Poultry faculty receive national recognition at PSA

DELWARE – Faculty members Mark Parcells and Jason Emmert recently took top honors in their field at the Poultry Science Association’s (PSA) annual meeting in Wilmington, Delaware. These two poultry scientists, in the Dale Bumpers College of Agriculture, Food and Life Science at the University of Arkansas, received national recognition and cash awards for their research and teaching, respectively.

Parcells, associate professor in molecular virology, was awarded the Hy-Line International Research Award and $1,500. This award recognizes a PSA member who, as a sole or senior author, published outstanding research in poultry science during the previous calendar year. Parcells’ research focuses on molecular mechanisms of the Marek’s Disease Virus (MDV), which is a contagious disease of domestic chickens.

Parcells’ paper, “Marek’s Disease Virus (MDV) Encodes a Interleukin-8 Homolog (vIL-8): Characterization of the vIL-8 Protein and a vIL-8 Deletion Mutant MDV” was an interdisciplinary research effort with scientists from the University of California, Davis (UC-Davis); the Slovak Academy of Sciences in Bratislava, Slovak Republic; the Department of Pharmacology and Toxicology at Dartmouth Medical School in Hanover, New Hampshire; and the USDA-ARS Avian Disease and Oncology Laboratory in East Lansing, Michigan. Key collaborators on the project were Su-Fang Lin and Hsing-Jien Kung of UC-Davis.

Jason Emmert, right, is shown receiving the Purina Mills Teaching Award and $1500 at the recent Poultry Science Association awards dinner in Delaware.

The past few months have been busy and productive as usual for the Center. Two faculty members received major awards at the Poultry Science Association meeting that was held at the University of Delaware in August; Jason Emmert received the Purina Mills teaching award and Mark Parcells received the Hy-Line Research Award.

Additionally, Hilary Pavlidis (M.S. student working for Dr. Nick Anthony) received a presentation award, making her eligible to compete for the graduate student manuscript award during the coming year.

The Center faculty welcomes Dr. Young Min Kwon (Assistant Professor, Poultry Microbiology) who joined the Department in July. Considerable progress has been made in the construction of two new houses and renovation of a third on the Poultry Research Farm.

Our recruiting efforts will once again be aided during the coming year thanks again to the support from the Harold E. Ford Foundation of the U.S. Poultry and Egg Association. Several students were involved in internships during the past spring and summer, including Cody Keen who was in Spain working with Pita’s Pita’s in Madrid.

Notable contributions of faculty featured in this issue of Partner’s include the activities of Dr. Dustan Clark who was on the frontlines fighting the avian influenza outbreak in Virginia for several weeks this past summer. His experience there provides invaluable

Recognition - continued on page 2

Mark Parcells, left, is shown receiving the Hy-Line Research Award and $1500 at the recent Poultry Science Association awards dinner in Delaware.
DIRECTOR - Continued from page 1

insight for the department and State of Arkansas, in the event that a similar break should ever occur in Arkansas.

Dr. Ron Okimoto research in molecular genetics has produced genetic markers that are being used in the industry to help remove undesirable pigmentation in breeding stock. According to Igal Pevsner (Geneticist – Cobb-Vantress, Inc.) while there are many researchers working on discovery and use of genetic markers, the only ones that have been used (and therefore valuable) to Cobb-Vantress, Inc. to date have been those developed by Dr. Okimoto.

Dr. Okimoto gave an invited talk on this subject at the PSA meeting in Delaware at the Ancillary Scientists Symposium – Genetic Technology Applied to Poultry Production. The title of his talk was “The use of feather color alleles and molecular markers in commercial applications in chickens.” Dr. Mark Parcells also gave on invited talk in the same symposium entitled, “Marek’s Disease virus reactivation from latency; Changes in gene expression at the origin of replication.”

PARTNERS is a newsletter for faculty, staff, students, alumni and friends of the Center of Excellence for Poultry Science, University of Arkansas Division of Agriculture and Dale Bumpers College of Agricultural, Food and Life Sciences, UA-Fayetteville.

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“This award recognizes outstanding research from a scientist who has only received their Ph.D. within the past 10 years,” said Dr. Walter Bottje, interim poultry science department head. “This award therefore recognizes one of the premiere, upcoming researchers in the field that will likely be an important contributing member of PSA for years to come.”

“I’m grateful to Hy-Line International and the PSA awards committee for this great honor. In working in poultry science, I’ve found it to be a very collegial atmosphere. I have received great cooperation and outstanding support for my research. It’s truly has been a tremendous team effort,” said Parcells.

Emmert, associate professor in nutrition and undergraduate curriculum coordinator for the department, received the Purina Mills Teaching Award and $1,500. While Emmert conducts several research projects in nutrition at the U of A, his primary responsibility is teaching. Currently, Emmert is teaching a freshman-level poultry careers course, two poultry production courses, as well as poultry judging and selection.

Emmert’s service activities are largely devoted to teaching and advising students and include chairing the departmental Advising and Curriculum Committees and coordinating the departmental scholarship program. He routinely advises 20 to 30 undergraduate students and currently has two graduate students.

As a proponent of providing undergraduate research and teaching opportunities, Emmert has directed 21 undergraduate students in teaching or research related projects. He also serves as Poultry Science Club advisor and assists with undergraduate recruitment primarily through dozens of FFA judging workshops in Arkansas.

Emmert’s notable teaching accomplishments include the development of two internet-based poultry production courses for use in distance education, which was accomplished with the assistance of a USDA Higher Education Challenge Grant.

Emmert received the University of Arkansas Gamma Sigma Delta Teaching Award in 2001 and the Dale Bumpers College of Agricultural, Food and Life Sciences John W. White Teaching Award in 2002. He has also twice been selected to receive the U of A Poultry Science Club “Mentor of the Year” award (2001, 2002).

“The future of PSA depends in part on students in teaching programs across the country. This teaching award is given to someone who has a great influence on the future of PSA, and we’re proud that it’s one of our own,” said Bottje.

“I attribute receiving this award after a relatively short period at the U of A to the wonderful teaching support available in our department and College,” said Emmert. Emmert joined the U of A poultry science department in 1997.

Danny Williams (right) of WYNCO is shown with his wife Nancy receiving an award at the 4-H state banquet held at the Northwest Arkansas Convention Center. Williams has been a key contributor to many events held by the 4-H organization in Arkansas. Congratulations Danny!
FAYETTEVILLE - Dr. Young Min Kwon has joined the University of Arkansas’ Department of Poultry Science in the Bumpers College of Agricultural, Food and Life Sciences. Kwon received his B.S. and M.S. in animal science from Seoul National University in South Korea and completed his Ph.D. in poultry science from Texas A&M University.

After completing his studies, Kwon began his post-doctoral work at the USDA-ARS Southern Plains Agricultural Research Center where he was working in the Food and Feed Safety Research Unit prior to joining the faculty at the U of A. Kwon has research experience in the field of poultry microbiology and bacterial pathogenesis. Currently, his research is focused on the genetic/genomic analysis of bacterial pathogens important in poultry for their virulence.

Kwon has recently developed genomic approaches to screen bacterial genomes for virulence genes during host infection. He is applying the approaches to dissect the mechanisms of foodborne bacterial pathogens, such as *Salmonella enteritidis* and *Campylobacter jejuni*, which cause disease and persist in poultry.

Kwon is a member of the American Society for Microbiology and the Poultry Science Association.

VIRGINIA - When Dustan Clark received a call from the Area Veterinarian In Charge (AVIC) of Arkansas to serve on a special task force fighting an outbreak of Avian Influenza (AI) in six counties of western Virginia, he didn’t even take time to check his meeting maker, he immediately said goodbye to his family, grabbed his suitcase and left.

Clark, an extension poultry veterinarian working at the University of Arkansas, is trained as a foreign animal disease diagnostician and is keenly aware of the potential devastation AI can cause.

“There are two forms of AI; high pathogenic and low pathogenic. The low pathogenic form may make birds sick, but isn’t necessarily deadly. The highly pathogenic form has a high mortality rate and can spread very rapidly across many regions during an outbreak,” said Clark. The form of AI spreading in Virginia was a low pathogenic form, however, occasionally low pathogenic AI has mutated into the more deadly high pathogenic form.

“I was asked to report to duty as a Special Assistant to the Deputy Directors working in conjunction with the USDA Animal Plant Health Inspection Service (APHIS). While I was there I was able to show and distribute copies of a video that had been produced by the Arkansas Cooperative Extension Service outlining symptoms of AI and biosecurity principles for controlling the spread of the disease,” said Clark.

Poultry experts have seen their share of AI outbreaks in the past. In 1984 in Pennsylvania, the United States endured a high pathogenic outbreak destroying over 17 million birds and costing almost $65 million to eradicate. Indirect costs to the poultry industry for this particular outbreak totaled nearly $349 million dollars. In 1995, Mexico experienced a very similar outbreak to the one in Pennsylvania.

“Outbreaks of AI can literally destroy the poultry trade business. Some countries refuse to accept shipments of birds infected with the low pathogenic form of the disease for fear of the disease spreading in their countries,” said Clark. “To ensure that no infected birds left their farms during this most recent outbreak in Virginia, approximately five million birds were destroyed.” Clark went on to clarify that only flocks testing positive for AI were destroyed.

When the call to assist came in, Clark left without hesitation and ended up spending the better part of his summer in Virginia fighting the disease. “Approximately 200 people were on hand at any given time during the outbreak assisting local growers. I was just glad to be a part of a tremendous team effort led by the USDA and poultry industry,” said Clark.

Clark is a faculty member at the Center of Excellence for Poultry Science on the UA campus. He is one of the leading poultry veterinarians in the state and currently serves on numerous committees including the Arkansas Animal Disease Emergency Response Team.
UA Department of Poultry Science receives donation from U.S. Poultry and Egg foundation

FAYETTEVILLE - The University of Arkansas Department of Poultry Science received a donation in the amount of $13,111 from the U.S. Poultry and Egg Association Harold E. Ford Foundation on Sept. 5. U.S. Poultry and Egg representatives Bill Lovette and Bernard Leonard, both of Tyson Foods, Inc., presented the check to Dr. Walter Bottje, interim department head, at the Center of Excellence for Poultry Science.

The Harold E. Ford Foundation, named for a former executive with the U.S. Poultry and Egg association, provides funds to train and educate for the advancement of the poultry industry. This support enables the department to develop an effective student recruiting strategy to recruit and retain top students and faculty members.

The UA Department of Poultry Science uses donations from the foundation to support projects such as the annual Poultry Science Youth Conference, the youth broiler show at the Arkansas State Fair, in-service programs and civic education programs. This year a portion of the funds are earmarked to produce a new recruitment video, something the department can use at programs all across the state.

“The support the Harold E. Ford Foundation provides for our department is outstanding. We’re so thankful for their generosity and willingness to impact the future of the poultry industry and our students with this gift,” said Bottje.

Bill Lovette, far left, and Bernard Leonard, far right, present Walter Bottje, interim department head, with a check for over $13,000 from the Harold E. Ford Foundation.

Lovette and Leonard, both employees of Tyson Foods, are representative of the U.S. Poultry & Egg Association.

In September the Poultry Science Alumni Organization hosted a Poultry Science Tailgate Party prior to the kickoff of the Boise State / Razorback football game. This year’s event took place in the “Hog Trough.”

We thank Diana Bisbee and Gary Davis for their assistance in conjunction with Lionel Barton coordinating the event.

If you still have not joined the Poultry Science Alumni Organization, it’s not too late to get involved.

The banner proudly displays the name of the Center of Excellence for Poultry Science on the tent of the poultry science alumni tailgate party prior to the Boise State football game.

If you would like to contact Dr. Barton you may e-mail him at lbarton@uark.edu or call the front desk for a message at 479-575-4952.

Dr. Barton is an emeritus faculty member of the poultry science department and he served as an extension poultryman.
Poultry student dives into Spanish culture

FAYETTEVILLE — Cody Keen of Fayetteville, a senior poultry science major at the University of Arkansas, decided to spend a summer in Madrid and found himself immersed in the language and culture of Spain. He loved every minute of it.

While in Spain this summer Keen attended school, lived in a home with a local family and worked for a Spanish agricultural company. His study abroad program was arranged through the Global Studies Program, part of the International Agriculture Program in the Dale Bumpers College of Agricultural, Food and Life Sciences at the U of A.

Keen is majoring in poultry science and minoring in three different programs: global agriculture, Spanish and agricultural business. Keen’s experience this summer fulfilled requirements for his unique blending of academic disciplines.

Once in Madrid, Keen first attended school for three weeks. After the completion of his studies, he interviewed with local companies and accepted a five-week internship with Pita’s Pita’s, a company that packages and sells eggs in addition to cooked products. It was a nice fit for a poultry major who speaks Spanish.

“While I was in Spain, I spoke only Spanish at work and school,” said Keen. “The only time I spoke English was when I occasionally went out with other American students. It was terrific.”

Keen said being immersed in the culture improved his Spanish dramatically. “I now have confidence in my speaking abilities and have a better flow to my conversational dialogue.”

He said one of the most enjoyable parts of the program was living in the home of a local family.

“The Monterroso family was so kind to open their home to me,” said Keen. “We had dinner together nearly every night and spent much of the time in conversation about our two cultures. I believe they asked me nearly as many questions about my life in America as I asked them about theirs in Madrid.”

When it came time for Keen to leave the Monterroso’s home, they didn’t want him to go. Keen smiled and said, “They actually teased me and said they had a nice single girl for me to marry so that maybe I could stay in the country. They were really wonderful.”

Keen said his expenses - approximately $2,000 for travel, schooling and lodging - were a small price for such a rich experience. “It’s an opportunity that every student should be able to take part in,” said Keen. “It’s one I’ll remember for the rest of my life.”

Cody Keen, center (in hat), is shown with two friends he made while in Madrid this summer for schooling and an internship. This particular photo was taken at the “running of the bulls.”

Poultry Science Summer Graduate Symposium held at the Center of Excellence on campus

FAYETTEVILLE - Three University of Arkansas students won Thomas Sullivan Travel Awards for research paper presentations during the Annual Graduate Student Summer Symposium hosted by the UA Poultry Science Graduate Association (PSGA) at the Center of Excellence for Poultry Science.

First place for paper presentation went to Carolyn Ojano-Dirain, a doctoral student of poultry scientist Walter Bottje, from Cagayan, Philippines. Her paper, “Effects of Different Sources and Levels of Methionine on Response of Broilers Three to Six Weeks of Age” co-written with poultry nutritionist Park Waldroup, won her $500, which can be used for travel expenses to the Poultry Science Association’s annual meeting in Delaware Aug. 12-15.

Second place for paper presentation went to doctoral student Cain Cavitt, from Alvin, Texas. Cavitt, a student of poultry scientist Casey Owens, won $300 for his paper “Prediction of Poultry Meat Tenderness using Razor Blade Shear, Allo-Kramer Shear, and Sarcomere Length.” Third place went to Niki Loupe, master’s student of Jason Emmert, who is from Crossett. Loupe took $200 for her paper “Growth Performance of Broiler Chicks during the Grower and Finisher Phases when utilizing Phase-Feeding.”

All poultry science graduate students and undergraduate students involved in the undergraduate research program were invited to participate by submitting a paper highlighting their respective research areas. Those submitting papers made presentations at the symposium.

Judges for the event were UA poultry adjunct professor Jon Story, emeritus professor Lionel Barton and research associate Pam Blore.

The PSGA uses the symposium as an opportunity to build a stronger relationship between academia and the poultry industry as well as give students a chance to hone their presentation skills locally before presenting to national audiences.
POSC Spring/Summer Interns

This past summer we had several students that participated in the poultry science internship program. The following is a list of students and the locations at which they served. Susan Watkins is the internship coordinator for the Center. If you or your company is interested in participating in this very worthwhile program, please contact her by e-mail (swatkin@uark.edu) or by telephone: (479) 575-7902.

Jason M. Nordin
Waynes Farms, Pendergrass, Georgia

Ross Wolfenden
Embrex

Sean Schader
Cargill, Inc.

Scott Jordan
Tyson Foods, Springdale

Josh Carmack
Tyson Foods, Grannis

Amanda Drake
Poultry Science Department

Abby Keener
Poultry Science Department

Lindsay Hale
Mississippi State University

William Parker
Tyson Foods, Springdale

Chad Burkett
Cargill, Inc., Springdale

Aaron Vanemburg
ConAgra, Batesville

Jason Warren
CES-BEV, Savoy Broiler Farm

Fall Scholarship Recipients

**Incoming Freshmen:**
Baeyens, Katy
Bateman, Kristin
Cole, Ashley
Denham, Sarah
Hill, Beth
Horton, Drew
Rowland, Emily
Swonger, Sidney
Waddell, Mindy

**Name of Scholarship**
Poultry Science Matching
Randal Tyson Memorial
Allied Industry
Poultry Science Matching
Poultry Science Matching
Poultry Science Matching
Randal Tyson Memorial/Feed Manufacturer’s
Randal Tyson Memorial
Henry B. Shreve

**Transfer Students:**
Harding, Russell
Kimble, Brad
Sink, Joshua

**Name of Scholarship**
Randal Tyson Memorial
Poultry Science Matching
Randal Tyson Memorial

**Continuing Students:**
Alston, Mark
Bowen, Olivia
Burkett, Chad
Conner, Jessica
Cornelison, Jana
Cox, Ashley
Devor, Bobbi
Drake, Amanda
Drumwright, Alison
Ganson, Fauna
Griesse, Rachel
Grossman, April
Hale, Lindsay
Hall, Bethany
Holmes, Kara
Hubbard, Adriane
Hubbard, Robert
Jackson, Britney
Jarquin, Robin
Jordan, Scott
Keen, Cody
Keener, Abby
Keeter, April
Layman, LeAnn
Lumpkin, Hugh
Outlaw, Benjamin
Parker, William (Drew)
Shasteen, Tara
Sikes, Destiny
Sossamon, Sarah
Stinnett, Ashley
Townsend, Julie
Van Brunt, Jarrod
Webber, Daniel
Wolfenden, Ross
Wright, Eric

**Name of Scholarship**
Feed Manufacturer’s/Randal Tyson Memorial
Poultry Science Matching
Allied Industries/Randal Tyson Memorial
Poultry Science Matching
Randal Tyson Memorial
Richard Forsythe
Allied Industry
Allied Industry
Poultry Science Matching
Allied Industry
Poultry Science Matching
Randal Tyson Memorial
Randal Tyson Memorial
Randal Tyson Memorial
Randal Tyson Memorial
Randal Tyson Memorial
Randal Tyson Memorial
Feed Manufacturer’s/Randal Tyson Memorial
Grover Harris
Feed Manufacturer’s
Allied Industry/Randal Tyson Memorial
Poultry Science Matching
Edmiston
James Whitmore
Tal Nalson
E.L. Stephenson
Darryle and Peggy Greene
Poultry Science Matching
Allied Industry
Hubbard
Genetic Markers help Breeders

FAYETTEVILLE - Genetic markers can help poultry breeders identify hidden characteristics and guide them on the path to producing healthier, more desirable birds.

Ron Okimoto, poultry scientist at the Arkansas Agricultural Experiment Station, is looking for those markers and determining what they mean. He is also studying how their corresponding genes interact with the rest of the genetic code to determine what color a chicken will be, how efficiently it uses feed and how well it resists diseases.

"Knowing more about how genes interact and control characteristics will give breeders more accurate information to select birds for conventional breeding," Okimoto said.

He's identifying markers that reveal the presence and location of alleles - genetic variants that account for differences in the appearance and development of offspring.

"All living things have two copies of their genes," Okimoto said. "Sometimes, one copy may vary from the other in one or more locations on the gene. These are called alleles, and a gene may have many of them. Nearly every gene we've looked at has alleles. Genetic variation is the reason we all do not look like clones."

One of the traits he's studying is pigmentation. "Pigments that affect feather color also affect coloration in the flesh," he said. "Poultry companies want to avoid discoloration of the meat caused by pigments. There is nothing wrong with it except that consumers don't want discoloration in white meat.

"So poultry companies want to breed chickens with less pigmentation. The problem is that broilers' feathers are all white, so they hide pigmentation problems," he said.

Okimoto said the only conventional way to find undesirable pigmentation in broilers is to breed them to colored chickens and see how the crossbreeding affects feather color. This process costs more time and money than a commercial breeder wants to spend to correct a purely aesthetic problem.

"Now we can find the problem with a simple blood test," he said.

Research groups like Okimoto's have been identifying markers for genetic variations for a decade, but no one has used them as a tool for selecting chickens for breeding. "We've identified the genes that cause these variations and we've got the markers that tell us when they're present," he said. "Now we're taking it to the next step, using them to select birds for breeding, to see if they work the way we expect them to."

In practice, poultry companies will select breeders for whole range of characteristics, and pigmentation will probably not be the most important one. A bird with undesirable pigmentation may be selected because it has have superior growth rate or resistance to ascites. (Ascites is a pulmonary hypertension syndrome that afflicts some broilers because their fast growth rate can outpace their cardio-pulmonary system.)

Genetic markers can help breeders more accurately determine the genetic potential of a bird and allow them to make more informed selection decisions, Okimoto said.

"One of the main things this work is going to do is help us get a handle on quantitative genetics," he said. "It'll help us understand how these genes interact with each other and give us a means to measure them and develop more accurate genetic models.

"The more we know about what's happening on the genetic level, the more we can help breeders develop better birds."
Faculty Notes

Walter Bottje has been elected the Chair of the Hy-Line Research Award Committee in addition to serving on the Alltech Student Manuscript Award Committee for the Poultry Science Association (PSA).

David Chapman was an invited speaker at a symposium on poultry vaccines organized by the American Association of Avian Pathologists in Nashville July 14. Chapman also presented papers at the American Association of Veterinary Pathologists meeting in Nashville on July 15th and at the Poultry Science Association meeting in Delaware on August 14th.

Keith Bramwell gave an invited presentation at the annual U.S. Poultry and Egg Association’s Hatchery Breeder Clinic held in Birmingham, Alabama, July 16-17. The presentation was entitled “Hatching Egg Handling and Sanitation.”

Four faculty members served as program or session chairs from the department at the recent PSA meeting in Delaware. They were: Billy Hargis (Pathology), Annie Donoghue (PPRSU) (Physiology), Dan Donoghue (Physiology) and Gisela Erf (Immunology).

Dan Donoghue was an invited speaker at the PSA symposium in Delaware and gave the presentation “Antibiotic Transfer into Poultry Tissues and Eggs: Human and Health Concerns.”

In addition to being a session chair, Gisela Erf (as mentioned above) served as a judge for the graduate student presentations at the PSA meeting in Delaware.

Wayne Kuenzel attended the Avian Nomenclature Forum held at Duke University July 17-21. The purpose of the forum was to review the nomenclature of the avian brain, particularly the forebrain, propose new terminology acceptable to the international community and vote for each change initiated. Kuenzel was one of only 30 people asked to participate. Kuenzel also gave an invited presentation at the recent PSA meeting in Delaware titled “Neurobiology of Molt in Avian Species.”

Narayan Rath organized and chaired the Ancillary Scientists’ Symposium on “Genetic Technology Applied to Poultry Production” held in conjunction with the recent PSA meeting in Delaware.

Susan Watkins is currently coordinating a “Managing Animal Resources for Environmental Quality” class that will be taking place across the state. This will be geared for enhancing the knowledge of industry personnel, Cooperative Extension Service (CES) personnel as well as student with regard to environmental issues. Watkins gave an invited presentation at the Annual Turkey Committee meeting in Eureka Springs September 13. Watkins is currently serving as secretary for that organization. On September 10-11, Watkins gave an invited presentation at the O.K. Foods Grower meetings in Fort Smith. She is currently working on the Poultry Federation’s Poultry Improvement Committee (PIC) to plan and coordinate human relations training for service technicians, which will take place in Little Rock, Fayetteville and Neosho, Missouri the first week in October. Watkins also chaperoned eight students to the Missouri State Fair where they assisted in running the Chicken Kitchen (which is a scholarship fundraiser for the Poultry Federation).

Robert Wideman gave an invited presentation “Calcium Metabolism in Broiler Breeders” at the Aviagen Technical Services Meeting June 6 in Hot Springs.

Student Notes

Hilary Pavlidis, master’s student of Nick Anthony from Virginia Beach, Virg., received the Graduate Student Research Paper Certificate of Excellence for Breeding and Genetics at the recent Poultry Science Association’s annual meeting in Delaware Aug. 14. Her paper was titled “Divergent Selection for Ascites Incidence in Chickens.” Pavlidis received her B.S. From Virginia Tech and is hoping to complete her master’s this semester.

Grants Awarded

F. Dustan Clark
Embrex, Inc. ...................... $17,696

D. Donoghue/A. Donoghue
US Poultry & Egg .............. $29,693

D. Donoghue
USDA CREES ................... $40,200

J. Emmert
Margarit Ltd. Celtic Sea Min .... $5,000

B. Hargis/L. Newberry
Biomin Distribution, Inc. ...... $12,319

B. Hargis
I.D. Russell ...................... $10,000

B. Hargis (2 combined grants)
USDA / Lynntech .............. $40,000

B. Hargis
USDA CREES ................... $40,200

J. Marcy
USDA CREES ................... $7,200

R. Okimoto (3 combined grants)
Cobb-Vantress ................ $26,540

C. Owens
New Horizon .................. $3,700

C. Owens
Marigot Ltd. Celtic Sea Min .... $5,000

M. Parcells
USDA CREES ................... $106,713

M. Slavik
USDA Food Safety ............. $104,000

P. Waldroup (2 combined)
Alpharma ....................... $10,000

P. Waldroup
Bimin Distribution, Inc. ....... $12,319

P. Waldroup
Roche Animal Nutrition ...... $14,400

S. Watkins
British United Turkeys ...... $38,400

R. Wideman
Hubbard ISA ................... $18,000

Grants listed above are from the previous issue, which would have been Fiscal Year 2001-2002 not previously reported as well as the start of the fiscal year 2002-2003. (Our previous issue was limited on space.)

Multiple grants from the same company have been combined with each other for reporting purposes in this newsletter.

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