



Kentucky Academy of Science

NEWSLETTER

*The Voice of Science
in Kentucky*

www.kyscience.org

Susan Templeton, Editor

August 2010

Enhanced Affiliates

- Bellarmine University
- Berea College
- Brescia University
- Centre College
- Eastern Kentucky University
- Kentucky Community & Technical College System
- Kentucky State University
- Morehead State University
- Murray State University
- Northern Kentucky University
- Spalding University
- Transylvania University
- University of Kentucky
- University of Louisville
- Western Kentucky University

Patron - \$5,000 level

- Lumins Associates

Sustaining Member - \$500 level

- Campbellsville University

Member - \$250 level

- Asbury University
- Kentucky American Water Company
- Kentucky Wesleyan College
- Lindsey Wilson College
- Pikeville College
- Thomas More College
- University of the Cumberlands
- Wood Hudson Research Laboratory

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- Hoffman Environmental Research Institute


From the President...

Numerous studies and reports confirm that American students lag in science and math skills when compared by international standardized tests and, not surprisingly, fewer of them are choosing science, engineering and math professions when compared to students in other countries. Unless we reverse these trends, there will not be enough people in the next generation to replace those of us who chose STEM careers, not to mention expanding our ranks to remain competitive as a nation in the global economy. The undisputed shortage of well-trained K-12 science and mathematics teachers is a large part of the problem because fewer students are getting the education they need. Another part of the problem is the lack of national standards for mathematics and science education. I have just returned from a National Science Foundation (NSF)/American Association for the Advancement of Science (AAAS) sponsored meeting that focused on these issues, convinced that it is impossible for a state like Kentucky, not to mention the entire nation, to produce the technical workforce of the future if we do not have the teachers with the content and pedagogical knowledge to teach these important subjects as well as national standards that guide what should be taught and how it should be done. Rising Above the Gathering Storm, a 2007 National Academy publication, calls for the US to add "10,000 more mathematics and science teachers annually." The March 2010 report of the U.S. Department of Education listing of teacher shortages state by state shows that Kentucky has shortages of secondary teachers in Biology, Chemistry, Engineering Technology, Information Technology, Physics, and Mathematics, and middle school teachers in Science and Mathematics.

The National Science Foundation Robert Noyce Teacher Scholarship Program is one initiative addressing the teacher shortage issue. The Noyce grant program provides scholarships in the form of forgivable loans to students who major in science, technology, engineering or math (STEM) and obtain a teacher certification. Noyce scholars must teach in a high needs school district, i.e. one with a high percentage of students from families with incomes below the poverty line, a high percentage of secondary school teachers teaching outside their content certification area, or a high teacher turnover rate. Nationally this program has trained 7700 teachers since it began in 2002. The University of Kentucky has had a Noyce award from the beginning but Northern Kentucky University, Western Kentucky University, and the University of Louisville all received awards last year and are just starting the training phase of their projects. Although a solicitation for next year is not yet posted on the NSF web site, there should be additional funds for more grants in the future and it would be great if other universities received awards and trained more STEM teachers for Kentucky.

New Mathematics and English standards have been formulated and to date, 25 states have adopted them. There was a session at the NSF/AAAS meeting on "Common Core State Standards for Mathematics." I learned that those in kindergarten through fifth grade will gain a solid foundation by focusing on whole numbers, arithmetic, fractions and decimals for kindergarten through fifth grade. Sixth through eighth grade students will learn geometry, algebra, probability and statistics. High school students will be challenged to apply mathematics to real-world problems. The presenter, Dr. Kaye Forgiore said "the standards go beyond arithmetic and other basic math skills to include

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 **Editor's Note:** When viewing the Newsletter in Acrobat Reader the Table of Contents (TOC) contains live links to each article; at the bottom right of each page is a link back to the TOC!

The KAS Newsletter is published in January, May and August. Current and archived issues are available at <http://www.kyscience.org>. You may contact the KAS Newsletter Editor at susan.templeton@kysu.edu.

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Messages from the Executive Director

During the past few months the world has visualized the importance of the work of scientists ...capping oil wells on the ocean floor, trying to save ecosystems on the gulf coast, discovering life saving medicines, etc. Scientific research is vital not only our country but the entire world.

The 2010 KAS Annual Meeting will feature scientific research presentations from Kentucky's best and brightest students and professionals. Online pre registration is now available. To receive a discounted meeting registration please pre register for the meeting at <http://www.kyscience.org> by October 15, 2010. Pre registrations fees will be \$10 for students, \$35 for regular members and \$60 for non KAS members. There will be no refunds after October 15. Onsite registration fees and after October 15 fees will be \$15 for students, \$50 for regular members and \$70 for non members.

KAS Annual Awards Banquet tickets will remain \$25/each. As in prior years, students participating in the Undergraduate Research Competition will receive a complimentary ticket to the KAS Awards Banquet the evening of November 13, but you MUST request a banquet ticket during pre registration. Banquet tickets are limited and are first come first serve.

Please note in 2010, the first step in the pre registration process will be the completion of the liability and media/photo release waivers. Once the pre registration process is complete, you will have the option of payment through PayPal either with your credit card (completed without opening a PayPal account), by PayPal account, or to pay by check.

A printable hard copy of the pre registration form is available on the KAS webpage. Please note mailed pre registration forms must be received by October 15. If you have questions regarding pre registrations please contact Jeanne Harris, KAS Executive Director at 859-227-2837.

KAS is grateful to WKU for hosting the 2010 Annual Meeting on their beautiful campus! Bowling Green has a number of wonderful attractions including The National Corvette Museum and the General Motors Corvette Assembly Plant, and not far from Bowling Green is Mammoth Cave National Park, the world's longest known cave system, with more than 367 miles explored.

NEW AT THE 2010 KAS ANNUAL MEETING: Relative to the Plenary Session focus, KAS will be inviting business/employers of scientifically based companies to participate as exhibitors and share with students information regarding current or future employment with their organization. Students will be able to speak with various businesses as well as Graduate Schools regarding skills/education required to succeed in science related careers. Additionally, exhibitors at the Annual Meeting will be invited to attend the Saturday evening Student Reception giving the students more one on one time with representatives.

I look forward to seeing you in Bowling Green at the 96th Annual Meeting!

Jeanne Harris
executivedirector@kyscience.org

KAS 96th Annual Meeting

Hosted by Western Kentucky University
Tentative Program

FRIDAY, NOVEMBER 12, 2010

9:00 a.m. - 4:30 p.m.	KBRIN - NIH Proposal Development Workshop
3:30 p.m. - 6:00 p.m.	KAS Governing Board Meeting
6:00 p.m. - 7:30 p.m.	Registration
7:00 p.m. - 8:00 p.m.	SYMPOSIUM <i>"One Health: Humans, Animals and the Environment"</i> Stanley Maloy, Ph.D Dean, College of Sciences & Professor of Biology University of California, Irvine
8:15 p.m. - 9:00 p.m.	KAS Sectional Officers Meeting
8:15 p.m. - 10:30 p.m.	Social

SATURDAY, NOVEMBER 13, 2010

7:00 a.m. - 5:00 p.m.	Registration
7:00 a.m. - 10:00 a.m.	Refreshments
8:00 a.m. - 4:00 p.m.	Exhibitors
8:00 a.m. - 9:30 p.m.	Power Point Presentations
9:30 a.m. - 9:45 a.m.	Refreshment Break
10:00 a.m. - 11:30 a.m.	Power Point Presentations
8:00 a.m. - 11:30 a.m.	Scientific Posters on Display (Session 1 - Sections TBA)
10:00 a.m. - 11:30 a.m.	Kentucky Community & Technical College Faculty Meetings
11:30 a.m. - 12:45 p.m.	Lunch (see list in registration folder)
11:30 a.m. - 12:45 p.m.	KAS Past President's Luncheon
1:00 p.m. - 2:15 p.m.	Power Point Presentations
2:00 p.m. - 3:30 p.m.	Business Meeting - KY-TN Branch, American Society for Microbiology
2:15 p.m. - 2:30 p.m.	Refreshment Break
2:30 p.m. - 4:00 p.m.	Power Point Presentations
1:00 p.m. - 4:00 p.m.	Scientific Posters on Display (Session 2 - Sections TBA)
4:15 p.m. - 5:15 p.m.	PLENARY SESSION - PANEL DISCUSSION <i>"Skills Required for 21st Century Careers in Science"</i>
5:30 p.m. - 6:30 p.m.	Annual KAS Business Meeting and Reception
5:30 p.m. - 6:30 p.m.	Student Reception
6:30 p.m. - 9:00 p.m.	ANNUAL AWARDS BANQUET

Headquarters hotel:	Holiday Inn 1021 Wilkinson Trace Bowling Green, KY 42103 270-745-0088
Location:	1.5 miles from WKU campus
Rate:	\$85/room - Single/Double/Triple/ Quad
Cutoff date:	October 22, 2010
Additional housing:	30 hotels/motels within 4 miles of WKU campus

KY/TN Branch of the American Society for Microbiology to Meet with KAS



The KY/TN Branch of the American Society for Microbiology (ASM) will meet jointly with KAS at the Annual Meeting in November. Dr. Stanley Maloy, Chair of the ASM Committee on Communicating Science to the Public, will speak Friday evening on “One Health: Humans, Animals and the Environment,” a topic that should be of interest to a broad audience. Dr. Maloy is Dean of the College of Sciences, Professor of Biology, and the Associate Director of the Center for Microbial Sciences at San Diego State University; his lecture is funded by the National ASM.

Annual Meeting Guidelines

Submitting an Abstract

The DEADLINE for submitting an abstract for presentation is **OCTOBER 15, 2010**. Forms will not be available after this date. There are a limited number of positions available for Power Point presentations so submit as soon as possible. **NEW FOR 2010: If a position is not available upon receiving your abstract you will be notified and given the opportunity to present a poster.**

To submit an abstract for presentation, either Power Point or poster, go to the KAS website at <http://www.kyscience.org>. On the left side of the page click on ANNUAL MEETING and then select SUBMIT AN ABSTRACT. This page will allow you to log on as a member or non-member and then go to the form for Submitting an Abstract. **YOU MUST BE PRE-REGISTERED** in order to submit an abstract. If you have not there will be a link to the pre-registration page that will allow you to do so after which you will return to the Abstract Submission Form to submit your abstract. See the GUIDELINES FOR PREPARATION OF ABSTRACTS (<http://www.kyscience.org/pdf/abstract-guidelines10.pdf>) to make sure your abstract is in the proper format. Your abstract needs to be submitted in one of the following: Word 2003 (.doc), Rich Text Format (.rtf) or Acrobat PDF (.pdf). You will receive a notice via e-mail that your abstract has been received. The program, upon completion, will be placed on the website at which time you will be able to determine the time and location of your presentation. All presentations will be on Saturday, Nov. 13. If you have any questions, please contact Dr. Robert Creek, Program Coordinator, at robertcreek@bellsouth.net.

Power Point and Poster Presentations

All Power Point presentations should be compatible with Power Point version 2007 for Windows and brought on a **USB drive** as the computers will not have a CD drive. You must be in your assigned room 15 minutes before your session is scheduled to start in order to load your presentation. It is not determined at this time whether the poster presentations will be divided into a morning session and afternoon session or one all day session. When the poster presentation schedule is finalized you will be notified via email or you may view the 2010 Annual Meeting Program when it becomes available on the KAS webpage.



NIH R15 AREA Grants - Proposal Development Workshop

Friday, November 12th, 9:00 a.m. - 4:30 p.m.
WKU COHH 4132 (College Heights Hall)

The Kentucky Biomedical Research Infrastructure Network (KBRIN) will again offer an intensive workshop on the development of National Institutes of Health (NIH) R15-Academic Research Enhancement Award (AREA) proposals. AREA grants are specifically designed to support small research projects in the biomedical and behavioral sciences conducted by faculty and students in colleges/universities and health professional schools that have not received more than \$6 million in NIH research grants in four of the last seven fiscal years. Thus, faculty at all colleges/universities in Kentucky, except U of L and UK, are eligible.

The three main goals of the AREA program are: (1) to support meritorious research; (2) to strengthen the research environment of the institution; and (3) to expose students to research.

The workshop will be led by faculty at KBRIN institutions that have been successful in competing for AREA grants. The morning session is designed for faculty with little or no NIH grant writing experience, whereas the afternoon session is designed to enhance the competitiveness of more experienced faculty. Depending upon level of experience with the NIH, registrations will be accepted for either the full day workshop or the afternoon workshop only.

The morning workshop will begin at 9:00 am CST and the afternoon session will begin at 1:00 pm CST. Lunch will be provided at noon.

The workshop is free and open to interested faculty at all Kentucky public and private institutions.

As space is limited, please register by Friday, October 22nd by contacting Ms. Stephanie Dearing, Assistant Director of KBRIN at stephanie.dearing@louisville.edu.

For additional workshop information, contact:

Dr. Nigel Cooper, KBRIN PI
(nigel.cooper@louisville.edu)

or

Dr. Bruce Mattingly, KBRIN Program Coordinator
(b.mattingly@moreheadstate.edu).

This workshop is sponsored by the Kentucky Biomedical Research Infrastructure Network (KBRIN), which is supported by grant #2P20RR16481-10 from the National Institutes of Health - National Center for Research Resources.

Call for Nominations for Superlative Awards Extended

The Kentucky Academy of Science seeks nominations of individuals who have made outstanding contributions to scientific research and education in the Commonwealth in the six areas designated below.

- **Outstanding Academy Service**
- **Distinguished College/University Scientist**
- **Outstanding College/University Teacher**
- **Outstanding Early Career in Post Secondary Education**
- **Outstanding Secondary School Science Teacher**
- **Distinguished Professional Scientist (in a non-academic position)**

Details on criteria and nomination packet content for all awards are available at <http://www.kyscience.org/members/awards.php>.

September 30, 2010, is the new deadline for nominations. All nominations and supporting materials should be sent in electronic format; e-mail attachments must be in MS Word format. Send to:

Dr. Dawn J. Anderson
Department of Biology
Berea College
CPO 1683
Berea, KY 40404
dawn_anderson@bera.edu

New Voting Procedure for 2011 KAS Elections



In response to membership suggestions and feedback, KAS will be utilizing Survey Monkey for on-line voting for the 2011 KAS Governing Board Election. Survey Monkey is an online survey tool which will allow KAS members to securely cast anonymous votes and for votes to be efficiently and securely tallied on-line. KAS will be using the basic plan which is a free service that can be electronically customized to provide voting in accordance with the KAS bylaws. For the upcoming election, on-line customization will allow all eligible KAS voting members to be able to vote for the KAS Vice President. Division members of either the Social & Behavioral Sciences or Physical Sciences will additionally be able to vote to elect one representative seat for the Social & Behavioral Sciences or one representative seat for the Physical Sciences as part of this year's KAS ballot.

How will I vote using Survey Monkey?

You will receive an customized email from KAS containing a web address to voting for the 2011 KAS ballot. Simply follow the instructions in the email to access the specific web address for voting and follow the directions to cast your vote for the KAS Vice President. If you are a division-member of the Social & Behavioral Sciences, or Physical Sciences, you will also have the option to vote for one of those respective seats for this year's KAS ballot.

KAS Research Funds Available

The following sources of research funding are available.

Marcia Athey and Botany Funds - Intended for research planned and conducted by students of Kentucky secondary schools, colleges, and universities under the supervision of a faculty member; consideration will also be given for support of faculty research projects. Faculty sponsors/researchers must be members of the Kentucky Academy of Science. The Marcia Athey Fund award (up to \$3,000) and Botany Fund award (up to \$750) are made to the institution of the faculty supervisor/researcher.

Special Research Program - Directed particularly to faculty in Kentucky institutions, public or private, involved primarily in undergraduate education. Proposals may be for work related to the subject matter of any of the sections of the Kentucky Academy of Sciences. Awards are for one year; funding for an additional year may be requested by reapplying the following year and competing with newly submitted proposals. Two awards of up to \$5,000 will be available as funding allows. Progress of the project must be reported within one month after the anniversary of the award, in the form of a report to the KAS President-Elect.

Undergraduate Research Program - Funds available for research planned and conducted by undergraduate students of Kentucky colleges and universities under the supervision of a faculty member. Faculty sponsors/researchers must be members of the Kentucky Academy of Science. Currently, two under-graduate research grant programs are available. Students are expected to present their research at the annual meeting of KAS, and submit a final report by January 31st of the following year.

- *Undergraduate Research Supply Grants*: Awards up to \$500.
- *Summer Undergraduate Research Grants*: Awards up to \$4,000.

Application process

Applications for all grant types must be submitted to the Chair of the Committee for the Distribution of Research Funds, and must be post-marked not later than November 15, 2010. Funding recommendations will be announced shortly after the January 2011 Board meeting. All proposals should include a Fund Application Cover Sheet and a Conflict of Interest List; downloadable PDF files are available on the KAS Grants webpage at <http://www.kyscience.org/members/grants.php>. Details on individual grant proposal requirements and evaluation criteria are also available from this page. All submissions should be in electronic format on CD (7 copies) and should be sent to:

George F. Antonious, Ph.D.
Kentucky State University
Department of Plant and Soil Science
Water Quality/ Environmental Toxicology
218 Atwood Research Center
Frankfort, KY 40601
Office: 502-597-6005
Lab: 502-597-6253
Fax: 502-597-6381
E-mail: george.antonious@ksu.edu

From the President... continued

standards for mathematics practice," such as problem-solving, persistence, reasoning, precision and other "habits of mind that we want to engender." We can be proud that Kentucky was the first state to formally adopt the new mathematics standards through a joint resolution of the Kentucky Board of Education, the state Council on Postsecondary Education and the state Education Professional Standards Board.

New science standards are in the works and for the first time, they will include engineering education standards. The process, which is underway, started with the U.S. National Research Council drafting a conceptual framework for science education standards. There was a public comment period that has, unfortunately, ended but the next step is to incorporate the comments and coordinate the use of the framework to develop explicit standards. Achieve, a nonprofit educational group is responsible for this work, supported by the National Science Teachers Association and AAAS. The Carnegie Corporation of New York is providing financial support. I have every expectation that Kentucky will also adopt the new science standards but it can only help if members of KAS become science standards advocates.

As a meeting wrap up, Dr. Bruce Alberts, editor-in-chief of Science Magazine, and former President of the National Academy of Sciences spoke about his perspectives of K-12 science education. Dr. Alberts has been a long time advocate for improving science education and he is very enthusiastic about the new science standards. He cautioned, however, that "We're losing lots of potential scientists, because science is much more exciting than it seems in the textbooks." Science standards are a start but it comes back to the teachers who need the tools to create that excitement in the classroom. KAS members can help by reaching out to teachers in their community and offer to tell students what you do, why it is exciting, what a great life it has afforded you and what they need to do to have similar success. Kids can't aspire to careers they don't know about and I venture to guess many careers represented by our members fall into that category.

Nancy Martin

KAS Members in the News

Academy members *Susan Templeton, Martha Marlette, and Myna Panemangalore* were recently honored at the American Association of Family & Consumer Sciences 101st Annual Conference & Expo in Cleveland, Ohio. Their article "Assessment of Body Weight Status and Macronutrient Consumption Patterns of Preschool Children" was chosen as the *Family & Consumer Sciences Research Journal* Outstanding Article of 2009. The authors received a \$500 check from sponsor Wiley-Blackwell, Inc. They donated the prize to the Franklin County Bluegrass Head Start Center where the study was conducted; the funds will be used to purchase nutrition education materials for the classrooms.

Templeton, Marlette, and Panemangalore have made numerous presentations on various nutrition and health research projects at KAS annual meetings. Marlette was instrumental in re-establishing the Health Sciences Section in the 90's; both she and Templeton have since served as section officers. Templeton has served as the KAS Newsletter Editor since 2002.

Kentucky Science Teachers Association Meeting

The 2010 Kentucky Science Teachers Association Conference and Professional Development in Lexington is on November 4-6. The theme is "Science in ACTION in Kentucky", with session strands of Assessment, Content, and Technology. The major theme of the conference will be a celebration of science and science education opportunities specific to Kentucky. Kentucky is world-famous for its caves, and our featured speaker will be Dr. Hazel Barton, Ashland Endowed Professor of Integrative Science at Northern Kentucky University. Dr. Barton is a world renowned expert in cave biology who was featured in the IMAX movie "Journey into Amazing Caves" and in the CBS Early Show segment "Underground Rock Star".

Three preconference sessions on Thursday, November 4, include the following:

- Science Tools that Promote Student Learning in Science and Math;
- The OSHA Lab Standard/Chemical Hygiene Plan Training Session; and a
- Geology Field Trip.

There are 104 sessions on Friday, November 5, and Saturday, November 6. Commissioner of Education Terry Holliday will present awards on Friday and also be a part of a discussion "Advancing Science Education in KY."

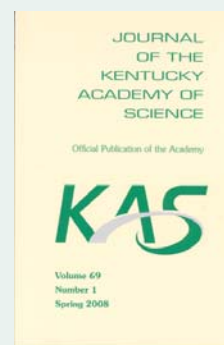
For more information, go to <http://www.ksta.org> and/or contact Sherry Fox, KSTA Executive Director, at sffox@aol.com.

Call For Papers

The *Journal of the Kentucky Academy of Science*, now in its 71st year, is published through Allen Press each spring and fall and is abstracted through BioOne. The *Journal* publishes peer reviewed articles from all disciplines within the Academy. Turnaround time usually is six months or less, and page charges (\$35/page) are very reasonable. The *Journal* accepts regular articles (12-20 manuscript pages), scientific notes (2-5 pages), and will accept Letters to the Editor. The *Journal* also seeks series of manuscripts that result from special workshops or conferences. In these cases, a special editor may be appointed. All manuscripts should be sent to:

David White, Editor J-KAS
Hancock Biological Station
561 Emma Drive
Murray KY 42072

Instructions for authors can be found at the KAS website www.kyscience.org/content/publish.php. Please call 270-474-2272 or e-mail the editor (david.white@murraystate.edu) for more information.



Science Across the Commonwealth

Rural Opportunities in Science

In the last decades scientific research has moved from themes driven by individual intellectual curiosity to projects involving collaborative efforts and themes with potentially practical applications (NSF Indicators 2010). The move toward group-centered tasks and multi-institutional consortia does not mean, however, that individuals can no longer find jobs and careers that use science learned in high school and undergraduate college courses. While jobs and careers in science are more evident in metropolitan centers, rural communities and districts have opportunities for young people interested in science.

Within a five-mile radius of Madisonville, Kentucky, a town of about 20,000, interviews at several businesses and state offices elicited information about jobs, some unexpected and surprising in a rural context. The Hopkins County Extension Office in Madisonville offered the expected jobs dealing with the analyses of soils and fertilization of croplands. Some of these jobs involve use of global positioning satellite (GPS) technology in order to fertilize parts of crop-growing acreage in cost-efficient ways. Crop production managers in rural areas are called upon to apply knowledge of needs of plants for nutrients and moisture, and needs of soils for plant rotation.

Area producers of packaged foods develop food products using chemicals that prevent spoilage. These producers hire quality control officers, jobs in which knowledge of microbiology and chemistry give an advantage to the potential employee. A surprising job requiring knowledge of chemical processes is in the area of manufactured products testing. Companies that make kitchen utensils such as mixers and blenders, for example, test mixers using white cake. A job candidate might be required to know something about chemical substances in food products and how they react in machines. An unexpected opportunity for a young person with a knowledge of biology and chemistry seeking a job is in product testing at a company that manufactures emulsifiers, agents to clarify beer, and adhesives for dentures.

The biology of native plants is expected in jobs at greenhouses, as landscape designers, and vegetable growers for sale at local farmers' markets. Often overlooked, however, is the fact that even small communities have their golf courses; a golf course manager benefits from knowledge of grasses and chemical fertilizers.

Veterinarians of both large and small animals have jobs for technicians and handlers with knowledge of the anatomy and physiology of these animals. Most communities have hospitals, nursing homes, and assisted living dwellings in which nutritionists and dieticians are hired. Knowledge of some human physiology, and the interactions of micro-nutrients, and effects of metabolic processes are important in these jobs.

The University of Kentucky has Agricultural Extension Offices in many Kentucky counties, with projected offices in all counties in the Commonwealth. Often the extension office houses the local 4-H Agent, whose job is to manage programs, and may include teaching physics, robotics, and rocketry, as well as animal husbandry and artificial breeding techniques, through 4-H programs.

Small local environmental testing laboratories and engineering consortia, run as businesses, are to be found in rural areas. Typical

is McCoy & McCoy Laboratories, Inc., of Madisonville and Paducah, where jobs are in place for lab technicians, biologists, chemists levels 1-3, microbiologists levels 1-3, and gas chromatography operators.

Municipal water treatment plants and wastewater management offer jobs in monitoring the chemical composition of waters. Other companies monitor their own discharges or the discharges of others. A small business, Associated Engineers, Inc. of Madisonville, hires employees who monitor discharges from mines for pollution content, evaluate the extent of water pollutants, and analyze emissions from smokestacks. This group also evaluates wetlands based on established criteria, and designates floodplains for municipal planning. One task frequently carried out is the removal of old underground gasoline storage tanks and evaluation of petroleum contaminants when a gas station is no longer in operation at the site.

Knowledge of the scientific method, how to ask questions that can be answered by gathering objective data, and how to interpret data in a clear, unbiased report, is essential to gaining and succeeding in any of these jobs that require some knowledge of biology or chemistry. Young people who have studied or obtained a degree at a college or university in Kentucky typically return to their homes in the Commonwealth. The ability to understand some facts, and to talk and write clearly about methods and procedures, confers a great advantage on these potential employees.

One such student at West Kentucky Community & Technical College was guided by his chemistry teacher in a project, "Benzene Vapor in Gasoline during Refueling." In it, the student was able to show the amount of toxicants that are present in ppm during the refueling of motor vehicles. The hydrocarbons detected were in excess of 10,000 ppm, above the limits of OSHA standards. This student, while also having an admirable academic record, obtained the job of his choice, in part, because of evidence of his ability to think clearly in a real-time, hands-on small but rigorous scientific field study.

*Submitted by Mary Janssen, At-Large Representative
KAS Governing Board*



A flow-through colorimetric autoanalyzer is used to determine nutrients in shallow ground water. Photo by Scott Bauer(USDA-ARS).

NEW AT THE 2010 KAS ANNUAL MEETING: KAS will be inviting various scientifically-based businesses as well as Graduate Schools to participate as exhibitors and share with students information regarding employment opportunities and the skills and education required to succeed in science-related careers. Exhibitors and the panelists from the Plenary Session on "Skills Required for 21st Century Careers in Science" will be invited to attend the Saturday evening Student Reception, giving the students more one-on-one time with representatives.

Posters-at-the-Capitol to Celebrate its Tenth Anniversary



On February 10, 2011, at the state Capitol building in Frankfort, *Posters-at-the-Capitol* will celebrate its tenth year of showcasing the research and scholarly work of Kentucky undergraduates. This year's event will bring the total number of undergraduates who have presented their projects to legislators at *Posters* to over 2,000. Undergraduates who will have projects completed for the February 2011 event are encouraged to submit project abstracts by the October 20, 2010 deadline. Submission is on-line at <http://campus.murraystate.edu/services/URSA/> and abstracts in all disciplinary areas are being sought.

Philip Houtz best summed up the students' experience at last year's *Posters* event. Houtz, who had worked with University of Kentucky mentors Lynne Rieseke and Bruce Webb on a project entitled, *In Vivo Integration of Carpeletis Ichnovirus Genone Segments into Heliothis Virescens DNA*, stated, "This was a good experience for me. I presented my research to my representatives in the Senate, R. J. Palmer, and the House of Representatives, Don Pasley, both of whom showed interest in my research despite my initial fears that I would be unable to relate to people beyond the strictly scientific community. Even more exciting was that it provided me with an opportunity to see a great range of fascinating research being done around the state!"

The importance of education to the future of Kentucky is demonstrated by the influential list of individuals who have welcomed the students to *Posters-at-the-Capitol*. Opening remarks have been presented by Lieutenant Governor Daniel Mongiardo, Council on Postsecondary Education (CPE) President Robert King, former Governor Ernie Fletcher, former Secretary of Education and Workforce Development Helen Mountjoy, Chair of the Senate Committee on Education Ken Winters, former CPE President Tom Layzell, and former CPE Vice President for Academic Affairs Jim Applegate, among others. For the past several years, the Governor has declared the day of *Posters-at-the-Capitol* "Undergraduate Research Day" in the Commonwealth and undergraduates participating in *Posters* have been presented with "Citations" by the Speaker of the House. While the final list of those who will welcome students for the tenth anniversary event is not finalized, Governor Steve Beshear, CPE President Robert King, Chair of the Senate Committee on Education Ken Winters and Chair of the House Education Committee Carl Rollins have been invited to speak.

Every year *Posters* is attended by many of the legislators from the Senate and House of Representatives. While no exact count is available, several hundred members of the House and Senate have attended the event during the past nine years. They have routinely praised the students' work and, at times, have expressed amazement that undergraduates had been able to perform work of this caliber. On several occasions, members have introduced students from their districts on the floors of the House and Senate and one student, who had conducted a health care study, was asked to present her

findings on the floor of the House. A few of the legislators have even expressed the regret that this kind of learning opportunity had not been available to them when they had attended college.

CPE President King sees *Posters* as representing something much larger in the Commonwealth. In King's view: "The *Posters-at-the-Capitol* program is the visible tip of a veritable iceberg of educational opportunity that is enhancing student learning across the Commonwealth's public universities. The posters represent expanding opportunities for undergraduate students to engage in work long reserved for graduate level study. The consequence is the enhanced quality of learning for those who participate, linking observation to analysis and problem solving, and providing the spark of inspiration to young people seeking that niche where they can contribute to society in meaningful ways."

Posters-at-the-Capitol is organized by campus coordinators at each of the 8 public universities and at the Kentucky Community and Technical College System. Each coordinator is responsible for advertising the event and coordinating the selection of participants on his or her campus. Students and faculty wanting additional information on *Posters* can obtain information by contacting their *Posters-at-the-Capitol* Campus Coordinator as listed below.

Campus	Coordinator	E-mail address
Eastern Ky University	Dr. Rose Perrine	rose.perrine@eku.edu
KCTCS	Dr. Mary Janssen	marye.janssen@kctcs.edu
Kentucky State U.	Dr. George Antonious	george.antonious@kysu.edu
Morehead State U.	Dr. Bruce Mattingly	b.mattin@morehead-st.edu
Murray State University	Dr. John Mateja Mr. Jody Cofer	john.mateja@murraystate.edu jody.cofer@murraystate.edu
Northern Ky University	Dr. Dan Curtin	curtin@nku.edu
University of Kentucky	Dr. Michael Mullen Ms. Evie Russell	mike.mullen@uky.edu egruss0@email.uky.edu
University of Louisville	Dr. Pamela W. Feldhoff	pamela.feldhoff@louisville.edu
Western Ky University	Dr. Blaine Ferrell	blaine.ferrell@wku.edu

Submitted by John Mateja, Chair, Posters-at-the-Capitol



Senate Committee on Education Chair Ken Winters welcomed students to Frankfort for Posters-at-the-Capitol 2010.

Kentucky Heritage Land Conservation Fund

Drs. William H. Martin and Richard K. Kessler

The Kentucky Heritage Land Conservation Fund (KHLCF) provides grants to acquire lands in their natural state across Kentucky to (1) protect unique natural areas and habitats of rare, endangered, and threatened species, (2) areas important to migratory birds; (3) areas such as wetlands and forested watersheds that perform important natural functions; and (4) areas in a natural state for public use, outdoor recreation, and environmental education. The grants are provided to state natural resource agencies, local governments across the state, and to any of Kentucky's public and private colleges and universities.

The Kentucky Academy of Science has two representatives on the governing board to provide expertise for assessment of the ecological value of proposed lands and to provide guidance for the resource management of the acquired properties. The authors of this article are the current representatives. Bill Martin is a forest ecologist retired from Eastern Kentucky University and Richard Kessler is an aquatic ecologist on the faculty at Campbellsville University. They are appointed by the Governor for three year terms based on the recommendations of KAS. Bill and Ritchie have both served on the Board and represented KAS for over 10 years. Bill is the Chairman of the KHLCF Board and Ritchie is the Chairman of the Project Review Committee that conducts on-site reviews of proposed acquisitions to assure that they meet Fund priorities, that the project is ecologically sound, and that the application is accurate.

The last annual report (2009) states that the KHLCF has over 32,000 acres (since the Fund began in 1995) through 118 projects in 55 counties valued at over \$37 million; over \$4 million has been provided for management of these lands. Revenue for the Fund comes from (1) the state portion of the unmined minerals tax; (2) environmental fines collected by the Kentucky Department of Environmental Protection; and (3) sale of nature license plates. The current plates that you see on the road are the hummingbird, dragonfly, and Cumberland Falls.

Eastern Kentucky University, Kentucky State University, Western Kentucky University and the University of Kentucky have all acquired land by grants from the Fund. ECU is in process of acquiring land that further protect Lilley Cornett

Woods in Letcher County. As stewards of land in Henry County, KSU is developing a handicapped-accessible environmental education center. WKU is focusing on conserving land in the Upper Green River watershed to protect water quality and invaluable mussel beds of this part of the Green River. UK

has used the Fund to acquire the best known and intact example of unique oak-ash savanna woodland of the Inner Bluegrass region of central Kentucky; it is located in Harrison County.

We will regularly report to the KAS membership by way of this KAS Newsletter. Future articles will provide details of the lands managed by the universities; a review of the process that colleges and universities use to apply to the KHLCF; description of areas acquired by the Fund; conservation issues relevant to the lands preserved by the Fund; and issues relevant to preserving and protecting Kentucky's natural heritage.

For additional information about the Fund or an application packet, contact our Frankfort office at 502-573-3080 and ask for Lisa Wellings; our mailing address is 375 Versailles Road, Frankfort, KY 40601. Our web site is:

<http://heritageland.ky.gov/>

All KAS members can support the KHLCF by buying a nature license plate at their next renewal; ten dollars goes to the Fund for each plate sold.



Waterfall on Lower Howard's Creek in Clark Co. (Photo by Joe Dietz)



2010 International Year of Biodiversity

The United Nations has declared 2010 to be the International Year of Biodiversity. Visit <http://www.cbd.int/2010/welcome/> to find out more about:

- The important role biodiversity plays in our lives and what is happening to it.
- What people are doing around the world to combat biodiversity loss.
- How people are celebrating the International Year of Biodiversity.
- Some of the resources available to you in your celebrations.