Kentucky Academy of Science

NEWSLETTER

www.kyscience.org | Susan Templeton, Editor | January 2011

The Voice of Science in Kentucky

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Faculty, staff and students at Enhanced Affiliate member organizations receive:

- ***free KAS membership***
- ***online access to KAS Journal***
- ***KAS Newsletter via e-mail***

☞ 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 www.kyscience.org. You may contact the KAS Newsletter Editor at susan.templeton@kysu.edu.

From the President...

It is an honor and a pleasure to assume the presidency of KAS. I am looking forward to a very busy year in which the voice of the Academy can have an impact on issues that face Kentucky. In these difficult economic times, organizations such as KAS have many responsibilities. We have to maintain and grow our organization, we need to address the needs of our constituency, and we must continue to serve as the scientific voice of our state. I am happy to report that our membership is at a record high, thanks to the establishment of the Enhanced Affiliate Memberships of our universities and colleges. Is your college/university/institution an "enhanced" member? Check out our web page www.kyscience.org to see if your institution is listed. If it isn't, we will be glad to help you impress your administration of the value of enhanced KAS membership. It is important for us to encourage all of our colleagues to join KAS. A strong membership base definitely improves our voice throughout the state.

There are several issues facing the Academy, but uppermost is our current financial situation. I want to thank Ken Crawford for his steadfast attention to our bottom line. We have been able to sustain our bank account for the last couple of years without touching the principle or interest from our investments. This has been possible because of the success of our annual meetings and prudent handling of the cash on hand. We have reinvested the interest we have been earning on the investments. However, we have now reached a point where the working bank account will not cover all of the anticipated 2011 expenses without dipping into the investment interest. At the November Governing Board meeting, we decided that we would try not to touch our interest, but rather cut expenses. Among the possible expenses we could cut/reduce are the research project funds available to (1) the professional scientists and/or (2) the Undergraduate Research Grants. The Board decided that rather than eliminate either of these worthy efforts, we would solicit funds from the membership to support the Undergraduate Research Grants. Since members covered by the enhanced affiliations no longer have to pay membership dues, we are hoping that you will dig into your pockets and ensure that undergraduate research continues to be funded as a major priority of the Academy. There is a convenient link on the KAS home page that will allow you to contribute to this fund (no amount is too small). It is easy and tax deductible! Please help us keep the undergraduate research grants funded!

The U.S. is struggling to understand what can be done to encourage our students to enter STEM careers. You, as practicing scientists and engineers in Kentucky, have an opportunity to reach out to our students at all levels and provide a model of your profession. Consider giving your time to attend career days at local schools, work with teachers who could use some additional help in the classroom, and be a mentor to students who show an interest in STEM areas. We all are busy, but the growth of math, science, and engineering will only happen if we can reach students in the

(continued on page 11)

☞ Inside this issue

2010 Annual Meeting

The 96th meeting of the Kentucky Academy of Science was held at Western Kentucky University on November 12-13, 2010. The meeting was very well attended with a total of 775 registered which represents the largest number that has ever been at an Academy meeting.

The meeting started on Friday evening with the Symposium. The Kentucky-Tennessee Branch of the American Society for Microbiology held their Annual Fall Conference in conjunction with KAS and provided the speaker Dr. Stanley Maloy, Dean, College of Sciences and Professor of Biology at the University of California, Irvine. Dr. Maloy's presentation entitled "One Health: Humans, Animals and the Environment" was well received.

Saturday had a full day of presentations, both power point and posters, with the well attended afternoon Plenary Session being the final presentation. It was a panel discussion in which four panel members discussed the "Skills Required for 21st Century Careers in Science." The KY-TN Branch of the ASM also hosted a lunch time symposium on Careers in Biotech & Public Health.

The meeting concluded with the Awards Banquet. The winners of the Superlative Awards, the URCs and GRCs are provided elsewhere in this Newsletter.

There were 233 power point presentations with 105 entering the URC and 48 in the GRC. There were 210 posters with 142 entered in the URC. The total breakdown by section is as follows:

Presentations by Section	Power Point			Poster	
	Total	URC	GRC	Total	URC
Agricultural Sciences	20	7	5	10	4
Anthropology & Sociology	9	4	1	3	1
Botany	7	2	1	2	2
Cellular & Molecular Biology	19	13	4	19	13
Chemistry	24	13	9	54	43
Computer & Information Sciences	9	1	3	8	2
Ecology & Environ. Sciences	14	6	3	17	4
Engineering	9	5	2	0	0
Geography	23	2	5	9	8
Geology	13	8	1	4	3
Health Sciences	6	5	0	11	9
Mathematics	10	3	0	2	2
Microbiology	14	7	3	15	12
Physics & Astronomy	11	7	0	11	10
Physiology & Biochemistry	9	7	21	5	5
Psychology	20	14	6	22	16
Science Education	10	0	0	5	1
Zoology	6	1	3	13	7

From Dr. Robert Creek, KAS Program Director

Messages from the Executive Director

I enjoyed seeing many of you at the KAS Annual Meeting. I always appreciate the opportunity to speak with KAS members!

Thank you to our 2010 Annual Meeting Sponsors. Without their support this meeting would not have been possible:

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MPD, Incorporated

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Also, thank you to WKU and everyone at WKU who handled the meeting details large and small. A special thanks to WKU President Ransdell, Ken Crawford - the Local Arrangements Coordinator, Blaine Ferrell, Philip Lienesch, Claire Rinehart, all the KAS sectional officers, and Rodney King with the KY-TN Branch of the American Society for Microbiology. And lastly, thank you to our Program Coordinator, Dr. Robert Creek, who volunteers many hours to make sure that not only the meeting runs smoothly, but also every person submitting a research paper or poster has a positive experience. For many students this is their first research presentation and Dr. Creek often goes that extra step to make sure students have a positive experience.

If you would like to view meeting pictures visit the KAS website and select the History and Photo Gallery tab under About the Academy.

I am pleased to share with you that Georgetown College has become an Enhanced KAS Affiliate. Welcome Georgetown College and thank you for your support.

Please feel free to contact me if I can be of assistance regarding any KAS matter.

And just a reminder, KAS turns 100 in 2014!

Best wishes,

Jeanne Harris, KAS Executive Director

2010 Undergraduate Research Competition Winners

Congratulations to the students and their mentors and thanks to those who devoted their time to judge the presentations.

AGRICULTURAL SCIENCES
- Oral 1st: Katie LeBlanc - Murray State University
- Oral 2nd: Joel Noah - Asbury University
- Oral 3rd: Clarice Esch - Western Ky University
- Poster 1st: Kyla Ross - Kentucky State University
- Poster 2nd: Anna Marie Weldon - Western Ky University
- Poster 3rd: Brian Z. Hedges - Wittenberg University

ANTHROPOLOGY AND SOCIOLOGY
- Oral 1st: Matthew Buttacavoli - Northern Ky University
- Oral 2nd: Samantha Wang - University of Ky
- Oral 3rd: Colleen Wynn - Western Ky University
- Poster 1st: Aleshia Hospelhorn - Northern Ky University

BOTANY
- Oral 1st: Alexia Callihan - Morehead State University
- Oral 2nd: Alyssa B. Roby - Bellarmine University
- Poster 1st: Sydney Combs - Western Ky University

CELLULAR AND MOLECULAR BIOLOGY
- Oral 1st: Louesa Akin - Centre College
- Oral 2nd: Kayla Kinker - Berea College
- Oral 3rd (tie): Adam Chambers - Berea College
  Osniel Gonzalez Ramos - Northern Ky University
- Poster 1st: Rachel Cary - Ky Wesleyan College
- Poster 2nd: Charli Bobbitt - Berea College
- Poster 3rd: Zach Laux - Western Ky University

CHEMISTRY
- Oral 1st: Zachary Sweeney - Centre College
- Oral 2nd: William Talbert - Northern Ky University
- Oral 3rd: Dino Varajic - Western Ky University
- Poster 1st: Amar Patel - Western Ky University
- Poster 2nd: Anthony Bankemper - Northern Ky University
- Poster 3rd: Chad Willis - Western Ky University

COMPUTER AND INFORMATION SCIENCES
- Oral 1st: Joshua Bradley - Morehead State University
- Poster 1st: Jovan Andjelich - Bellarmine University

ECOLOGY AND ENVIRONMENTAL SCIENCE
- Oral 1st: Stephanie Hayes - Northern Ky University
- Oral 2nd: Victoria Gilkison - Western Ky University
- Oral 3rd: Brenna Tinsley - Western Ky University
- Poster 1st: John Yeiser - Eastern Ky University
- Poster 2nd: Anna Mantooth - Western Ky University
- Poster 3rd: Evan Duszynski - Asbury University

ENGINEERING
- Oral 1st: Daniel C. Graves - Morehead State University
- Oral 2nd: Brandon L. Molton - Morehead State University
- Oral 3rd: Tyler T. Burba - Morehead State University

GEOGRAPHY
- Oral 1st: David Evans - Western Ky University
- Oral 2nd: Lee Campbell - Western Ky University
- Poster 1st: Kyle Berry - Western Ky University
- Poster 2nd: Sarah McCann - Western Ky University
- Poster 3rd: Kyle Mattingly - Western Ky University

GEOLOGY
- Oral 1st: Melanie Newton - Western Ky University
- Oral 2nd: Christopher Toney - Western Ky University
- Oral 3rd: Austin Moyers - Western Ky University
- Poster 1st: Leslie Williams - Northern Ky University
- Poster 2nd: Matt Downen - Western Ky University
- Poster 3rd: Stuart M. Kenderes - Western Ky University

HEALTH SCIENCES
- Oral 1st: Justin E. Pile - Western Ky University
- Oral 2nd: Julie Cardosi - Northern Ky University
- Oral 3rd: Jacqueline Walker - Kentucky State University
- Poster 1st: Ashley Humphrey - Ky Wesleyan College
- Poster 2nd: Jillian C. Goines - Bellarmine University
- Poster 3rd: T'shura S. A. Ali - Bellarmine University

MATHEMATICS
- Oral 1st: Stefan Schnake - Murray State University
- Oral 2nd: Anthony Bombik - Western Ky University
- Oral 3rd: Justine Missik - Western Ky University
- Poster 1st: Alexander Hare - University of Ky
- Poster 2nd: Amir Ahmadi - Morehead State University

MICROBIOLOGY
- Oral 1st: Kati Ayers - Western Ky University
- Oral 2nd: Aric Johnson - Western Ky University
- Oral 3rd: Elizabeth Shelley - Northern Ky University
- Poster 1st: Virginia Shelley - Northern Ky University
- Poster 2nd: Colin Moss - Western Ky University
- Poster 3rd: Kathryn Brady - Western Ky University

PHYSICS AND ASTRONOMY
- Oral 1st: Ramesh Adhikari - Berea College
- Oral 2nd: Guoke Yang - Centre College
- Oral 3rd: John M. Wilson - Western Ky University
- Poster 1st: Richard Jelsma - Bellarmine University
- Poster 2nd: Caleb K. Grimes - Morehead State University
- Poster 3rd: Wiliam Norris - Berea College

PHYSIOLOGY AND BIOCHEMISTRY
- Oral 1st: Kevin Murray - Wood Hudson Cancer Research Laboratory
- Oral 2nd: Ruth Sudbeck - Western Ky University
- Oral 3rd: Hodari-Sadiki James - Berea College
- Poster 1st: Josie Maione - Morehead State University
- Poster 2nd: Jennifer O'Brien - Centre College
- Poster 3rd: Callie Wilson - Murray State University

PSYCHOLOGY
- Oral 1st: Ryan Will - Centre College
- Oral 2nd: Nicholas Holt - Morehead State University
- Oral 3rd: Martina Wagoner - Morehead State University
- Poster 1st: Meagan Howard - Northern Ky University
- Poster 2nd: Aaron Ellis - Northern Ky University
- Poster 3rd: Kera King - Northern Ky University

SCIENCE EDUCATION
- Poster 1st: Zachary Danneman - Berea College

ZOOLOGY
- Oral 1st: Brenna Tinsley - Western Ky University
- Poster 1st: Abigail Wier - Berea College
- Poster 2nd: Maranda Elswick - Pikeville College
- Poster 2nd: Katherine Touzinsky - Wittenberg University

2010 Superlative Awards

OUTSTANDING COLLEGE/UNIVERSITY TEACHER

The 2010 recipient of the KAS Outstanding College/University Teacher is Dr. Renee Fister, Professor of Mathematics and Statistics at Murray State University. Dr. Fister received her BA degree in Mathematics from Transylvania University and her M.S. and Ph.D. from the University of Tennessee, Knoxville. She joined the Faculty at Murray State in 1996. Dr. Fister states: "My philosophy of teaching and research resides in the concept that others do not care what I know until they know I care."

Dr. Fister has been in actively engaged for many years in involving mathematics students at Murray State in a variety of mentored educational experiences, in part due to her stellar record of obtaining extramural funding from a wide variety of sources. Notably, Dr. Fister was lead PI on an NSF-funded Biology & Mathematics in Populations Studies (BioMaPS) grant in which she was an active mentor and collaborator with twelve undergraduate students and seven Math & Biology colleagues working to develop a new cross-disciplinary biomathematics area and a biomathematics modeling course.

Dr. Fister has served as the mathematics expert for a Department of Education-funded project to help teachers in low-performing schools improve their mathematics knowledge and train them ways to more effectively teach mathematics concepts, and worked with teams of faculty from across the Commonwealth as part of an NSF project to train faculty in modern pedagogy and effective classroom practices.

Dr. Fister has done all this while running an active and productive research program in the applicability of optimal control in various biological and medical areas, including mathematical analyses that predict the utility of combination drug therapy for cancer patients and application of optimal control theory to neuroblastoma treatment.

Dr. Fister's impact as an outstanding teacher is perhaps best summarized by one of her students who wrote: " She is a constant source of inspiration for me….In my opinion, Dr. Fister is the embodiment of what a university professor should be - approachable, understandable and encouraging."

KAS President Nancy Martin (left) presented the award to Dr. Renee Fister, Murray State University

OUTSTANDING SECONDARY SCHOOL SCIENCE TEACHER

The 2010 recipient of the KAS Outstanding Secondary School Science Teacher is Mrs. Susan Neumann. Mrs. Newmann received her BS degree in Biology from Allegheny College and her MAT in Science Education from the University of North Carolina - Chapel Hill. She is currently a high school life science and environmental science teacher at Eastern Kentucky University's Model Laboratory High School.

Colleagues report that, since joining the Model faculty, Mrs. Newmann has endeavored to cultivate a school culture which not only appreciates the diversity of the life sciences but also one that is more ecologically conscious. Through her efforts, the Model Laboratory School became involved in the "Green and Health Schools" program. Through projects initiated in Mrs.Newmann's environmental sciences course, the Model School implemented a school-wide recycling program. She has also worked to enhance Model's outdoor classroom as a viable and diverse learning environment for K-12 students. Mrs. Newmann worked to create and sponsor Model High School's first Envirothon team. In just two years, this team demonstrated its knowledge and advocacy against the damaging effects of mountaintop removal at both the state and national level, placing 1st in the state competition in both 2008 and 2009.

Colleagues also report that Mrs. Newmann is known for the positive and trusting relationships she forms with her students. They note that she has a strong sense of social justice and strives to facilitate student learning and self-awareness through real world and constructivist approaches in her pedagogy. Mrs. Newmann is known for not only her strong content knowledge but her enthusiasm for that content and her students.

DISTINGUISHED COLLEGE/UNIVERSITY SCIENTIST

KAS President Nancy Martin (left) presented the award to Dr. Frank Ettensohn, University of Kentucky.

The KAS Distinguished University Scientist Award recipient for 2010 is Dr. Frank Ettensohn of the Department of Earth and Environmental Sciences at the University of Kentucky. Dr. Ettensohn received his BS and MS degrees in Geology from the University of Cincinnati and his Ph.D. from the University of Illinois at Urbana-Champaign. He has been a faculty member at the University of Kentucky for the past 35 years.

Dr. Ettensohn is a research scientist whose work in geology and paleontology is highly regarded around the globe. He has conducted research on oil and gas shales in Kentucky and nearby areas since the mid-1970's, work that has great significance now and in the future given the increasing role of natural gas in energy production. Dr. Ettensohn's widely published results are being used by researchers in Europe, China and South America to explore for more organic-rich shale deposits; he has recently been invited to China to work on the black-shale basins of south China with local research scientists.

Additionally, Dr. Ettensohn has developed tectonic and sedimentological models for the origin of limestone deposits in the Commonwealth which are being used to predict the occurrence and characteristics of limestone deposits around the world.

Dr. Ettensohn has also done extensive research on seismites, deposits found in sedimentary rocks produced by earthquake activity, and he has developed a method for finding ancient epicentral areas by mapping the distribution of deformation types. He has undertaken the analysis of the Appalachian Basin as a tectonic foreland basin and has recently published a paper summarizing the entire Precambrian-Paleozoic history of the Appalachian Basin.

Dr. Ettensohn has over 170 publications to his credit as well as many reviews, guidebooks, maps, and charts. He has also directly mentored over 41 graduate students. Dr. Ettensohn has received numerous awards including two teaching/research Fulbright Fellowships, the Lifetime Achievement Award from the American Institute of Professional Geologists (Kentucky Section) and Educator of the Year from the American Association of Petroleum Geologists (Eastern Section).

OUTSTANDING EARLY CAREER IN POST SECONDARY EDUCATION

The 2010 winner of the KAS Outstanding Early Career Award is Dr. Kristin Ashford, assistant professor of Nursing at the University of Kentucky. Dr. Ashford received her BSN degree from Wasburn University in 1991, her MSN degree from the University of Louisville in 2000 and her Ph.D. in Nursing from the University of Kentucky in 2007, joining the faculty of the UK College of Nursing that same year. Pre-natal/Obstetric Nursing is her area of expertise.

Dr. Ashford has been described as a "role model for outstanding teaching and mentoring" and has demonstrated highly effective teaching in both classroom and clinical settings. She uses innovative strategies and multi-sensory approaches to engage her students, including the use of birthing simulation manikins, Turning Point software technology, integration of movie themes/ clips as teaching tools, and a wide variety of visual aids and learning tools. Her students rate her as consistently "excellent," and note that her enthusiasm about the course material greatly enhances their learning. They note that she is "awesome" at explaining difficult material and is always willing to meet with outside of class.

Dr. Ashford's philosophy is to encourage students to take a proactive approach to learning by fostering an environment where they are encouraged to think critically. She believes in promoting academic growth in a non-threatening but challenging atmosphere such that students can achieve their personal and professional goals.

Dr. Ashford has also been actively involved outside the classroom, mentoring several undergraduate Nurse Scholars and has served as the faculty advisor for UK Medical Missions, a multi-discipline student organization that conducts local and international medical missions, including trips to Bolivia, the Dominican Republic and Haiti.

In addition to her expertise as a teacher, Dr. Ashford's colleague report that she is on the path to become an outstanding nurse scientist. Dr. Ashford has published in leading nursing journals and has received funding for two research grants from the National Institutes of Health totaling ~$1.2 million, one focusing on prenatal inflammatory biomarkers and the other on community action smoking cessation interventions.

OUTSTANDING ACADEMY SERVICE

The 2010 Outstanding Academy Service Award recipient is Dr. George Antonious of the Department of Plant and Soil Sciences at Kentucky State University. Dr. Antonious received his BS & MS degrees in Agriculture in Pesticide Chemistry and Ph.D. degree in Pesticide Chemistry & Residue Analysis from the University of Alexandria (Egypt), and completed a post-doctoral fellowship in the Department of Horticulture at the University of Kentucky before joining the faculty at Kentucky State University.

Dr. Antonious has been both an active teacher and scholar. While at KSU, he has taught such diverse courses as Biochemistry, Organic Chemistry, the Chemistry of Ordinary Things, The Environment & Human Impact on the Environment, and Environmental Science & Bioremediation Techniques. Dr. Antonious has also been an active research mentor for KSU undergraduates and in the Research Apprenticeship Program for minority high school students.

Dr. Antonious has received numerous grant awards to study low cost absorbents for reducing pesticides and heavy metal impact on environmental quality, on biofumigation for soil health in organic high tunnel and conventional field vegetable production systems, and natural capsaicinoids as alternative pesticides for organic growers among many others.

Dr. Antonious has been an active member of KAS for many years and has served on the KAS Governing Board as an at-large representative. Where Dr. Antonious has perhaps made the greatest impact in the Academy in his role as the Chair of the KAS Committee on Distribution of Research Funds. In this capacity, he solicits applications, arranges for grant application review, oversees the funding distribution, and assesses progress towards project goals. Dr. Antonious has modernized and streamlined the grants process and has recognized and addressed issues such as the need for conflict of interest forms and progress reports, and the consideration of past performance in subsequent funding decisions. Dr. Antonious 's stewardship of the grants program goes beyond the application process and includes the personal attention he gives to the grantees. He is always available for consultations and advice.

Dr. Antonious has provided leadership and responsible stewardship of KAS research grant funds over the years and his continued stewardship in this current time of scarce resources has never been more valued and appreciated.

KAS President Nancy Martin (left) presented the award to Dr. George Antonious, Kentucky State University.

Call for Nominations for Superlative Awards

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 (non-academic)

Detailed criteria for each category are available online at www.kyscience.org/content/nominations.php. Nomination packets for all awards should include an abbreviated curriculum vitae (5 pages or less) containing information pertinent to the award as well as a list of publications, and letters of recommendation from two to three professional colleagues well acquainted with the candidate's qualifications for the award.

Outstanding Academy Service Award nomination packets should include documentation of special contribution to the Academy.

Outstanding Secondary School and *College/University Teacher* awards nomination packets should include documentation of special accomplishment as a teacher of science, especially measures of student success, participation in student development beyond the classroom, and science curriculum development. Letters of recommendation for secondary school teachers may also come from an administrator or supervisor, a teaching colleague, a student, or a parent.

April 15, 2011, is the 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. Cheryl Davis
1906 College Heights
Department of Biology
Western Kentucky University
Bowling Green, KY 42101
cheryl.davis@wku.edu
270-745-6524

KAS Research Funds

A total of 24 grant proposals have been received and are under review. Dr. George Antonious, Chair of the KAS Committee on the Distribution of Research Funds, will present the award recommendations at the KAS Board Meeting scheduled for February 12. The grant recipients will be announced shortly thereafter at www.kyscience.org/members/grants.php.

The efforts of the reviewers (Dr. Antonious, Kentucky State; Dr. K. C. Russell and Dr. Rebecca L. Kelley, Northern; Dr. Gary Ritchison, Eastern; Dr. Ricky Cox, Murray; and Dr. Ilson White, Morehead) are deeply appreciated.

The Kentucky Academy of Sciences Board is urging you to make a donation to a board approved fund raising drive in support of the Undergraduate Research Supply Grants and the Summer Undergraduate Research Grants. The former support up to $500 for supplies and expendables necessary for student research and the latter up to $3000 for students engaged in summer research under the guidance of a faculty mentor. The Academy revenue stream is largely dependent on income from the Raymond H. Athey Foundation trust and we are fortunate to have their support. However, in the current economic climate, income from investments has plummeted but our expenses for running the foundation, supporting the annual meeting and the junior academy have not decreased. Unless we find another source of support, the only way to handle the $10,000 projected shortfall for 2011 is to eliminate all grant support except the Marcia Athey and Botany Funds specifically designated by the Athey Trust. This would mean eliminating the Undergraduate Research Supply Grants and the Summer Undergraduate Research Grants. While they are not large, these grants are important for the students who benefit. There are 2,200 members of the Academy and most no longer pay individual dues because they work at an enhanced affiliate institution. I am going to contribute AT LEAST $35.00, the amount I would pay, and used to pay for my KAS membership, to the cause of supporting undergraduate research. The board and the students will be most grateful if you can join me in making a similar tax deductable donation to the Undergraduate Research Fund as soon as you can so we can plan for the future.

At this time, thanks to the KAS governing Board members and a few other early bird donors, we have raised $1,000 toward our $10,000 goal. You can donate via credit card or PayPal account at

2010 Graduate Research Winners

AGRICULTURAL SCIENCES
- 1st: Nathan Howell - Western Ky University
- 2nd: Gary T. Cundiff - Western Ky University
- 3rd: Jon Cambron - Kentucky State University

ANTHROPOLOGY AND SOCIOLOGY
- 1st: Cheryl Pan - University of Ky

BOTANY
- 1st: Yinu Wang - Western Ky University

CELLULAR AND MOLECULAR BIOLOGY
- 1st: Oliver Starks - University of Louisville
- 2nd: Jahnavi Kancharla - Western Ky University

CHEMISTRY
- 1st: Eric Vanover - Western Ky University
- 2nd: Rambhoopal Kantam - Murray State University
- 3rd: Vivek Badwaik - Western Ky University

COMPUTER AND INFORMATION SCIENCES
- 1st: Daryl Dsouza - University of Louisville
- 2nd: Sungbo Jung - University of Louisville
- 3rd: Gyuchoon Cho - University of Louisville

ECOLOGY AND ENVIRONMENTAL SCIENCE
- 1st: Robert Denton - Eastern Ky University
- 2nd: Coy R St. Clair - Murray State University
- 3rd: Daniel Douglas - Eastern Ky University

ENGINEERING
- 1st: Anthony Shelley - Morehead State University
- 2nd: Elaheh Arabmakki - Morehead State University
- 3rd: Jared May - Morehead State University

GEOGRAPHY
- 1st: Josh Gilliland - Western Ky University
- 2nd: Elizabeth Schmitz - Western Ky University
- 3rd: Mitchell Gaines - Western Ky University

GEOLOGY
- 1st: Ann W. Harris - Eastern Ky University

MICROBIOLOGY
- 1st: Samar M. Solyman - ASM-University of Tennessee
- 2nd: Marcelo A. F. Kramer - Northern Ky University

PHYSIOLOGY AND BIOCHEMISTRY
- 1st: Yajie Wang - Western Ky University
- 2nd: Amanda Webb - Western Ky University

PSYCHOLOGY
- 1st: J. David Forman - Morehead State University
- 2nd: Andrea Williams - Morehead State University
- 3rd: Teresa Mueller - Morehead State University

Griffith Memorial Graduate Awards
- 1st: J. David Forman - Morehead State
- 2nd: Andrea Williams - Morehead State
- 3rd: Teresa Mueller & Jacquelyn Lile - Morehead State

ZOOLOGY
- 1st: Jacob Eldridge - Western Ky University
- 2nd: Kevin Merrill - Eastern Ky University
- 3rd: Matthew Wood - Western Ky University

Congratulations to these students and their mentors. A special thanks to those who devoted their time to judge the presentations.

Open Access Journals and Databases

Open access journals are online journals that can be accessed, read, downloaded, and printed in abstract and full text forms by anyone, without paying fees for journal subscriptions or scientific society memberships. Since about 1970, journals originally established in the open access format have been available in several databases. In originally-open access journals, authors may publish online with immediate accessibility, through publishers such as BioMed Central. One of these is the Public Library of Science (PloS), www.plos.org, a database of seven original scientific and medical journals published online with free and immediate access. A non-profit organization, PloS invites donations to support its activities.

Databases that search online journals or research articles include PubMed Central, managed through the National Institute of Health (NIH). Pub Med is not an online journal publisher. Rather, it functions as a search engine for its online library of research material published elsewhere. Partial contents of major journals, such as Science and Nature, and specialized journals in science fields are also accessible through this database.

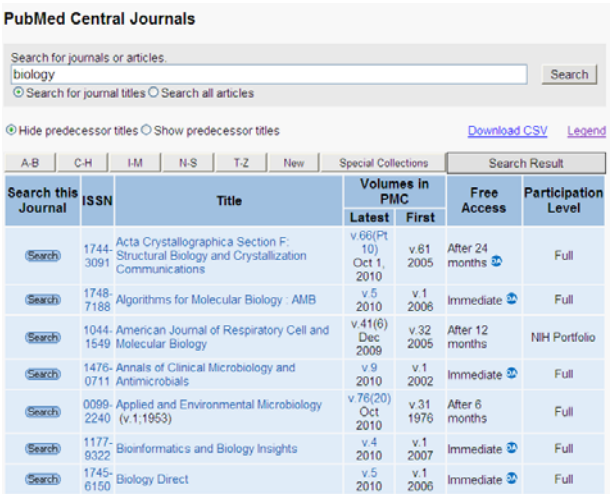
The Kentucky Academy of Science is a member of the database BioOne through Allen Press, publisher of the Academy's journal. BioOne is an online database and search engine where one can find scientific journals or specific articles from journals online, without itself being a publisher of originally online journals. Each journal may have a different policy regarding the amount and delay of online accessibility. The Journal of the Kentucky Academy of Science requires members to log in to the society to go beyond the public pages to be able to see a full article. A non-member may purchase access to the article for a limited time period. BioOne returns a portion of the fee for participation to KAS.

Online publications have little or no delay between publishing times and accessibility online, as well as little or no cost to the reader. Articles may be downloaded and printed without charge to the reader. Especially in the fields of biological life sciences and medical research, online journals and search engines for collections of online research material offer a wealth of information to those who have the necessary knowledge to properly evaluate their content within a framework of scientific findings. Access to research results that may otherwise cost hundreds of dollars, or that may be inaccessible because of rural location, is free for the reading. Students prepared by undergraduate studies in biology or pre-medical anatomy and physiology are able to access findings from empirical studies in their chosen fields. Mastery of the technological tools needed in the future to pursue scientific research will include the ability to effectively traverse open access databases using online navigational search engines.

Four online open access databases that provide resources to researchers investigating areas of scientific inquiry are described below, along with the results of a few specific searches in each database.

PubMed Central (www.ncbi.nlm.nih.gov/pmc/about/intro.html) is the open access database of the National Institute of Health (NIH). PubMed Central contains biomedical and life sciences journal literature and is managed by the NIH National Center for Biotechnological Information (NCBI) in the National Library of Medicine. As a digital library, PubMed Central is an electronic repository in which full journal content or research articles may be deposited. Research that is funded by NIH is requested from authors at the time of submission to journals elsewhere and other journals are invited to deposit their holdings. PubMed Central publishes both immediate and delayed access material, and indicates material funded by NIH. About two million articles are contained in the database.

PubMed Central has the most extensive holdings of digital journals and articles not originally published online. However, periods of delay are typical, ranging from six months to a year between original publication and open online availability. Some online subsidiary journals of subscription (society) publications may be accessed through PubMed Central as well. Journal titles are listed alphabetically under a main heading, "Journal List," with an indication of the earliest digital deposit. (Example below) Journals of the BioMed Central database are included in PubMed Central searches. Each journal title may be searched using links from the journal title or the entire PubMed Central database can be searched for journals or articles, with constraints on titles, authors, and compound terms.



PubMed Central Journals

Search for journals or articles.

biology

Search

Search for journal titles Search all articles

Hide predecessor titles Show predecessor titles Download CSV Legend

A-B | C-H | I-M | N-S | T-Z | New | Special Collections | Search Result

Search this Journal	ISSN	Title	Volumes in PMC		Free Access	Participation Level
			Latest	First		
Search	1744-3091	Acta Crystallographica Section F: Structural Biology and Crystallization Communications	v.66(Pt 10) Oct 1, 2010	v.61 2005	After 24 months	Full
Search	1748-7188	Algorithms for Molecular Biology : AMB	v.5 2010	v.1 2006	Immediate	Full
Search	1044-1549	American Journal of Respiratory Cell and Molecular Biology	v.41(6) Dec 2009	v.32 2005	After 12 months	NIH Portfolio
Search	1476-0711	Annals of Clinical Microbiology and Antimicrobials	v.9 2010	v.1 2002	Immediate	Full
Search	0099-2240	Applied and Environmental Microbiology (v.1:1953)	v.76(20) Oct 2010	v.31 1976	After 6 months	Full
Search	1177-9322	Bioinformatics and Biology Insights	v.4 2010	v.1 2007	Immediate	Full
Search	1745-6150	Biology Direct	v.5 2010	v.1 2006	Immediate	Full

BioMed Central Ltd. (www.biomedcentral.com) is the open access database of Springer Science and Business Media in London. It contains 205 peer-reviewed open access journals. Users can browse through lists of journal titles and subject areas. Journals cover the areas of medicine, physiology and pharmacology, diseases, public health, epidemiology, cell biology and chemistry, genomics, neuroscience, and other health-related research areas. Articles published in BioMed Central are also immediately archived in PubMed Central.

From each journal title a link shows a list of its latest articles. "Gateways" at the end of the lists of journals, in some subject areas, are links that provide access to special research topics; for example, the Bioinformatics and Genomics Gateway highlights large-scale genomic databases and translational research.

It is easy to search BioMed Central by subject, after registering as a user by entering a password at no cost. Searches by subject may be carried out on BioMed Central or PubMed Central databases, and may be refined by limiting to title, text, or by compound terms.

A search of a few specific items in BioMed Central and PubMed Central was made to compare their holdings.

1. "Neuroscience" gave over 4700 research articles in BioMed, over 26,000 in PubMed, including topics of DNA and cell biology of brain and spine, animal models, eg. Drosophila.
2. "Neurobiology" gave 1,715 research articles in BioMed, about 12,500 in PubMed, including brain pathways and chemical functions, consciousness and fMRI, animal models, eg. Drosophila, zebrafish, inhibition of microRNA functions.
3. "Vision" gave 3,185 research articles in BioMed, and over 72,000 articles in PubMed. Articles were not limited to eye and photoreceptors, but included articles on malaria, mental disorders and caregiver burden, and migraine. "Retina" narrowed results to almost 1,100 research articles in BioMed, almost 32,000 in PubMed, including axonal degeneration, embryonic stem cells and genes, proteins in retinal development, model organism zebrafish, miR regulator of DNA-mediated apoptotic networks.
4. "Molecular biology" gave over 21,000 research articles in BioMed, 73,750 in PubMed, including gene and mitochondrial gene expression, microRNA, cellular signaling, microbiology of disease, and phylogenetic diversification based on molecular divergence dating techniques.
5. "MicroRNA" gave 960 articles in BioMed, almost 4,500 in PubMed, including microRNA in disease, microRNA precursors, cellular signaling, DNA methylation in silencing, miRNA inhibition of neuroblastoma cell survival, gene expression in human stem cells, model organisms Drosophila and zebrafish, miRNA conserved in evolution, plant miRNA.
6. "Bioinformatics" gave almost 13,500 research articles in BioMed, over 29,500 in PubMed, including themes of molecular biomarkers, phylogenetic patterns of animals based on mitochondrial and nuclear data, genetic techniques in artificial selection, phylogenetic analyses of genes in developmental processes, molecular diversity and conservation, genomic identifications (in yeasts, alfalfa, Daphnia, zebrafish), microRNA evolution.
7. "Phototaxis" gave 43 research articles in BioMed, 758 articles in PubMed, including cyanobacterial genomes, origins of rhodopsin, models of plant and mammalian cellular processes. When limited to "negative phototaxis," the search gave 28 research articles in BioMed, 449 in PubMed, including transducer proteins as photo- or chemical receptors, model organisms C. elegans and Volvox.

The Directory of Open Access Journals (www.doaj.org) is a production of the libraries of Lund University, Copenhagen, Sweden. It provides open access to journals that have peer review or editorial quality control. There are over 5300 journals from around the world in the directory; about 2200 of these journals can be searched by article. Subjects covered by the journals include varied disciplines, principally biology, life and health sciences, but also agriculture and earth sciences, social sciences, technology and engineering, physics and astronomy, and journals in history, art, and architecture.

Journals are browsed by title or subject. A list of subject areas may be expanded to include subheadings within each subject area. Links from some journal titles give lists of volumes held in the database with research articles that may be viewed and printed. Searches may be made for journals or articles, with additional constraints possible. A comparison with BioMed and PubMed indicates the database is less extensive than either of those.

1. "Neuroscience" gave 2,088 documents (but these include reviews), on topics such as neuronal chemistry, firing patterns and signal strength in brain structures, the giant squid axon model.
2. "Neurobiology" gave 141 documents, including neurobiology of diseases, siRNA expression.
3. "Vision" gave 3,206 documents, but these include "vision" as opinion or viewpoint, also thermal visualization. "Retina" gave 429 documents, including model zebrafish, gene expression in cephalochordates, diabetic ocular complications.
4. "Molecular biology" gave 3,465 documents, including proteins, allele frequencies, gene coding in E.coli, population genetics. "MicroRNA" gave 258 documents, including inhibition of apoptosis, microRNA evolution.
5. "Bioinformatics" gave 5,026 documents, including microbial communities, microbial genome assembly.
6. "Phototaxis" gave 12 documents, including light signal transduction, and one of the three articles also found in "negative phototaxis."

Libertas Academica (www.la-press.com/about_us.php) started in 2005 as an independent on-line business in Auckland, New Zealand. Libertas Academica is a publisher of open access journals on topics in medicine, public health, and clinical therapeutic techniques. Authors are invited to submit papers directly to the site; papers are then promptly reviewed and made accessible. Reprints may be purchased at low cost for educational or other use. A series of original journals targets specific topics; for example in Clinical Medicine, "Insights: Blood Disorders."

Journals and a list of categories are listed. Links from each term on the categories list give access to journal titles in that category. A search may be carried out for journals or articles through the categories list provided, which restricts the search to terms listed as category terms. One category, "Bioinformatics," gave 305 articles.

The database is smaller than BioMed or PubMed. "Neuroscience" gave about 1,450 items, but these include news items, reviews, biographical sketches of editorial board members, and other non-research article items. "Neurobiology" gave about 215 items. "Vision" gave about 604 items; "retina" narrowed the result to about 157 items. "Molecular biology" gave 9,930 items, "microRNA" gave about 516 items. "Phototaxis" and "negative phototaxis" gave the same single item.

Open access journals represent a new business model in the world of academia and research which is supported by high-technology industry. Their impact has already been felt in areas such as the biological life sciences and medical research. Additional information about the history and status of open access databases and free journals can be read in "Free Journals Grow Amid Ongoing Debate," Science, 329, 20 August 2010, published online at www.sciencemag.org. KAS members who have experience with open access journals or who have found otherwise inaccessible research articles online through these sources are invited to send their accounts to marye.janssen@kctcs.edu A future newsletter article will collate these reports for all readers.

Contributed by Mary Janssen, Ph.D./Psychology
Member-at-Large, KAS Governing Board

KAS Governing Board Updates

The Nominations and Elections Committee, chaired by Sean Reilley, congratulates those who were elected to office and expresses sincere appreciation to all those willing to serve the Academy by allowing their names to be placed into nomination.

Newly-elected/re-elected Board Members:
- Vice President Cheryl Davis (Western Ky University)
- Physical Sciences Rep. Eric Jerde (Morehead)
- Social & Behavioral Sci. Rep Judy Voelker (Northern)

Continuing Board Members:
- President Barbara Ramey (Eastern)
- President Elect Dawn Anderson (Berea College)
- Past President Nancy Martin (Uof L)
- Secretary Robert Kingsolver (Bellarmine)
- Treasurer Ken Crawford (Western)
- Biological Sciences Rep. Richard Durtsche (Northern)
- Physical Sciences Rep. KC Russell (Northern)
- Social & Behavioral Sci. Rep. Sean Reilley (Morehead)

Ex-officio Board Members:
- Executive Director Jeanne Harris
- Junior Academy of Science Director Ruth Beattie (UK)
- Program Coordinator Robert Creek (Eastern)
- Journal Editor David White (Murray)
- Webpage Editor Claire Rinehart (Western)
- Newsletter Editor Susan Templeton (Kentucky State)
- Executive Secretary Emeritus Don Frasier (UK)

Retiring Board Member:
- Past President Robin Cooper (UK)

The retiring board members were recognized for their service to KAS by President Nancy Martinat the Kentucky Academy of Science Annual Business Meeting on November 13, 2010.

Note: When Cheryl Davis takes office as Vice President on January 1, 2001, that creates a vacancy for her currently held At-Large Representative seat. A replacement will be nominated by President Barbara Ramey and confirmed by the Governing Board at its next meeting.

Kentucky Mourns Education Leader Robert F. Sexton

Robert F. Sexton died last August after a long battle with cancer. Sexton had been executive director of Kentucky's Prichard Committee for Academic Excellencesince 1983, when it began as a grass roots organization focusing on improving education at all levels. Robert King, president of the Kentucky Council on Postsecondary Education, said Kentucky has lost one of its great education leaders and advocates.Gov. Steve Beshear said, "The most fitting memorial to Bob Sexton will be for us to continue to build on the enduring legacy of quality education he has left us."

Excerpted from an Associated Press article in The Lexington Herald-Leader on Friday, Aug. 27, 2010.

Journal of the Kentucky Academy of Science (J-KAS)

Editor's Note

After five very enjoyable years, I plan to step down as Editor of J-KAS due to other commitments. Thus, KAS is searching for someone to take over the reins. If you might be willing to fill this role or know of someone appropriate, please contact me. Although there are no specific position requirements or description, it would be ideal for someone with a strong publication record and previous editorial experience. I plan to stay on for at least one Volume as "Associate Editor" to smooth the transition. Manuscripts still can be sent to me until the position is filled. Below I provide general information on the Journal and contributor guidelines; detailed guidelines for format, citation style, illustrations/tables, etc., are available at www.kyscience.org/content/publish.php.

David S. White J-KAS Editor
Endowed Chair for Ecosystem Studies
Director, Hancock Biological Station
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Back Volumes of J-KAS

With special thanks to the staff and students of the Hancock Biological Station, all back issues of the Journal have been scanned into PDF files and are available on the KAS website (www.kyscience.org). Volumes 1 - 66 are open and available to everyone. Volumes 67 (2006) onward are available only to KAS members and require log-in.

About J-KAS

Each Volume of the Journal normally contains two Numbers, the first published in spring and the second in fall. J-KAS publishes original research papers and notes on all areas encompassed by the Academy. Review papers and Special Contributions will be considered for publication, but the Editor should be consulted in advance. J-KAS will publish manuscripts from symposiums and special workshops; again, the Editor should be consulted as symposium plans are developed. Announcements, News, Board Minutes, and other Academy information (as listed in the bylaws) will be included as received.

General Guidelines for Contributors

1. Authors do not have to be members of the Academy nor reside in Kentucky.
2. Acceptance of papers for publication in J-KAS depends on merit as evaluated by each of two or more external reviewers.
3. Manuscripts may be submitted at any time to the Editor via e-mail as MS Word documents.
4. In a cover e-mail, list the names, addresses, telephone numbers, and E-mail addresses of three potential reviewers.
5. Format/style of papers must conform to the guidelines posted on the KAS website and also to practices in recent issues of J-KAS that are, in effect, a style manual.

2011 Sectional Officers

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From the President... *continued*

primary and middle grades and encourage them as they enter high school and college. KAS has made a commitment to Kentucky students, but KAS will only be influential if the membership is involved. This applies to other issues in the state. We need to pay attention to our environmental issues, legislative actions, and other developments that impact society's view of science. Please become proactive in helping our citizens understand how important the growth of scientific understanding is to the successful growth of our Commonwealth and our country.

It is a pleasure to serve you and I look forward to an exciting year as your president.

Barbara Ramey

Science Across the Commonwealth

A BOATLOAD OF TROUBLE FOR KENTUCKY?

A Guest Editorial by Robert Kingsolver, Dean and Director, Center for Regional Environmental Studies, Bellarmine University

Last month, Governor Steve Beshear proposed that the Commonwealth of Kentucky award tax incentives to encourage the development of "Ark Encounter," a biblical theme park envisioned for an 800 acre site in Grant County. Kentucky's Tourism, Arts and Heritage Cabinet has since granted preliminary approval for up to $43 million over 10 years in tax incentives to the park's developer--a for-profit entity owned in part by Answers in Genesis. This is the same ministry responsible for the creationist "museum" in nearby Petersburg. Plans for the proposed park include a colossal wooden representation of Noah's Ark complete with animal menagerie, dramatic exhibits based on Old Testament stories, and a 100-foot tall "Tower of Babel." In addition to the tax incentives, Ark Encounter developers are asking the state to fund a multimillion dollar interchange off of I-75 to improve highway access to the project. The tax incentive plan has attracted national attention, along with considerable criticism from civil liberties groups.

The park's developers have publicly stated that Ark Encounter will teach a literal interpretation of biblical texts, and its Answers in Genesis backers continue to claim the mantle of scientific credibility for their belief in young-earth creationism. Though KAS respects any group's right to celebrate its cultural and religious traditions, the Academy has long held the position that faith-based paradigms defying any sort of investigative scrutiny should not be passed off as scientific truth, especially at taxpayers' expense. Governor Beshear defends state support of the biblical theme park, saying in effect that he was not elected to consider the creation of the universe, only the creation of jobs.

Setting legal and theological questions aside, will the Ark Encounter theme park really create more jobs than it kills? Construction firms will surely be employed in fabricating these fabulous structures, and the park will presumably need employees to sell its cotton candy, peddle its literature, and shovel its manure. On the other hand, the publicity surrounding government support for this project will not be well received by scientists, engineers, and the technological innovators who might otherwise bring high-paying jobs to Kentucky.

Scientifically literate people will think twice about moving to or investing in a state that publicly endorses the replacement of established scientific methods and principles with an alternative "creation science." It is therefore worth asking whether the Tourism Cabinet's proposed tax incentives will actually lead to a better long-term future for all Kentuckians. While competing states are investing in solar energy, broadband infrastructure, and the biotechnologies of the future, our Commonwealth is putting its money on a landlocked wooden boat, a failed stairway to heaven, and a bronze-age world view.

Meanwhile, a more constructive opportunity to invest in tourism and promote Kentucky's national reputation languishes for lack of state attention. The same tourism cabinet that seems so anxious to promote a for-profit, anti-science enterprise has ignored longstanding plans for a natural history facility in the state's capital. Unlike the proposed theme park, a Kentucky Natural History Museum could enhance the public understanding of science by exhibiting real plants, real animals, real fossils, and geologic specimens actually collected in our state.

The Natural History Museum has been authorized, but never funded by the state legislature. Its board of directors, established by KRS 146.650, has not even been called together to meet in recent years, in spite of requests for action from its KAS representatives. To our knowledge, the state has sought no investors in this project, nor has it launched any public awareness campaign comparable to the recent deluge of publicity for Ark Encounter.

Opportunities lost include the natural history museum's potential tourism revenue and a critically needed educational resource, but also the preservation of our state's natural heritage. As we wait year after year for a facility, Kentucky's irreplaceable biological and geological collections are being shipped out of state, thrown away, or left to deteriorate in inadequate storage facilities. In spite of the stirring words we hear from state government about the importance of science for future prosperity, the proposed public subsidy of Ark Encounter steers Kentucky in the opposite direction.

Governor, we applaud your interest in economic development, but let's let religious organizations build their own monuments, and reserve public support for tourism and educational projects that better serve the interests of all Kentuckians.

2011 Posters-at-the-Capitol Attendance Encouraged

Kentucky's Posters-at-the-Capitol will celebrate its 10th anniversary on February 10, 2011. This year's event will feature the work of 220 undergraduates and 140 faculty mentors from the Commonwealth's public universities and community colleges. The students' work will be displayed on 119 posters. Governor Steve Beshear has proclaimed February 10th as "Undergraduate Research Day" throughout the Commonwealth.

Posters-at-the-Capitol activities will begin with welcoming remarks in the Capitol Rotunda at 11:00 a.m. Posters may be viewed on the second floor of the Capitol building from 11:30 a.m. to 3:30 p.m., with a reception being held from 1:30 p.m. to 3:00 p.m. Posters-at-the-Capitol activities are open to the public and students, teachers, faculty and administrators are particularly encouraged to attend.

A special morning program for state decision makers will focus on the need to develop undergraduates who can compete in today's global marketplace. Featured speakers will include Lee Todd, Jr., President, University of Kentucky; Kris Kimel, President of the Kentucky Science and Technology Corporation; F.T. "Terry" Samuel, Vice President, Lexmark International; Steve Matherly, Vice President, Fifth Third Private Bank, and John Mateja, Chair, Posters-at-the-Capitol Organizing Committee.

More information regarding Posters-at-the-Capitol can be found online at campus.murraystate.edu/services/URSA/index.html.

Submitted by John Mateja, Director, Undergraduate Research and Scholarly Activity Office, Murray State University

Guest Editorial

Answers in Genesis (AIG) ministries and Ark Encounter, LLC plan to build an 800-acre theme park near Williamstown featuring a 500-foot-long "replica" of Noah's Ark (including dinosaurs), a petting zoo (thankfully not including dinosaurs), and a Tower of Babel. AIG is already famous for the "Creation Museum" (www.answersingenesis.org). AIG's "museum" claims that the earth is about 6,000 years old and that Noah's Flood occurred circa 2350 BC. Moreover, the museum puts dinosaurs on Noah's Ark and says Tyrannosaurus was a vegetarian until Adam's Sin. My review of the "Anti-museum" can be found here: www.ncse.com. The "Ark Park" plans to echo the museum's teachings.

The Noah's Ark theme park would be a matter of free expression by religious conservatives except that Kentucky's government promises tax breaks to support the project. In December, Governor Beshear held a press conference with AIG and Ark Encounter to announce that the state is giving Ark Encounter a tax incentive to bring jobs to the region. Under the Tourism Development Act, the "Ark Park" can withhold up to $37.5 million in Kentucky sales taxes to offset the park's projected $150 million price tag.

What can you do about this situation? Long term, you can improve the way you teach the scientific method, evolution, and relevant sciences, especially to non-science majors. A poll reported in PLoS Biology revealed that 25% of high school biology teachers devoted at least one or two classroom hours to creationism and intelligent design creationism (Berkman et al., 2008). As many as one in six of the teachers surveyed indicated belief in young earth creationism. If some public school teachers are not doing an adequate job of teaching evolution and relevant sciences, it may be because of pressure from administrators and the local community, but it is also because some were inadequately educated in their university science courses. Too often the scientific method is discussed in introductory lectures, but not integrated into the rest of the course. Likewise evolution is discussed in "the lecture" on evolution, without being integrated into the course (Scott, 2010). Some universities have made fantastic strides in teaching the importance of evolution and the scientific method, but there is always room for improvement.

In the short term, speak out! If scientists are silent, politicians and school boards will only hear the voices of anti-scientists. Proponents of young earth creationism and intelligent design creationism are vigilant in trying to inject their views into public schools. Every time our legislature meets there is a risk that a bill inserting creationism into the curriculum could be passed. An example of such proposed anti-evolution legislation is this year's HB 169 (see the text of this bill at right). Pro-creationism organizations, such as the Family Foundation of Kentucky, have far more contact with our legislature and school boards than do scientists; let local and state elected representatives know your opinions. When textbook or core curriculum decisions are made, scientists rarely have time to participate, but they need to. Kentucky has over one hundred school districts, and scientists need to pay attention to these local decisions where creationism gets taught, or evolution is misrepresented.

Lastly, join the National Center for Science Education (www.ncse.com 420 40th St., Suite2, Oakland CA 94609). They are the leading organization that keeps tabs on creationist activity and are very helpful if a problem develops.

Citations:

Berkman, M. B., Pacheco J. S., and Plutzer, E., 2008, Evolution and Creationism in America's Classrooms: A National Portrait. PLoS Biology 6(5):e124.

Scott, E. C., 2010, Dobzhansky was right: Let's tell the students. Bioessays 32: 372 - 374.

Submitted by Daniel Phelps
President, Kentucky Paleontological Society
www.kyps.org
edrioasteroid@msn.com

A Bill to Watch

The Kentucky Legislature convened in regular session January 4th, 2011; HB 169 was introduced in the House that day by Rep. Tim Moore (R) House District 26 in Hardin County. This bill reads as follows:

AN ACT relating to science education and intellectual freedom.

SECTION 1. A NEW SECTION OF KRS CHAPTER 158 IS CREATED TO READ AS FOLLOWS:

(1) Teachers, principals, and other school administrators are encouraged to create and foster an environment within public elementary and secondary schools that promotes critical thinking skills, logical analysis, and open and objective discussion of the advantages and disadvantages of scientific theories being studied.

(2) After a teacher has taught the content related to scientific theories contained in textbooks and instructional materials included on the approved lists required under KRS 156.433 and 156.435, a teacher may use, as permitted by the local school board, other instructional materials to help students understand, analyze, critique, and review scientific theories in an objective manner.

(3) This section shall not be construed to promote any religious doctrine, promote discrimination for or against a particular set of religious beliefs, or promote discrimination for or against religion or nonreligion.

(4) This section may be cited as the Kentucky Science Education and Intellectual Freedom Act.

You can have access to timely information concerning the 2011 Kentucky Legislature by visiting the Kentucky Legislature Home Page.

www.lrc.state.ky.us

Visit www.usa.gov/Contact/Elected.shtml to obtain e-mail and postal addresses for key elected officials:

- State Governors and State Legislators
- U.S. Senators and U.S. Representatives
- President Barack Obama and Vice President Joe Biden

2011 Kentucky Science and Engineering Fair (KY-SEF)

Eastern Kentucky University will host the eighth annual Kentucky Science and Engineering Fair (KY-SEF) for middle school and high school students Saturday, April 2, 2011. This event will feature the work of more than 200 students who have advanced through local and regional competitions across the Commonwealth. They will compete for trophies, ribbons, university and private scholarships, and special awards from corporations and organizations. The high school students will compete for the chance to represent the Commonwealth at the Intel International Science and Engineering Fair in Los Angeles in May.

Competition is held in 18 categories:

- Animal Sciences
- Behavioral and Social Sciences
- Biochemistry
- Cellular & Molecular Biology
- Chemistry
- Computer Science
- Earth Science
- Engineering (Materials & Bioengineering)
- Engineering (Electrical & Mechanical)
- Energy and Transportation
- Environmental Management
- Environmental Sciences
- Mathematical Sciences
- Medicine and Health Sciences
- Microbiology
- Physics and Astronomy
- Plant Sciences
- Team Projects

This event represents an exciting milestone for the science and technical education community in Kentucky. The Fair's mission is to expand educational opportunities for all middle and high school students and to enhance the visibility and importance of science and engineering in Kentucky by providing annual statewide competitions that support, encourage and recognize student excellence in science and engineering research. The Fair also gives the public a chance to see the quality of science being done in Kentucky middle and high schools and to showcase what the students are capable of doing.

The Kentucky Academy of Science has been a loyal supporter of KY-SEF by providing both financial support and judges each year. The commitment of KAS members to this event is very important and the organizers of the fair hope that they can rely on your continued support. A call for judges will be sent by e-mail near the end of January. Please consider judging and playing a very rewarding role in the academic development of our next generation of scientists.

So put Saturday, April 2, on your calendar and sign up to be a judge when notification comes your way! As with all non-profit endeavors this year, KY-SEF is looking for financial sponsors. If any KAS member knows of a corporation or other group that would like to become involved with this worthy activity, please contact Barbara Ramey or Bob Creek (barbara.ramey@eku.edu or robertcreek@bellsouth.net).

Kentucky Junior Academy of Science

The 2011 Annual Meeting of the Kentucky Junior Academy of Science will be held 8.30am - 5pm on Saturday, 23rd April, 2011, in the T. H. Morgan Building on the campus of the University of Kentucky, Lexington, KY.

Any Kentucky high school or middle school student may present his or her research findings at the Kentucky Junior Academy of Sciences Annual Meeting. To register for the meeting, a teacher, supervisor or principal from your school must return to the Director of KJAS, the requisite membership form and fee, abstracts (instructions attached), and papers for all students entering from your school. All forms, abstracts, papers and checks from the school must be submitted to KJAS by March 25th, 2011. Late submissions WILL NOT be accepted.

The Junior Academy was begun over fifty years ago to foster an interest in science for high school students in Kentucky. KJAS has expanded over the years to include middle school students. Members of the Junior Academy present the results of their projects each spring at the KJAS annual meeting. Preliminary oral presentations (10 minutes) are conducted during the morning sessions. The winners of the morning sessions make presentations in the afternoon finalist sessions. Four overall winners are selected and these students represent Kentucky at the National American Junior Academies of Sciences (AmJAS) meeting held in February the following year. The Kentucky Academy of Science will provide needs-based funding for these students to attend this meeting, up to a limit of $1000.00 per person. Needs-based funding will also be available for chaperones, up to a limit of $1000/person.

The AmJAS convention meets in conjugation with AAAS, the American Association for the Advancement of Science. As the world's largest general science organization and publisher of Science, AAAS has more than 138,000 members and 275 affiliated societies. One very important aim and purpose of the AAAS is to reach out to young scientists in middle school and high school. It recognizes that these young people are its future.

Checklist for presenting at the meeting:

- ☐ Paper Submission Form
- ☐ Membership Form and fee
- ☐ Abstract (hard copy only)
- ☐ 2 hard copies of word-processed Research Paper
- ☐ Signed copy of waiver

Additional information and parking directions will be mailed on receipt of above materials. All forms and instructions can be downloaded from the KAS webpage (click on KJAS link).

www.kyacademyofscience.org/members/jkas.html

Mail to: Dr. Ruth E. Beattie, Director, KJAS, Dept. of Biology, University of Kentucky, Lexington, KY 40506, rebeat1@uky.edu, 859-257-7647 by March 25, 2011.

Attention KAS Members: Judges are needed for the KJAS Spring Symposium. Please contact rebeat1@email.uky.edu to volunteer. Thanks.

Election 2010: Land and Stewardship Update

As many of you may know, Election Day 2010 was not just a big day for political candidates. It was also a huge day for conservation-related ballot measures at the state and local level. Seven Conservancy state chapters were actively involved in some of these conservation-related ballot measures, and overall the results are impressive.

These efforts helped create over $7 BILLION in new conservation funding for the next 25 years, and defeated ballot measures that would have rolled back conservation policy in two states. These wins included a statewide constitutional amendment in Iowa that when implemented will permanently dedicate $150 million per year to land, water, and soil conservation.

WINS

California - No on Proposition 23: A ballot measure that would have suspended California's climate change laws. ***61% NO***

Iowa - Proposition 1: A constitutional amendment that will permanently dedicate $150 million per year in future state sales taxes for land, water, and farmland preservation. ***62% YES***

Oregon - Measure 76: A constitutional amendment to continue dedicating a portion of the state lottery for parks and natural resources which will generate about $100 million per year. ***68% YES***

Maine - Question 3: A statewide bond measure to provide $9.75 million for the Land for Maine's Future program. ***60% YES***

San Antonio, TX - Propositions 1 & 2: Two local measures that will extend the current sales tax which will provide an additional $90 million to protect land around the Edwards Aquifer, and another sales tax to provide $45 million for various open space and parks funding. Prop 1: ***66% YES*** Prop 2: ***67% YES***

Rhode Island - $14.7 million statewide bond for parks and open space. ***65% YES***

Town of Narragansett, RI - A $2 million bond for local open space acquisitions. ***PASSED***

Klamath County, OR - No on Measure 18-80: Defeat of this measure will ensure ongoing support for fish habitat restoration for the Klamath River Basin in south-central Oregon. ***DEFEATED***

LOSS

California - Proposition 21: A measure to approve a new annual vehicle fee which would have provide dedicated, stable funding for state parks and conservation for the next 25 years. ***58% NO***

TOO CLOSE TO CALL

Cochise County, AZ - Question 1: A local ballot measure that would establish a new water district to protect the Upper San Pedro River in southeastern Arizona.

Shared by Jeanne Harris
Written by Terry Cook
Kentucky State Director
The Nature Conservancy of Kentucky

Job Openings

EDITOR: Journal of the Kentucky Academy of Science. See page 10 of this newsletter for detail.

MICROBIOLOGIST: Transylvania University, a selective, private, Tier I Liberal Arts college invites applications for a TENURE-TRACK ASSISTANT PROFESSOR position starting September 2011. Ph.D. and commitment to undergraduate education and student research required.

Teaching responsibilities include lecture and laboratory sections in (1) upper-level Microbiology, (2) sophomore-level Cell and Molecular biology; and (3) biology electives in their specialty (e.g., immunology, virology, microbial pathogenesis). Teaching load is two classes with laboratory sections per regular term. The college has an excellent faculty development program that competitively funds student and faculty research with separate research space available. Bingham Awards for Excellence in Teaching may provide substantial salary supplements for exceptional candidates or smaller start-up awards for recent Ph.D.s. Please send curriculum vitae, graduate and undergraduate transcripts; and three letters of recommendation. In your cover letter please identify specialty courses you would contribute to the program and how you would actively engage undergraduates through your teaching and research. Review of applications will begin on February 15th and will continue until an appointment is made. Send applications to: Dr. James Wagner, Division of Natural Sciences and Mathematics. Transylvania University, Lexington, KY 40508. Electronic applications and recommendations (PDF only) with your name in the subject line should be addressed to biologyjob@transy.edu. Transylvania University is committed to building a faculty that reflects the diversity of American society.

Can dinosaurs be brought back to life?

World-renowned paleontologist Jack Horner is coming to Lexington in February at the invitation of the Kentucky Section, American Institute of Professional Geologists, to tell us about the dinosaurs that still live with us - the birds - and how we might use them to create modern dinosaurs by altering regulatory genes in bird embryos. Jack is a curator and professor of paleontology at Montana's Museum of the Rockies at Montana State University in Bozeman. A recipient of the MacArthur Fellowship "genius grant," he has made some of the most important recent discoveries about dinosaurs, including the first evidence of dinosaur parental care, the discovery of dinosaur embryos in fossil eggs, finding the largest T. rex and producing new ideas about how these large creatures lived, not to mention his recent work with a student who extracted dinosaur cells and other soft parts from fossil bones. Jack has also written several books about his discoveries and theories, was the inspiration for the lead character in the Jurassic Park movies, and was the technical advisor for the series of movies. This talk will be based on his book with James Goreman, *How to Build a Dinosaur: Extinction does not have to be Forever*. Join us on Thursday evening, February 10, 7:30 P.M., at the Singletary Center for the Arts, University of Kentucky, for a free lecture about how Jack proposes to make the first "Chickenosaurus."

Kentucky Heritage Land Conservation Fund

Drs. William H. Martin and Richard K. Kessler

Kentucky's public and private colleges and universities are all eligible for grants to acquire undeveloped land through the Kentucky Heritage Land Conservation Fund (KHLCF). Such natural lands are ideal for supplementing and enriching coursework in a number of disciplines and as research sites for undergraduate and graduate students, their mentors, and other researchers.

To be considered for acquisition, the land needs to meet one or more priorities of the Fund:

1) Protect unique natural areas and habitats of rare, endangered or threatened species;
2) Protect area important to migratory birds; such areas would be important to migrating waterfowl, songbirds, or both;
3) Protect areas that perform natural functions such as wetlands, tracts of old-growth forests, and forested watersheds;
4) Provide areas in their natural state for outdoor recreation and environmental education.

The first three priorities are obviously about natural resource conservation which should be of particular interest to KAS members in the academic departments of biological sciences, earth science or geology, and geography. Also members that are affiliated with interdisciplinary centers, institutes, and divisions should be particularly interested in areas that provide living examples of watershed protection, urban green space, and places that can be monitored and compared with human-dominated landscapes.

The last priority explicitly mentions environmental education. These lands can serve as outdoor laboratories for formal and informal science and environmental education for the institutions that own and manage the lands as well as serving the regional K-12 schools. These preserved areas are invaluable for insuring that "no child is left inside", for teacher training, and for professional development of in-service teachers by providing real, living examples of all levels of biodiversity, the structure and composition of ecosystems, and problems of resource management.

The process of acquiring land via the KHLCF begins with interested faculty and administrators identifying the property, assuring that at least one Fund priority is met, and determining that the landowner is willing to consider selling if a grant application is approved. At this stage, all that is needed is a reasonable estimate of value of the land. If the application is approved, there will need to be two, state-approved appraisals (if valued over $100,000). The state can only pay fair-market value.

An application packet is obtained by calling the office of the Fund in Frankfort-502-573-3080-and speaking with Ms. Lisa Wellings. She will be glad to send you the packet and she will also be glad to answer questions and provide assistance in preparing the application.

The application requires a short site description that includes the relation of the land to one or more to the Fund priorities. Other details about the property such as topographic (with general boundary) and location maps will be needed. The major portion of the application is the Preliminary Resource Management Plan which describes how the resources will be protected, how the land will be used, and how it will be managed (the packet will provide guidance for preparing the plan).

A one-page budget will need to be prepared. All acquisition expenses-cost of the land, appraisals, title search, and boundary survey-are paid by the Fund. At least 10% of acquisition cost will need to be applied to management needs such as trail development, parking areas, and resource inventories. All reasonable management needs are paid by the Fund except personnel and expensive capital equipment.

Completed applications are submitted to the Fund office for consideration and approval at a quarterly meeting of the KHLCF Board. Prior to the board meeting, there will be an on-site review of the project and the proposed management plan.

At the close of 2010, 6 university projects have conserved and protected over 1300 acres. Future articles will describe these projects and how the institutions are utilizing, protecting, and managing them as part of their educational, research, and service missions.

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For additional information about the Fund visit our web site at:

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.

Stone Mountain View (Photo by Joe Dietz)