Partners, November 2008

Dale Bumpers College of Agricultural, Food, and Life Sciences (University of Arkansas, Fayetteville). Center of Excellence for Poultry Science

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PARTNERS

A newsletter for faculty, staff, students, alumni, donors, industry and friends of the Center of Excellence for Poultry Science at the University of Arkansas

NIAGARA FALLS, Canada -- Two University of Arkansas Division of Agriculture scientists received awards during the Poultry Science Association’s annual meeting held July 20-23 in Niagara Falls, Ontario, Canada.

Dr. Young-Min Kwon, assistant professor in poultry science, received the Hy-Line International Research Award for his focus on the genetic and genomic analyses of bacterial pathogens important in poultry to understand the mechanisms of persistence and virulence. He has developed a functional genomic approach to screen a bacterial genome for virulence genes during host infection. He is applying these approaches to dissect the pathogenic mechanisms of foodborne pathogen Salmonella. His laboratory recently developed an efficient genetic method for precise manipulation of the Salmonella chromosome, which has proven to be particularly useful for the development of efficient Salmonella-vectored vaccines that display foreign immunogenic epitopes on the cell surface. Using this tool, he has also been engaged in the development of Salmonella-vectored vaccines to control various infectious diseases in poultry, including avian influenza, coccidiosis, and necrotic enteritis. In collaboration with Dr. Billy Hargis, he continues to develop and optimize these Salmonella-vectored vaccines, with very promising progress.

Kwon received his BS and MS degrees in animal science from Seoul National University in South Korea and completed his PhD in poultry science in 2000 from Texas A&M University. He completed postdoctoral research at the US Department of Agriculture (USDA) Agricultural Research Service (ARS) in College Station, Texas, before joining the University of Arkansas in July 2002. His research projects have been supported by grants from the National Institutes of Health (NIH) and USDA.

Robert F. Wideman Jr., professor of poultry science was inducted as a Fellow into the Poultry Science Association. Wideman received a BA in biology from the University of Delaware in 1971, spent two years as an officer in the US Army, and then received the MS and PhD degrees in regulatory biology (physiology) at the University of Connecticut. He was a postdoctoral research associate in the Department of Physiology at the University of Arizona College of Medicine in Tucson before accepting a position as assistant professor of poultry science at The Pennsylvania State University in 1981. Wideman attained the rank of professor of poultry science at Penn State University, where he advised undergraduate students in the animal biosciences and poultry technology and management programs, taught graduate and undergraduate courses in physiology, and conducted basic and applied research. In 1993 he moved to the University of Arkansas where he continues to teach undergraduate and graduate courses in animal physiology.

Wideman received the Research Award from the Poultry Science Association in 1988, the National Chicken Council Broiler Research Award in 1999, and the University of Arkansas John W. White Research Award in 2002. He served on the board of directors of PSA and the Federation of Animal Science Societies (FASS), and was the president of FASS during 2001. In 2003 he was appointed by the US Secretary of Agriculture to the USDA Research, Economics and Education Task Force, with the mandate to evaluate the merits of establishing a National Institute for Agricultural Science. In 2004 he was appointed as the associate director of the Center of Excellence for Poultry Science at the University of Arkansas. He served as section editor for Poultry Science. He has published 11 review articles and book chapters, 150 refereed journal articles, 100 technical or poultry industry articles, and he has three US patents.
Graduate students from UA Poultry win large number of international research awards at Poultry Science Association meeting

Valerie Brewer, a master’s student of Jason Emmert and Casey Owens, took first place for her poster on poultry nutrition.

Sandro Cerrate, a doctoral student of Park Waldroup, took first place for his poster on poultry nutrition.

Vijay Durairaj, a master’s student of Dustan Clark and Narayan Rath, who took first place for his research on leg problems in broiler breeders.

Isaac Hartford, a master’s student of Nick Anthony, won first place for oral presentation in the genetic, pathology and immunology section.

Holly Jackson, undergraduate student of Billy Hargis, won first place in the poster section of Processing, Products and Food Safety.

Lakshmi Kannan, a doctoral student of Narayan Rath, took first place for her research presentation on macrophages and Thymosin beta 4 regulation.
To find *Campylobacter jejuni*, look in the biofilms

FAYETTEVILLE, Ark. - *Campylobacter jejuni* is a pathogen found in chickens and is the nation’s leading cause of foodborne bacterial diarrhea, so poultry producers look for ways to control it before the birds go to processing. The good news is that the bacterium is susceptible to stress and is vulnerable. So what keeps it going?

Here’s one way: the bug latches onto other colonies of bacteria - biofilms - and uses them as places to thrive in ways the Campylobacter jejuni would be less likely to do on their own.

“The capture of C. jejuni could be correlated to the amount of biofilm present,” said Irene Hanning, a post-doctoral associate in food science at the University of Arkansas System Division of Agriculture, who investigated the issue for the Food Safety Consortium. “This makes control of all biofilms critical because the communities have a strong potential to capture high levels of C. jejuni.”

First, it’s important to consider how biofilms work. Many bacteria have an ability to form a biofilm, which Hanning described as an assemblage of bacteria encased in a sticky substance. Biofilms are complex structures that adhere to surfaces and consist of colonies of bacteria.

Being in a biofilm is an advantage to bacteria. The biofilm provides protection from antibiotics and other threats to bacteria’s existence. *C. jejuni* has had a major disadvantage in that unlike many other bacteria, it doesn’t do well at making its own biofilm. So it may have found the next best thing to do: it moves into biofilms that are already protecting other bacteria. *C. jejuni* becomes a secondary colonizer.

The host colonizers can be any of several bacteria, but *C. jejuni*’s most prevalent host turns out to be *Pseudomonas*, which also serve as the main spoilage bacteria on chicken carcasses and are excellent biofilm formers, Hanning said.

Hanning looked at the ability of *C. jejuni* to survive from biofilm populations isolated from four places: a drinking unit in a chicken growout house, a drain under a plucker in a processing plant, a retail chicken carcass and a crate used to haul live chickens. No *C. jejuni* was found on the growth surfaces outside of biofilms that had already been established. The biofilms were cultured under three different temperatures that showed varying levels of ability to harbor *C. jejuni*.

“These experiments indicated that *C. jejuni* can be captured and harbored by a biofilm regardless of the bacterial constituents,” Hanning said. “Therefore most biofilms should be considered as having the potential to promote and harbor *C. jejuni.*”

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Poultry Science Annual Scholarship Golf Tournament nets $20,000 for students

FARMINGTON, Ark. – Thirty-four teams netted $20,000 for scholarships during the Ninth Annual University of Arkansas Poultry Science Scholarship Golf Tournament Apr. 15 at the Valley View Golf and Country Club in Farmington.

Format for the tournament was a four-person scramble with a shotgun start. An awards presentation was held in the clubhouse immediately following conclusion of play for each flight.

First place winners in the morning flight were Larry Butler, Zach Butler, Bruce Lahay and Kevin Stanton with a score of 58. Second place winners were Roger Holman, James Hopkins, Tom Louks and Randy Thrash with a score of 61. Third place winners were Bob Martin, Gene Martin, Bruce Tencleve and Andy Wells with a score of 62. Other awards in the morning went to Tim Momant for coming closest to the pin, Zach Butler for hitting the longest drive and Grover Harris for winning the morning putting contest.

First place winners in the afternoon flight were Fred Barnhill, Darryl Muldoon, John Muldoon and Gary Murphy with a score of 59. Second place winners were Steve Dixon, Mark Penzo, Bob Rochelle and Jamie Statler with a score of 60. Third place winners were Marvin Childers, Vic Smith, Mark Sullivan and Syd Tatum with a score of 62. Other awards in the afternoon went to Daryl Muldoon for coming closest to the pin, Zach Butler for hitting the longest drive and Bobby James for winning the putting contest.

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The major sponsors for the tournament were Cobb-Vantress, Inc., and FPEC (Food Processing Equipment Company). Marel Food Systems also provided additional funding through a hole sponsorship. Arkansas Farm Bureau donated balls, towels and tees for each participant, Harps Food Stores, Inc., donated snacks for goody bags and InTents donated the use of two “hospitality” tents to use on the course.

Since the poultry tournament started nine years ago, over $160,000 has been raised through this event for scholarships in the department.
Leland Tollett Veterinary Diagnostic Laboratory dedication

Story by Howell Medders, Division of Agriculture

FAYETTEVILLE, Ark. -- The public attended the June 12 dedication of the Leland Tollett Veterinary Diagnostic Laboratory, which is operated by the University of Arkansas System’s Division of Agriculture. Director Steve Breeding said the laboratory provides disease diagnostic services and animal health monitoring programs for the poultry and livestock industries, veterinarians and the public.

The dedication took place from 2 to 4 p.m. at the laboratory on Deane Street at Porter Road. It is part of the complex of Division of Agriculture facilities and field research plots in the Arkansas Agricultural Research and Extension Center.

The program included remarks by Don Tyson and Leland Tollett, who are both retired chairmen and CEOs of Tyson Foods; Marvin Childers and Gary Murphy, president and chairman of the board, respectively, of The Poultry Federation; Milo Shult, U of A System vice president for agriculture, and Jon Fitch, director of the Arkansas Livestock and Poultry Commission.

The 7,365-square-foot facility replaces an outdated lab in Springdale that has served the area since the early 1960s. Funding for the $2.4 million facility included a $1 million donation from Tyson Foods.

Architecture Plus of Fort Smith designed the building, and general contractor was SSI of Siloam Springs. The lab is staffed by Breeding, who is a board certified veterinarian, four laboratory technicians and a receptionist.

An innovative feature of the laboratory is a drive-up window as a convenience that will complement animal disease prevention programs, Breeding said. “The ability to submit samples to the laboratory without ever leaving your vehicle is something everyone will benefit from, especially the poultry companies,” he said.

The necropsy suite is similar to those found in veterinary colleges to enhance the diagnostic services and provides pre-veterinary students firsthand experience in animal anatomy and pathology, Breeding said. Major improvements in necropsy facilities include a hydraulic table for large animals, a new small animal necropsy table, surgical lighting, walk-in cooler, large-capacity incinerator and an adjacent histology lab.

Breeding said the laboratory’s clientele includes the poultry industry, private veterinary practitioners, farmers, individual animal owners and university faculty. The lab receives direct submissions from Arkansas, Missouri and Oklahoma and mail-in submissions from several other states.

The new facility also houses the Poultry Federation Laboratory that performs serology testing for the Mycoplasma and Salmonella species monitored under the USDA’s National Poultry Improvement Program.

The Veterinary Diagnostic Laboratory conducts approximately 100,000 tests yearly to screen for avian influenza in cooperation with the USDA’s National Poultry Improvement Plan. Other services include serology testing to monitor flock health and response to vaccination, diagnostic molecular testing for various diseases, bacterial culture and identification, antimicrobial sensitivity testing and equine infectious anemia testing. The lab also assists the Arkansas Department of Health with sample collection for Rabies and West Nile virus testing.

Breeding, a native of Conway, has B.S. degrees in poultry science and animal science, a master’s degree in poultry science/physiology and a doctorate in veterinary medicine, all from North Carolina State University. He is also a diplomate in the American College of Poultry Veterinarians and has received USDA training in diagnosis of foreign animal diseases.
FAYETTEVILLE, Ark. – Thirty-one high school students from around the state in addition to Maryland, Missouri and Texas, experienced college life first-hand at the University of Arkansas July 15-18 while attending the tenth annual Poultry Science Youth Conference sponsored by the poultry science department.

The conference is designed to foster interest in the poultry industry, the University of Arkansas and the poultry science major through hands-on experiences, tours and industry presentations.

The theme of this year’s conference was “Poultry Science – Let the games begin,” and it followed an Olympic theme.

Two days of the conference took place at the Tyson Discovery Center, where students learned how food technologists and other team members develop new products. Students attending the conference actually got to prepare recipes, developed by Tyson chefs, using chicken and fresh ingredients and then presented them to the group. Three former students from the department, who are now working at Tyson, led the hands-on event.

Gary Davis, undergraduate recruiter said, “We wanted students to get a feel for how complex the poultry industry is and how many different opportunities are available to our students once they complete their studies.”

Student groups then returned to the Center of Excellence for Poultry Science test kitchen and developed their very own products using the skills and information they learned during the exercises at Tyson. Each team gave their final presentations before faculty members and parents during a closing ceremony in the Leland Tollett Auditorium in the Poultry Science Building.

Sponsors of the conference were the Farm Bureau, Harold E. Ford Foundation and the Center of Excellence for Poultry Science.

Next year’s conference will again be held in July. For information, e-mail Gary Davis, poultry science undergraduate recruiter, at gddavis@uark.edu. Students completing the 10th and 11th grades are eligible to attend. Space is limited.

FAYETTEVILLE, Ark. – Jason Emmert, professor in poultry science, left the department in August to take a position of Assistant Dean of Academic Programs at the University of Illinois College of Agricultural, Consumer and Environmental Sciences in Urbana-Champaign.

Interim Dean Lalit Verma, Associate Dean Donna Graham and Department Head Walter Bottje presented Emmert with various tokens of appreciation.

Emmert received a B.S. degree in Agricultural Sciences from the University of Illinois in 1992. He received M.S. and Ph.D. degrees in Nutritional Sciences from the University of Illinois in 1994 and 1997, respectively. Emmert joined the faculty at the University of Arkansas in 1997 as the Undergraduate Curriculum Coordinator for the Department of Poultry Science. In 2003, Dr. Emmert was inducted into the University of Arkansas Teaching Academy and most recently won the Advising Award from Bumpers College.

Emmert worked closely with Poultry Science undergraduates, as co-advisor to the Poultry Science Club and as scholarship coordinator for the Department of Poultry Science. He typically advised over 25 to 30 students each semester. We wish him well in his new administrative position.

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UA Poultry Cooking Team takes Third Place at Poultry Festival

ROGERS, Ark. -- Seven members of the University of Arkansas Division of Agriculture stepped up and took third place for their poultry barbecuing skills during the Annual Poultry Festival, held on the parking lot of the Embassy Suites in Rogers.

This is the first time ever a Division team has placed in the top three. Members of the team were Keith Bramwell, James Denton, H.L. Goodwin, Jr., Jon Moyle, Alvin Phelps, John Pruett and Doug Yoho. Congratulations cook team for making our department proud against the industry experts!

Faculty member and students participate in international symposium in Colima

COLIMA, Mexico -- Faculty member Billy Hargis and research faculty member Memo Tellez hosted a group of their graduate students in addition to making invited presentations at an international symposium in Colima, Mexico. Tellez is considered one of the top experts on poultry in Mexico.

Local and state newspapers covered this event and Hargis and his “crew” provided valuable insight on poultry health to the attendees.

Hargis’ research program is in the area of poultry health and ante mortem food safety intervention with interests in poultry immunology and endocrinology.

SEEING THE SIGHTS -- From left, Amanda Wolfenden, Memo Tellez, Billy Hargis and Ross Wolfenden take in the sights in Mexico during a symposium.

Grants Awarded

Listed in order of receipt

H.L. Goodwin, Jr. • Washington County. Assessing the flow of litter to a litter bailing operation in Washington County, AR. $20,000.

Steven Ricker U.S. Department of Transportation. Nanoparticle systems for delivery of biological antimicrobial compounds to limit microbial contamination in industrial yeast fermentation. $35,000.

Billy Hargis, Steve Tung* and Yanbin Li (lead)* NRICGP. Biosensor for rapid, sensitive and specific detection of avian influenza virus H5N1. $375,000.


Keith Bramwell. George’s Inc. George’s breeder trial; production characteristics of broiler breeder hens fed varying levels of dietary crude protein. $25,744.

Billy Hargis (lead), Kimberly Cole and Young-Min Kwon. NRICGP. Live recombinant Salmonella vaccination with novel universal antigen presentation and immune potential. $383,593.

David Chapman. Alpharma, Inc. Efficacy of Avatec against isolates of Eimeria from turkey flocks that are resistant to Coban. $15,937.


Billy Hargis. Cargill, Inc. Poultry diseases research program. $55,671, gift.

Casey Owens. DSM Nutritional Products. Cantaxanthin project. $24,163.


Walter Bottje. Nicholas Turkey Breeding Farms. Water acidifier research. $30,000 gift.

* Joint faculty member in two departments or faculty member in another department, but grant is for poultry research.

Eleventh Day enrollment numbers for The Department of Poultry Science fall 2008 class included 29 incoming freshman and three transfer students. Of the incoming freshman, 14 were males and 15 were females.
### Students Participate in Internships

The following students participated in internships with industry this summer:

- **Samantha Blair:** Aviagen, Albertville
- **Betsy Conner:** NCAT, Fayetteville
- **Ashley Creasey:** Simmons Foods, Inc., Siloam Springs
- **Amanda Hancock:** Aviagen, Salisaw, Okla.
- **Darla Hancock:** Cal-Maine, Siloam Springs
- **Jordan McDaniel:** Cobb-Vantress, Inc., Siloam Springs
- **Brooke Ross:** Cargill, Inc., Springdale
- **Jeff West:** Cal-Maine, Siloam Springs

### Culinary courses on campus continue with success

STILL COOKING -- John Marcy, extension poultry specialist and culinary class organizer is pictured on the far right with two participants in a recent culinary class held on campus. These culinary classes are part of the Culinary Arts for Food Technologists Series and are offered several times throughout the year and are organized in cooperation with the Research Chefs Association. Classes are a 40-contact-hour, five day hands-on training workshop. If you would like more information on the courses, please contact John Marcy at jmarcy@uark.edu or phone: (479) 575-4952.

### Faculty Notables:

- **Walter Bottje** gave an invited presentation July 10-11, at an Animal Science meeting in College Station as part of their growth and feed efficiency symposium. The talk was “Association of Mitochondrial Function and Feed Efficiency in Poultry and Livestock species.”

- **Keith Bramwell** gave an invited presentation on biosafety and Best Management Practices in Poultry at the FENIVA Venezuela conference (May 2008). Bramwell also gave a talk on hatching egg holding at a Jamesway Hatchery management seminar in Raleigh, NC in April. He was an invited speaker at the Poultry Federation symposium in April on weighing and evaluating broiler breeders. Additionally, Bramwell gave two presentations at the Small Flock Poultry Workshop held at the Heifer Project Ranch in Perryville in March.

- **David Chapman** gave an invited presentation during the Landmark Symposium celebrating 100 years of the Poultry Science Association held at Niagara Falls, Canada in July.

- **James Denton** gave an invited presentation in the Molecular Detection Day Program of the International Rapid Methods in Microbiology Workshop at Kansas State University on June 18, 2008. The title was “The Role of the National Alliance for Food Safety and Security-Center for Microbial Detection.” Denton also presented “Evolution of the Worldwide Chicken Broiler Market” to the Venezuelan Poultry Congress in Maracaibo, Venezuela on May 22.

- **Gisela Erf** gave invited presentations on two research projects at the International Avian Immunology Research Group meeting at the Gold coast in Queensland, Australia in June. Erf also gave a presentation and presented a poster on autoimmune vitiligo in the Smyth-line chicken and gave

### Adams Equipment donates litter spreader

A poultry litter decaker and spreader donated by Adams Fertilizer Equipment in DeWitt was delivered Oct. 3 to the Applied Broiler Research Farm at Savoy. Susan Watkins, associate professor of poultry science, said the spreader will be used for research on environmentally responsible handling and use of poultry litter for fertilizer.

DONATION -- Pictured with a litter decaker and spreader donated by Adams Fertilizer Equipment at the Applied Broiler Research Farm are Tom Tabler, farm manager; Cecil Smith, technician; Jillian Briggs, Northwest Arkansas representative with Adams Equipment; Susan Watkins, associate professor of poultry science; and Frank Jones, extension section leader and professor of poultry science.
Faculty Notables cont’d from p. 7

an invited presentation on Animal Models for Vitiligo at the 20th International Pigment Cell Conference and the 5th International Melanoma Research Congress in Sapporo, Japan, May 7-12.

H. L. Goodwin was one of two agricultural economists attending the Congressional Visit Day hosted by the Council on Food, Agriculture and Resource Economics on April 3-9 in Washington D.C. The schedule included briefings on the farm bill, research and extension funding, federal appropriations and individual meetings with various committee and congressional staff persons. Goodwin also was responsible for a summary session and results geared toward economic incentives and market forces that can be used to encourage compliance with environmental regulations, specifically those dealing with air pollution at the International Workshop on Air Pollution held in September.

Frank Jones hosted the International Short Course on Modern Poultry Production for 18 participants from all over the world at the Center of Excellence for Poultry Science, April 21 to 25. Jones and Tom Tabler both gave invited presentations during the National Poultry Waste Management Symposium held Oct. 21-23 in Des Moines.

Casey Owens-Hanning hosted Poultry 101 on the UA campus, May 20-22, in cooperation with Shelly McKee of Auburn University and Christine Alvarado of Texas Tech University. Thirty industry participants from around the U.S. attended. The group also hosted Poultry 201 on the U of A campus in September with around 25 participants.


Guillermo Tellez, visiting research professor in poultry science, gave an invited presentation at the Mexican Academy of Science on April 19.

Susan Watkins gave an invited presentation at the FACTA conference in Santos, Brazil, in May.

Congratulations to Robert Wideman, Jr., who was inducted as a Fellow in the Poultry Science Association and Young-Min Kwon who received the Hy-Line International Research Award during the Poultry Science Association’s annual meeting in Niagara Falls.

Student News:

PSA Research Awards were given to several UA students during their international meeting in Niagara Falls: Valerie Brewer, a master’s student of Jason Emmert and Casey Owens, took first place for her poster on poultry nutrition. Sandro Cerrate, a doctoral student of Park Waldroup, took first place for his poster on poultry nutrition. Vijay Durairaj, a master’s student of Dustan Clark and Narayan Rath, who took first place for his research on leg problems in broiler breeders. Isaac Hartford, a master’s student of Nick Anthony, won first place for oral presentation in the genetic, pathology and immunology section. Holly Jackson, undergraduate student of Billy Hargis, who won first place in the poster section of Processing, Products and Food Safety. Lakshmi Kannan, a doctoral student of Narayan Rath, took first place for her research presentation on macrophages and Thymosin beta 4 regulation.

Lakshmi Kannan, doctoral student of Narayan Rath, received a $500 student travel award to the Aegean 5th International Conference on Innate Immunity, Chania, Crete, Greece from June 19- 26.

The Poultry Science Graduate Association (PSGA) held a summer symposium on July 8th and the following students won awards: for Oral Presentations first place went to Derek Allen, student of Wayne Kuenzel for his presentation “Effects of erolotypic lesions of the medial bed nucleus of the stria terminalis (BSTM) on sexual behavior in male broiler breeders.” Second place went to Jon Moyle, student of Keith Branwell for his talk “Production performance of broiler breeder hens raised on various growth curves.” And, third place went to Ross Wolfenden, student of Billy Hargis, for his presentation, “Development and evaluation of candidate recombinant Salmonella-vectorized Salmonella vaccines.” Prizes for posters were also awarded and first place went to Lakshmi Kannan student of Narayan Rath, for her poster, “Regulation of thymosin beta 4 in chicken macrophages by toll like receptor activation.” Second place went to Gino Lorenzoni, student of Robert Wideman, Jr., for his poster, “Intratracheal administration of bacterial lipopolysaccharide elicits pulmonary hypertension in broilers with primed airways.” And, third place went to Srichaitanya Shivaranaiah, student of Billy Hargis, for his poster, “Evaluation of live vectored Salmonella vaccines.” Prizes for posters were also awarded and first place went to Nick Anthony, a master’s student of Narayan Rath, for her poster on poultry nutrition. Sandro Cerrate, a doctoral student of Park Waldroup, took first place for his poster on poultry nutrition. Vijay Durairaj, a master’s student of Dustan Clark and Narayan Rath, who took first place for his research on leg problems in broiler breeders. Isaac Hartford, a master’s student of Nick Anthony, won first place for oral presentation in the genetic, pathology and immunology section. Holly Jackson, undergraduate student of Billy Hargis, who won first place in the poster section of Processing, Products and Food Safety. Lakshmi Kannan, a doctoral student of Narayan Rath, took first place for her research presentation on macrophages and Thymosin beta 4 regulation.