Register by May 21 for biotechnology summer workshops

The registration deadline is May 21 for one or more of the biotechnology education workshops offered by the Office of Biotechnology at Iowa State University.

Educators in public and private schools or those who work with youth in 4-H or other community programs can strengthen and update their STEM-based curriculums with modern content, techniques, and activities in biotechnology and bioethics, while earning professional development or Iowa State University graduate credits at the workshops.

The workshops, instructed by Iowa State's 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 $100 per day to help cover their costs of attending. ISU Extension and Outreach educators or personnel can receive travel reimbursements of up to $100 per day.

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 and ISU Extension and Outreach educators are eligible to receive free supplies and equipment for specific lab protocols from the Office of Biotechnology.

**For More Information**

For more information about the biotechnology education workshops, see the descriptions on the next page, contact Mike Zeller at 515 294-5949 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.

**Workshop Registration**

To register for any workshop, please contact Lori or use the online registration form available at www.biotech.iastate.edu/summer-training-courses-for-educators. Please submit your registration to arrive by May 21, 2018.
Iowa Biotech Opportunities

Biotechnology education workshops

Biotechnology Education Workshop I
Iowa State University, Ames
June 11-14, 2018

This workshop course is directed at science, agriculture, family and consumer sciences, and ISU Extension and Outreach 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, antibiotic resistance, biofuels, and more. Educators will prepare and perform the lab protocols as the students would do in class.

Credits
• 2 professional development credits – $70

• 2 ISU graduate credits – $497 per credit

Stipend
• $400 stipend for Iowa teachers ($100 per day) funded by the Iowa Biotechnology Association

Travel
• Travel reimbursement available for ISU Extension and Outreach educators/personnel (up to $100 per day)

Registration deadline
May 21, 2018

Biotechnology Education Workshop II
Iowa State University, Ames
June 25-28, 2018

This advanced workshop is open to science, agriculture, family and consumer sciences, and ISU Extension and Outreach 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.

Credits
• 2 professional development credits – $70

• 2 ISU graduate credits – $497 per credit

Stipend
• $400 stipend for Iowa teachers ($100 per day) funded by the Iowa Biotechnology Association

Travel
• Travel reimbursement available for ISU Extension and Outreach educators/personnel (up to $100 per day)

Registration deadline
May 21, 2018

Bioethics workshop

Bioethics Workshop I
Iowa State University, Ames
June 18-21, 2018

This course is designed for educators who want to incorporate discussion of ethical issues into existing science courses. Participants will create case studies designed to integrate ethical content in the science curriculum, and which might also be used to address such issues for extension audiences. The focus will be on ethical issues in science education, including especially agricultural biotechnology. Several other bioethics topics will also be covered.

Participants will work through activities and case studies that they can take home and use in their classes. During the workshop, participants will be divided into groups. Each group will develop a study on a topic relevant to students who take their classes.

The workshop will also address some pedagogical issues, including appropriate objectives for bioethics units; alternative 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. Participants will leave with classroom-ready case study exercises for use in their own classes.

Credits
• 2 professional development credits – $70

• 2 ISU graduate credits – $497 per credit

Stipend
• $400 stipend for Iowa teachers – ($100) per day

Stipends for the two biotechnology education workshops generously are provided by the Iowa Biotechnology Association.

To register for any workshop, contact Lori Miller (800 643-9504, lorimill@iastate.edu) or register online at www.biotech.iastate.edu/summer-training-courses-for-educators.
Iowa Biotech Opportunities

Travel
• Travel reimbursement available for ISU Extension and Outreach educators/personnel (up to $100 per day)

Registration deadline
May 21, 2018

Questions? Contact Clark Wolf at 515 294-3068 or e-mail jwcwolf@iastate.edu

Iowa Academy of Science meeting April 20-21

The 130th Iowa Academy of Science (IAS) Annual Meeting and 85th Iowa Junior Academy of Science Symposium will be held April 20-21 at Buena Vista University in Storm Lake. Iowa's scientists, science educators, and students are invited to attend events and hear invited speakers address topics that include recovery of an endangered species, gene editing, and ecological site development and archaeological discoveries in Iowa.

General session topics and speakers

Deep Sea Conservation - The Secret Life of Nautiluses
Gregory Jeff Barord, Ph.D., Marine Biology Instructor, Central Campus, Des Moines, Iowa

Title to be announced
James T. Dietrich, Ph.D., Assistant Professor, Director, Iowa Low-Altitude Remote Sensing Lab, Department of Geography, University of Northern Iowa, Cedar Falls, Iowa

More Than a Decade of Research Leading to Recovery of an Endangered Watersnake
Robert Brodman, Ph.D., Associate Professor of Biology, Buena Vista University

Symposia
Meeting participants also can attend a symposium of their choice:
Symposium A: Gene Editing in Eukaryotes and Prokaryotes
Symposium B: Ecological Site Development and Application in Iowa
Symposium C: Recent Iowa Excavations from the Late Prehistoric Era

Highlights and more information
Other highlights of the meeting are the poster and oral research presentations of the Iowa Junior Academy of Science, the President's Banquet on Friday evening, and award presentation events. For more information on additional speakers, events, the conference hotel, maps, and how to register, visit the IAS website at www.scienceiniowa.org.

Save the dates: ISTS fall conference October 7-8

The Iowa Science Teaching Section fall conference is at the Science Center of Iowa in Des Moines (pre-conference) on Oct. 7 and the FFA Enrichment Center in Ankeny (conference) on Oct. 8. Details/flyer: www.scienceiniowa.org

From the Director . . .

As the new Director of the Office of Biotechnology, I am delighted to welcome you to the spring edition of the Iowa Biotech Educator.

Our Office facilitates and advances programs in research, education, and outreach that apply and train people to develop and use technology based on biological processes. The Biotechnology Outreach Education Center (BOEC) supports these important endeavors.

Over its lifetime, the BOEC has played a pivotal role in STEM education in Iowa. The BOEC has trained more than 3,000 educators though training courses and has provided free materials and supplies to Iowa's K-14 educators to reach more than 300,000 Iowa students.

I value the contribution that the BOEC has made to STEM education in the state, and as the new Director of the Office of Biotechnology, I will continue to support the BOEC's efforts in the future.

I hope you will consider taking advantage of one of the three BOEC summer workshops being offered (see p. 2) or the new thermal cyclers available through the Biotechnology Public Education Program's equipment loan program (see p.6).

My warmest regards to all Iowa educators and their students during the spring semester.
Iowa Biotech Expertise

Mike’s message . . .

Welcome to the spring edition of the Iowa Biotech Educator. This edition will highlight the Office of Biotechnology and the Biotechnology Outreach Education Center’s (BOEC) spring activities and summer workshops.

This edition is the final announcement for the summer Biotechnology Education workshops. Feel free to forward the link given later in this column, or make hard copies of the newsletter to distribute among your life science, agriculture, and family and consumer science staff/departments.

As of January 2018, the Office of Biotechnology has a new director.

Please take a few minutes to read the director’s column on p. 3.

Spring 2018

Spring is here, and it’s time for you to make final decisions about outreach and summer professional development opportunities here in the BOEC at Iowa State University. Beginning June 11, three biotechnology workshops will be held on-campus in Ames (see p. 2). This year’s workshop schedule again will be completed by the end of June.

The workshops are designed to enhance your curriculum’s STEM, life science Iowa Core, and Next Generation Science Standards criteria by bringing the newest life science principles and techniques into your classrooms.

Even if you don’t intend to visit Iowa State to attend one of the workshops, we need your help in getting the word out to colleagues in your district and others about the services and summer workshops the biotechnology education program offers. You might even look into bringing a team of colleagues from your department to the workshops. All workshops offer professional development credits for licensure and/or ISU graduate credits. You can always find copies of the newsletter on our website at www.biotech.iastate.edu/iowa-biotech-educator-newsletter/.

BOEC has been busy

Since the last newsletter, I have been busy presenting to schools and groups on- and off-campus. If you are thinking of planning a visit to the BOEC, there are still a few dates left in April and May.

For those of you who have attended workshops and plan to take advantage of the free supplies and equipment, it is time to plan your end-of-the-year orders. To schedule a visit date or

Continued on page 6

BOEC Lab Notes

Please recycle lab supplies

This is the final issue of the Iowa Biotech Educator for the 2017-2018 school year.

Before you leave for the summer, please recycle any free biotechnology lab supplies that you ordered from Iowa State’s Office of Biotechnology during this school year.

Thanks for your help and have a great summer!

How to recycle Iowa State supplies

The 10X TBE bottles 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, Iowa State University, Office of Biotechnology, 1210 Molecular Biology Building, 2437 Pammel Drive, Ames IA 50011-1079. Please empty and rinse the 10X TBE bottles before you return them. Contact Lori if you need assistance.

Iowa educators still have time to sign up for one or more summer workshops offered by Iowa State University’s Office of Biotechnology. See the registration instructions on p.1.

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Jeanne M. Serb
Associate Professor of Ecology, Evolution and Organismal Biology
Director of the Office of Biotechnology

Glenda D. Webber
Editor

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Iowa Biotech Competitions

Spring 2018

I.O.W.A. STEM Teacher Award recipients for 2018 announced

The Iowa Governor's STEM Advisory Council and Kemin Industries have announced the recipients of the 2018 I.O.W.A. STEM Teacher Award sponsored by Kemin Industries.

The I.O.W.A. STEM Teacher Award was created in 2014 to recognize and celebrate one teacher from each of the six STEM regions who goes above and beyond to increase their students’ interest in STEM. Each recipient is recognized for their dedication in representing I.O.W.A. by being innovative in their methods, Outstanding in their passion for education, Worldly in the way they help students see that STEM is all around them, and Academic through engaging students in the classroom to prepare them for higher education and high-demand careers.

Each recipient was selected by a panel of judges after being nominated for the award by a colleague, school administrator, parent, student or community member and completing an application showcasing their contributions to STEM education. The recipients will receive $1,500 for personal use and another $1,500 for their classroom.

The award recipients from each of the regions include:

- **Northwest Region**: Jacquie Drey, 4th grade teacher at Storm Lake Elementary School
- **North Central Region**: Teresa Green, technology teacher librarian at Edwards Elementary School (Ames)
- **Northeast Region**: Stacey Snyder, expanded learner program and gifted resource teacher at Orange Elementary School (Waterloo)
- **Southwest Region**: Denise Hoag, computer science/business teacher at Thomas Jefferson High School (Council Bluffs)
- **South Central Region**: Dr. Holly Showalter, medical and bioscience research instructor at Waukee APEX
- **Southeast Region**: Cassidy Reinken, magnet coordinator at Johnston STEAM Academy (Cedar Rapids)

All six recipients have each been honored with ceremonies in their classrooms with their students and peers and were recognized together at STEM Day at the Capitol by STEM Council Co-Chairs Gov. Kim Reynolds and Roger Hargens, Accumold President and CEO, the morning of Wednesday, February 14th.

For more information about the award and all current and previous recipients, please visit www.stemawardfluidreview.com.

Congratulations to 2018 Science Bowl winners

Iowa Regional High School Science Bowl

Congratulations to Johnston High School students who won the 2018 Iowa Regional High School Science Bowl hosted by the U.S. Department of Energy's Ames Laboratory and Iowa State University in January.

Students William Julstrom, Aditya Somisetty, Chris Yao, and Paul Zhang, and their coaches Stephanie Buckingham and Kyla Burns advanced to the U.S. Department of Energy's National Science Bowl® to be held April 26-30 in Washington, D.C. Congratulations also to runner-up Ames High School, and third place West Des Moines Valley.

Thirty-nine teams competed in this year's event.

Iowa Regional Middle School Science Bowl

Congratulations to the Ames Middle School students who won the 2018 Iowa Regional Middle School Science Bowl hosted by the U.S. Department of Energy's Ames Laboratory and Iowa State University in February. Twenty teams competed in the event.

The winning team of Ames students Nethaka Dassanayke, Gerald Han, Aidan Krueger, Jacob Stevens, Rishabh Swamy, and their coach Rachel Miller advanced to the National Middle School Science Bowl® in Washington, D.C., to compete April 26-30.

Congratulations also to Regina Middle School for a second-place finish and Bettendorf Middle School who finished third.

Free Resources

National DNA Day is April 25

https://www.genome.gov/10506367/national-dna-day/

National DNA Day commemorates the completion of the Human Genome Project in April 2003 and the publication of the discovery of the double helix of DNA in 1953 by James Watson and Francis Crick. DNA Day is celebrated annually on April 25th by action of the 108th Congress designating it as DNA Day.

For events in Iowa and other states, activity ideas, and more about the history of DNA, visit the National DNA Day website given above, hosted by the National Human Genome Research Institute of the National Institutes of Health (NIH).
order supplies, e-mail Lori Miller (lorimill@iastate.edu) or me (mzeller@iastate.edu) or call our Iowa toll-free number at 800 643-9504.

**PCR equipment available**
With funding recommended by the Iowa State University Biotechnology Council and approved by the Office of the Vice President for Research, along with equipment support from the Bio-Rad company, the BOEC purchased four thermal cyclers and shipping containers as part of the Biotechnology Public Education Program’s equipment loan program. The BOEC also can provide a 12-position mini-microcentrifuge to complete the special equipment needed to do PCR activities with classes.

Even though the BOEC offers supplies for only the TPA-25 Alu sequence protocol right now, each thermal cycler also is programmed for the most popular PCR activities offered by Bio-Rad and Carolina Biological, if educators prefer to purchase the activities from these companies. You can review the TPA-25 Alu sequence activity required equipment and materials at www.biotech.iastate.edu/laboratory-protocols. An article detailing the PCR activity can be found in the 2018 winter edition of the *Iowa Biotech Educator*.

The next issue of the *Iowa Biotech Educator* will greet you electronically as you arrive back at school in August. That issue will announce all curriculum materials, familiar and new, and our current slate of outreach opportunities that will be available for you during the 2018-19 school year. Have a great summer!