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

It is with great pleasure that I invite you to attend one or more of the biotechnology or bioethics workshops offered in Ames this summer. 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 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 and Outreach 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 and ISU Extension and Outreach educators are eligible to receive free supplies and equipment for specific lab protocols from the Office of Biotechnology. See p. 2 for workshop and registration details.

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

Sincerely,
Mike Zeller
Biotechnology Outreach Education Coordinator
Biotechnology education workshops

Biotechnology Education Workshop I
Iowa State University, Ames
June 12-15, 2017

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 – cost to be announced

Stipend
• $200 stipend for Iowa teachers ($50 per day) funded by the Iowa Biotechnology Association

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

Registration deadline
May 22, 2017

Biotechnology Education Workshop II
Iowa State University, Ames
June 26-29, 2017

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 – cost to be announced

Stipend
• $200 stipend for Iowa teachers ($50 per day) funded by the Iowa Biotechnology Association

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

Registration deadline
May 22, 2017

Bioethics workshop

Bioethics Workshop I
Iowa State University, Ames
June 19-22, 2017

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 – cost to be announced

Stipend
• $200 stipend for Iowa teachers ($50 per day)

Questions? Contact Mike Zeller, 515 294-5949, or mzeller@iastate.edu

Stipends for the two biotechnology education workshops generously were provided by the Iowa Biotechnology Association.
Summer research internship for 8-12 grade science teachers

Iowa State University is offering 8-12 grade biology teachers the opportunity to participate in a six-week training and research internship in Molecular Biotechnology and Genomics to be held in Ames from June 12 – July 28, 2017 (contingent on unforeseeable snow days!).

No prior biotechnology training is necessary to be accepted into this program. Teachers will be introduced to the process of scientific research by conducting a small independent project under the supervision and mentorship of ISU faculty and staff. Teachers will be provided with the tools, experiences, and on-going relationships with career scientists and with fellow teachers that will enable them to share with their high school students the latest developments in biotechnology and inspire their students with a desire to learn more about this field of science.

The internship program is supported by the National Science Foundation and U.S. Department of Agriculture, and stipends of $6,300 will be given to successful candidates. Participants who live farther than 30 miles from the ISU campus will be offered housing in ISU residential halls at no additional cost. Participants will receive up to $500 to cover their travel expenses.

For further details, please visit www.cbirc.iastate.edu/education/precollege/ret/ or contact program director Dr. Adah Leshem at 515 294-8453 or e-mail her at adah@iastate.edu.

The application deadline is March 1, 2017; however applicants will be reviewed on a rolling basis. Placements will be made by the end of March 2017.
Mike’s Message continued

Just contact Lori Miller, lorimill@iastate.edu, or me anytime to order supplies or equipment, to schedule a visit to the BOEC, or to have your questions answered.

I have arranged my schedule so that most days I am exclusively available from 7-8:30 a.m. weekdays, except when I travel. For immediate questions, my office phone is 515 294-5949 or e-mail me at mzeller@iastate.edu.

Fall activities
This fall, I was kept busy teaching pre-service teachers from agricultural education, family and consumer sciences, and the Master of Arts in Teaching (M.A.T.) degree program here on campus.

Along with teaching, I presented to school groups either in the BOEC or at Iowa schools. Typically, the demand for the BOEC outreach services is very high in the spring. Please order supplies as soon as your schedule allows for your spring classes.

For more information about event visits or field trips to the BOEC on Iowa State's campus, please contact Lori or me to answer questions and/or schedule a date.

Attending state and national conferences
It was good seeing many of you at the Iowa Science Teaching Section/Iowa Council of Teachers of Mathematics (ISTS/ICTM) conference at Valley High School in West Des Moines.

It’s always great to hear from the group of you who were able to attend the conference.

In early November, I traveled to Denver to attend the National Association of Biology Teachers (NABT) national conference. It was an excellent opportunity to gather information, materials, and ideas to offer to Iowa educators in the future.

Planning for the spring semester
Remember, if you are planning a visit to the BOEC or need supplies, contact Lori or me as soon as you can to reserve dates. 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 your STEM endeavors by bringing biotechnology into your classroom.

Have a great start to the spring semester.

Iowa STEM Competitions

Major award programs for which Iowa science educators or their students are eligible are featured below. For other award, competition, and grant opportunities for educators or students, visit the Office of Biotechnology's educational funding website at www.biotech.iastate.edu/educational-awards-and-funding-sources/.

60th State Science and Technology Fair
March 30 – 31

The 60th State Science and Technology Fair of Iowa (SSTFI) will be held in Ames on Thursday and Friday, March 30 – 31. The fair is open to any student in grades 6-12 residing in or attending school (public, private, parochial or home school) in the state of Iowa.

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 be awarded trips to the Intel International Science Fair.

PHOTOS: MIKE ZELLER

Do you need close-up, hands-on lab experience with classroom tested biotech lab protocols? Learn with other educators at the summer 2017 workshops. See p. 2 for details.

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James M. Reecy
Professor of Animal Science and Director of the Office of Biotechnology

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Editor

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and Engineering Fair in Los Angeles, California, in May. All exhibitors in grades 6-12 are eligible for prizes and other special awards.

As one of the fair sponsors, the Iowa Biotechnology Association (IowaBio) will be making five scholarship awards at the 2017 fair. The IowaBio 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 projects at the fair are eligible for the IowaBio 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 2016 winners were Kortney Banks, Van Buren Junior-Senior High School, Keosauqua; Taylor Harrison, Central Lee High School, Donnellson; Rachel Mehmert, Holy Trinity Catholic Junior/Senior High School, Ft. Madison; Manasa Pagadala, Rivermont Collegiate, Bettendorf; and Aaron Wills, Central Lee High School, Donnellson.

In addition to the five IowaBio scholarships, the Association is working with the Biotechnology Institute, an educational foundation headquartered in Washington D.C., to award an Iowa BioGENEius Challenge winner. The Iowa BioGENEius Challenge winner will compete at the International BioGENEius challenge in San Diego, California, next summer. The 2016 BioGENEius winner was Aaron Wills.

For more information about the SSTFI, visit www.extension.iastate.edu/sstfi/ or contact board chair Jay Staker, e-mail jstaker@iastate.edu. Volunteers are being recruited to judge at this year’s event. For details, contact Vicki Speake, phone 515 294-5738.

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Ames Lab / Iowa State host science bowls

The Iowa Regional High School Science Bowl
Hosted by the U.S. Department of Energy’s Ames Laboratory and Iowa State University, this year’s Iowa Regional High School Science Bowl is scheduled for Saturday, January 28, 2017, on the Iowa State University campus in Ames.

During the competition, teams of up to five students, including one alternate, answer questions from categories such as biology, chemistry, mathematics, physics, earth and space sciences, and energy.

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 27 - May 1, 2017. The 2016 champion of the Regional High School Science Bowl was Valley High School of West Des Moines.

The Iowa Regional Middle School Science Bowl
The science bowl for grades 6-8 will be Saturday, February 25, 2017, on the Iowa State University campus in Ames. This event also is hosted by the U.S. Department of Energy’s Ames Laboratory and Iowa State University.

Participants will compete in a question-and-answer contest about life science, physical science, earth and space science, energy, mathematics, and general science.

The winning academic team of the 2017 competition will receive an all-expenses-paid trip to the National Middle School Science Bowl® in Washington, D.C., to compete from April 27 - May 1, 2017. Ames Middle School was the champion of the 2016 Middle School Science Bowl.

For more information
To learn more about the science bowls, go to www.ameslab.gov/education/science-bowl or contact Deb Samuelson at 515 294-9557, debsam@ameslab.gov, or Steve Karsjen at 515 294-5643, karsjen@ameslab.gov.

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Nominations open February 1 for excellence in science teaching awards

On February 1, administrators, colleagues, or teachers themselves can begin nominating outstanding science teachers in Iowa’s K-12 schools for one of the 2017 Excellence in Science Teaching Awards offered by the Iowa Academy of Science.

The deadline for completed application packets is January 31, 2018.

Iowa teachers of all grade levels in all science areas are eligible to be nominated in one of the seven nomination categories: elementary science, earth/space science/environmental science, general/multiple science, life science, middle school/junior high science, physical science, and science supervisory. For details, e-mail iascience@uni.edu or visit the website at www.scienceiniowa.org/esta-current-awards.
March 15 deadline for biology teacher awards

Biology teachers have until March 15 to nominate a colleague or themselves for this year's Outstanding Biology Teacher Award, sponsored by the National Association of Biology Teachers (NABT).

Nominees are judged on their teaching ability and experience, cooperativeness in the school and community, and student-teacher relationships. Please take the time to nominate a deserving colleague or yourself. Nomination instructions can be found in the Awards and Opportunities section of the NABT website at www.nabt.org. The deadline for 2017 nominations is March 15, 2017.

For more information, contact Iowa's director for the award Doug Herman, Herman.Doug@iowacityschools.org, or Mike Zeller, mzeller@iastate.edu.

April 1 and May 1 deadlines for presidential awards

April 1 is the deadline for online nominations of math and science teachers of grades 7-12 for a Presidential Award for Excellence in Mathematics and Science Teaching.

May 1 is the deadline for nominated teachers to prepare their applications. This award is the highest recognition that a mathematics or science teacher in the United States can receive and is presented in Washington, D.C.

The competition alternates each year between teachers of grades K-6 and teachers of grades 7-12. Up to two winners in mathematics or science are named from each state or jurisdiction. For details, e-mail info@paemst.org or visit www.paemst.org.

Congratulations to the awardees named last August who represent two nomination years. For grades K-6, the awardees were mathematics teacher Ann Johnson, Sageville Elementary School, Dubuque, and science teacher Joshua Steenhoek, Jefferson Intermediate School, Pella.

For grades 7-12, the awardees were science teacher Lynne Bleecker, Parkview Middle School, Ankeny, and mathematics teacher Richard Brooks, Johnston High School.
Some Animals Are More Equal Than Others: Keystone Species and Trophic Cascades

This short film addresses questions like: What determines how many species live in a given place? How many individuals live in a given habitat?

In the early 1960s, experiments by ecologists Robert Paine and James Estes established the importance of keystone species in regulating ecological communities. Their research began to help ecologists understand the cascades of effects set in motion by their removal from the community. In this film, Paine and Estes come together to describe their pioneering experiments and how their findings impact today’s conservation decisions. Supporting resources include a film guide, an interactive website, and a classroom poster. All the resources are free online or the film can be ordered as a DVD.

Holiday Lectures on Science

For more than 20 years, the Howard Hughes Medical Institute (HHMI) has hosted its Holiday Lectures on Science. According to its website, each fall the HHMI invites leading scientists to its headquarters to speak to high school students from the greater Washington, D.C., region. The annual event includes hands-on activities, lectures, discussions, and energetic exchanges among students, teachers, and scientists. The lectures are broadcast live and are later made available for free online and on DVDs that can be ordered free by educators.

To make the lecture content easy for educators to incorporate into their classrooms, the HHMI produces free science education materials, including classroom activities and lesson plans, interactive online modules, animations, apps, and virtual laboratories. Educators can download the materials at www.BioInteractive.org.

The 2016 Holiday Lecture was Ecology of Rivers and Coasts – Food Webs and Human Impacts presented by lecturers Mary Power from the University of California-Berkeley and Brian Silliman from Duke University. Other recent lectures include Patterns and Processes in Ecology (2015); Biodiversity in the Age of Humans (2014); Medicine in the Genomic Era (2013); Changing Planet: Past, Present, Future (2012); Bones, Stones, and Genes: The Origin of Modern Humans (2011); and Viral Outbreak: The Science of Emerging Disease (2010).
About Iowa State’s Public Education Program in Biotechnology... 

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