotechnology, including the impact on the animals themselves, the institutions and procedures that govern the research and applications within the agrifood system, and the relationships between humans and other animals. Topics examined in the paper include a general overview of animal biotechnology science; genetics in conventional animal breeding programs; ethical issues overview; and religious views, public perceptions, and regulation of animal biotechnology. The 16-page paper is free online from the Publications List section of the website at www.cast-science.org. Printed copies are available for a shipping/handling fee.

**Free Publication: Inside the Cell**


The National Institute of General Medical Sciences (one of the National Institutes of Health) has an 80-page publication titled *Inside the Cell*. It is available free online in HTML or PDF formats. Cell topics covered include structure, functions, reproduction, aging, and death. Targeting high school students or above, the publication contains a glossary and full-color diagrams and photos that help explain the topics, plus online animated illustrations and movies. Educators can order 30 printed copies free for educational use.
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 20-23 Bioethics Workshop I

_____ June 27-30 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_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.

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.

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