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## ARD News December 2008

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# Agricultural Research Division News

December 2008

Volume 41, Number 6

## Comments from the Dean Gary Cunningham

Ours is a great land-grant university, and we in the Agricultural Research Division are proud to be part of it.

In IANR the three missions of the land-grant university – research, teaching, and extension education – closely entwine. We work together. We learn from each other. And because we are integrated and collaborative in our work in IANR, we are well-positioned to take advantage of the new competitive grants program for research, education and extension that is part of the 2008 Farm Bill, and called AFRI for Agriculture and Food Research Initiative.

AFRI combines the funding authorities of the National Research Initiative (NRI) and the Initiative for Future Agriculture and Food Systems (IFAFS). AFRI offers increased potential funding opportunities, along with new competitive grant programs for research and integrated projects. These new proposals can be a combination of research, education and extension projects.

We are uniquely positioned to submit proposals that align with all three. IANR faculty often hold dual appointments in research and teaching or research and extension. In IANR we see science as a continuum, from research on the most fundamental issues through applications supporting teaching and extension education relevant to living systems from the molecular to the global levels of organization. We expect IANR scientists will enjoy great success in applying for AFRI grants.

The first steps to this success include preparing and submitting effective applications. New application procedures and processes are required. To help everyone understand these procedures and maximize our potential for success, we are pleased to offer the AFRI Research Proposal Opportunities workshop on Jan. 6, 2009. This workshop will be presented via Breeze. You can participate individually at your computer, or host an online broadcast for a group and view it together.

Sessions include:

**AFRI Research Program Areas** with Dr. Debora Hamernik, USDA

*Review of standard research, integrated designations and program leadership*

**Observations from a Panel Member** with Dr. Clinton Jones, UNL

*Characteristics of a successful research proposal*

**Proposal Development Services** from Tisha Gilreath Mullen, UNL Office of Research

*Reviews and assistance from proposal writers*

**Submitting your Proposal** from Lynne Smejdir, IANR Finance and Personnel

*Requirements for submitting your proposal*

**AFRI Integrated Program Areas** with Dr. Debora Hamernik, USDA

*Identifying standard and integrated research designations*

**Features of a “High Impact” Extension Component** with Elbert Dickey and Rick Koelsch, Extension Administration

*Self-assessment in evaluating quality of extension components*

**Evaluation of Impact** from Jason Ellis, AgLEC

*Key planning considerations*

**Observations from a Panel Member** with Linda Boeckner, UNL Panhandle R&E Center

*Additional characteristics of a successful research proposal*

To participate in the AFRI Research Proposal Opportunities event on Jan. 6, 10:30 a.m. to 12:00 p.m. CST, and 1:00 to 2:30 p.m. CST, you should:

- Plan to use a computer with Internet access and a phone.
- Go to ARD website [ard.unl.edu/fundinginfo/shtml](http://ard.unl.edu/fundinginfo/shtml) for connection links.
- If you are unable to view the program on the 6<sup>th</sup> of January, the content will be available from the above website.

We in IANR have an important opportunity to showcase our work, submit effective proposals, and receive valuable grant funding in the months ahead. I urge you to be part of this workshop Jan. 6. Together we will share grant recipient success in 2009.

Gary Cunningham, Dean and Director

## Undergraduate Honors Research Program

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Funds for the 2009 Academic Undergraduate Honors Student Research Program have been allocated to units for support of undergraduate student research projects. This program is open to junior and senior University Honors Program students proposing to work with a faculty research mentor who has an ARD appointment. One proposal was received and funded. The following student has received funding:

**Kelsey Swartz** (Biochemistry) \$2,500  
Mentor: Dr. Robert Spreitzer  
“Hybrid Rubisco Enzymes”

## Mussehl Endowment

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Three proposals were submitted for the Mussehl Endowment. This substantial endowment was established in the University of Nebraska Foundation by the Mussehl Estate to support poultry research programs at UNL. Projects eligible for support from the Endowment include poultry management, health, nutrition, physiology, waste management and utilization, and poultry product research. The following proposals were funded:

**Sheila Scheideler** (Animal Science)  
**Dana Hahn** (Animal Science)  
“The Effect of an Enzyme Cocktail of Xylanase, Amylase and Protease and Dried Distillers Grains with Solubles in Laying Hen Rations: Nutrient Digestibility, But Viscosity and Microbial Population of the Gut”  
**Funded: \$25,000 November 1, 2008 - October 31, 2009**

**Sheila Scheideler** (Animal Science)  
**Patricia Weber** (Animal Science)  
“The Effects of Social and Environmental Enrichments on Behavior and Welfare of Turkey Hens”  
**Funded: \$24,604 November 1, 2008 - October 31, 2009**

**Jens Walter** (Food Science and Technology)  
**Sheila Scheideler** (Animal Science)  
“Identification of Novel Enzymes for the Supplementation of Poultry Feed Using a Metagenomic Approach”  
**Funded: \$25,000 November 1, 2008 - October 31, 2009**

## David H. and Annie E. Larrick/William G. Whitmore Funds, 2009

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The David H. And Annie E. Larrick Student Support Fund was established in the University of Nebraska Foundation in 1998 by Ronald Larrick in honor of his grandparents. It was decided that these funds will be devoted to supporting graduate student travel to professional and scientific meetings. All currently registered graduate students whose advisor or co-advisor currently has an ARD research appointment are eligible.

The William G. Whitmore memorial fund was established at the University of Nebraska Foundation in 1980 as a memorial to William G. Whitmore, a member of the Board of Regents at the University of Nebraska from 1902-1916. The Whitmore fund is specifically designated to support travel of graduate students in the fields of animal science, agricultural education and leadership and veterinary and biomedical sciences. Most of the Larrick funds are used to support graduate students in other departments.

The Larrick and Whitmore Graduate Student Travel Grant Programs provide funding for travel expenses not to exceed \$500. The following students received funding for January-June 2009:

*Name:* Virgil Bremer  
*Department:* Animal Science Department  
*Meeting:* American Society of Animal Science  
*Place:* Des Moines, Iowa

*Name:* Sarah Vanness  
*Department:* Animal Science Department  
*Meeting:* American Society of Animal Science  
*Place:* Des Moines Iowa

*Name:* Racheal Slattery  
*Department:* Animal Science Department  
*Meeting:* American Society of Animal Science  
*Place:* Des Moines, Iowa

*Name:* Amy Miller  
*Department:* Biochemistry Department  
*Meeting:* American Society for Biochemistry  
*Place:* New Orleans, Louisiana

*Name:* Krishnamoorthy Pitchai  
*Department:* Biological Systems Engineering  
*Meeting:* American Society of Agriculture and Biological Engineers  
*Place:* Reno, Nevada

*Name:* Isa Kabenge  
*Department:* Biological Systems Engineering  
*Meeting:* American Society of Agriculture and Biological Engineers  
*Place:* Reno, Nevada

*Name:* Denis Mutiibwa  
*Department:* Biological Systems Engineering  
*Meeting:* American Society of Agriculture and Biological Engineers  
*Place:* Reno, Nevada

*Name:* Pratik Bhandari  
*Department:* Biological Systems Engineering  
*Meeting:* American Society of Agriculture and Biological Engineers  
*Place:* Reno, Nevada

*Name:* Eunju Jung  
*Department:* Child, Youth and Family Services  
*Meeting:* Society for Research in Child Development  
*Place:* Denver, Colorado

*Name:* Amanda Fujikawal  
*Department:* Entomology Department  
*Meeting:* American Academy of Forensic Sciences  
*Place:* Denver, Colorado

*Name:* Andrew Brown  
*Department:* Nutrition and Health Sciences  
*Meeting:* American Society for Experiment Biology  
*Place:* New Orleans, Louisiana

*Name:* Valerie Pestinger  
*Department:* Nutrition and Health Sciences  
*Meeting:* American Society for Nutrition  
*Place:* New Orleans, Louisiana

*Name:* Gaganpreet Kaur Mall  
*Department:* Nutrition and Health Sciences  
*Meeting:* American Society for Nutrition  
*Place:* New Orleans, Louisiana

*Name:* Gregory Curtrell  
*Department:* School of Natural Resources  
*Meeting:* Graduate Climate Conference  
*Place:* Seattle, Washington

*Name:* Yi Zou  
*Department:* Textiles, Clothing and Design  
*Meeting:* American Chemical Society  
*Place:* Salt Lake City, Utah

*Name:* Namal Liyanage  
*Department:* Veterinary and Biomedical Sciences  
*Meeting:* American Society for Microbiology  
*Place:* Philadelphia, Pennsylvania

## **New or Revised Projects September and October 2008**

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### **NEB 21-147 Evaluating performance of tractor continuously variable transmissions (CVTs) and row-crop planters**

*Investigator:* Michael Kocher, Biological Systems Engineering  
*Status:* Hatch project effective Sept. 1, 2008, through Aug. 31, 2013

### **NEB 21-149 NE-1035, Commercial greenhouse production: Component and system development**

*Investigator:* George Meyer, Biological Systems Engineering  
*Status:* Multistate project effective Oct. 1, 2008, through Sept. 30, 2013

### **NEB 22-335 Ecophysiology of interplant competition**

*Investigator:* John Lindquist, Agronomy and Horticulture  
*Status:* Hatch project effective Oct. 1, 2008, through Sept. 30, 2013

### **NEB 26-189 Dried distillers grains with solubles (DDGS) in growing-finishing swine diets**

*Investigator:* Phil Miller, Animal Science  
*Status:* Hatch project effective Sept. 1, 2008, through Aug. 31, 2013

### **NEB 26-190 S-1040, Genetic selection and crossbreeding to enhance reproduction and survival of dairy cattle**

*Investigator:* Jeffrey Keown, Animal Science  
*Status:* Multistate project effective Oct. 1, 2008, through Sept. 30, 2013

### **NEB 27-063 NC-1171, Interactions of individual, family, community, and policy contexts on the mental and physical health of diverse rural low-income families**

*Investigator:* Susan Churchill, Child, Youth and Family Studies  
*Status:* Multistate project effective Oct. 1, 2008, through Sept. 30, 2013

### **NEB 28-100 NC-205, Ecology and management of European Corn Borer and other lepidopteran pests of corn**

*Investigator:* Blair Siegfried, Entomology  
*Status:* Multistate project effective July 1, 2008, through Sept. 30, 2010

### **NEB 31-118 NC-213, Marketing and delivery of quality grains and bioprocess co-products**

*Investigator:* Lloyd Bullerman, Food Science and Technology  
*Status:* Multistate project effective Oct. 1, 2008, through Sept. 30, 2013

### **NEB 36-072 W-2002, Nutrient bioavailability - phytonutrients and beyond**

*Investigator:* Janos Zemleni, Nutrition and Health Sciences  
*Status:* Multistate project effective Oct. 1, 2008, through Sept. 30, 2013

**NEB 38-067 Assessment of the impact of water and nutrient management practices on groundwater nitrate concentrations**

*Investigator:* Mary Spalding, School of Natural Resources  
*Status:* Hatch project effective Aug. 1, 2008, through July 31, 2013

**NEB 38-068 Causes and predictability of drought in the Great Plains**

*Investigator:* Robert Oglesby, School of Natural Resources  
*Status:* Hatch project effective Sept. 1, 2008, through Aug. 31, 2013

**NEB 62-004 Phylloquinone (Vitamin K1) biosynthesis and engineering in plants**

*Investigator:* Gilles Basset, Plant Science Initiative  
*Status:* Hatch project effective Sept. 1, 2008, through Aug. 31, 2013

## Proposals Submitted for Federal Grants September and October 2008

The following is a listing of proposals that were submitted during September and October 2008 by faculty for federal grant programs. While not all grants will be funded, we are appreciative of the faculty members' outstanding efforts in submitting proposals to the various agencies.

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**Shannon Bartelt-Hunt and Daniel Snow** – NSF – Collaborative Research: Fate and bioavailability of steroidogenic compounds in aquatic sediment – \$211,714

**Paul Hanson** – NSF – Dune Undergraduate Geomorphology and Geochronology Project in Wisconsin – \$44,228

**Yiqi Yang and Narendra Reddy** – NSF – Developing wheat protein fibers as a new class of biomaterials for tissue engineering applications – \$195,704

**Yiqi Yang and Narendra Reddy** – NIH – Plant protein fibers as a new class of biomaterials for tissue engineering scaffolds – \$426,706

**Daniel Peterson** – NIH – Adaptive immune response to symbiotic bacteria as a mediator of gut homeostasis – \$379,890

**Anatoly Gitelson** – Binational Agricultural Research and Development Fund – Remote pigment assessment in inland waters for quantitative monitoring of potentially nuisance algae – \$150,000

**Robert Hutkins and Rodney Moxley** – USDA-BARD – Oligosaccharide mixtures as novel anti-adhesive agents for the prevention of bacterial infectious diseases – \$201,600

**James Specht** – USDA-ARS – Drought stress tolerance in Nebraska – \$89,072

**Yiqi Yang and Narendra Reddy** – NSF – Developing composites from textile wastes for high value industrial applications – \$195,704

**Yiqi Yang and Narendra Reddy** – NSF – Developing plant protein fibers as substrates for sorption loading of drugs for controlled release applications – \$198,602

**Anne Vidaver** – USDA-CSREES – Developing a national recovery plan for gumming disease of grasses and ryegrass toxicity, caused by *rathayibacter toxicus* – \$19,700

**Anatoly Gitelson** – NASA – A MODIS based decision support tool for Gulf Coast Salt Marsh Conservation and Restoration – \$150,049

**Anatoly Gitelson** – NASA – The effects of projected climate change on land use, freshwater supply, agriculture, and estuarine water quality in the Mid-Atlantic Region – \$559,920

**Kyle Hoagland** – U.S. Army Corps of Engineers – U.S. Army Corps of Engineers-Civil Works Joining Fee for the Great Plains (GP) Cooperative Ecosystems Studies Unit (CESU) – \$10,000

**James Alfano, Thomas Clemente and Paul Staswick** – Department of Agriculture-BARD – Elucidating functions of type III effectors from necrogenic and tumorigenic bacterial pathogens – \$180,000

**Wayne Woldt and Erkan Istanbuluoglu** – NSF – Observing system stimulation experiment for watershed resilience – \$330,426

**Robert Harveson** – USDA-CSREES – The 2008 Legume IPM PIPE Subcontract - Nebraska – \$24,310

**Mark Pegg, Kevin Pope and Brenda Pracheil** – U.S. Fish and Wildlife Service – Rates and consequences of downstream paddlefish passage through Missouri River dams – \$72,326

**Scott Hygnstrom** – Department of Agriculture-APHIS – Toward the development of spatially explicit models of wildlife disease – \$138,015

**Jeyamkondan Subbiah** – NSF – Spectral imaging to determine the histopathology of unstained skin for early melanoma detection – \$498,950

**Qi Hu, John Lenters, Brian Wardlow, David Wedin, Robert Oglesby and Anatoly Gitelson** – NASA – NASA China Land Cover and Use Changes – \$1,119,391

**Jeyamkondan Subbiah, Harshavardhan Thippareddi, Milford Hanna, Vicki Schlegel, Paul Read, Richard Perrin and David Rickert** – USDA-CSREES – Improving profitability by extracting bioactive and high-value ingredients from winery co-products using novel processing technologies – \$1,611,598

**Steven Harris** – NIH – Role of GTPase modules in highly polarized growth – \$760,892

**Robert Joecke** – NSF – Bio-cementation of soils through ureolysis: Developing novel and sustainable low-impact engineering practices – \$82,499

**Brian Wardlow and Mark Svoboda** – NOAA – A GOES Thermal-Based Drought Early Warning Index for NIDIS – \$62,441

**Jae Ryu, Cody Knutson, Xun-Hong Chen and Raymond Supalla** – NOAA – Development of a Shared Vision Education and Planning Tool (SVEPT) for water resources management under climatic uncertainty – \$298,412

**Qi Hu, Robert Oglesby and Song Feng** – NOAA – NOAA Warm Season Precipitation in North America – \$349,617

**Sally Mackenzie** – NSF – Acquisition of high performance LTQ XL orbitrap mass spectrometer – \$809,855

**Daniel Snow** – NSF – Acquisition of high resolution mass spectrometer for studies involving emerging contaminants – \$322,337

**Jeyamkondan Subbiah** – NSF – Acquisition of micro-hyperspectral imaging systems for early diagnosis of cancer – \$659,300

**David Wedin, Shashi Verma, Judy Diamond, Robert Oglesby, Sherilyn Fritz and Stephen Goddard** – NSF – STC: Center for Integration of Climate and Landscape Dynamics – \$25,331,012

**Janos Zemleni** – NIH – Role of biotin in birth defects – \$105,423

**David Billesbach** – Department of Energy – Development and field testing of rapidly deployable carbon dioxide flux measurement system – \$33,849

**Thomas Powers** – USDA-CSREES – Comprehensive genome-based diagnostic research and pipeline for identification of threatening plant pathogens – \$39,484

**Craig Allen, Richard Tyre, Sherilyn Fritz, Alan Tomkins and Ashok Samal** – NSF – IGERT: Resilience and adaptive governance in stressed watersheds – \$3,216,035

**David Gosselin, Donna Woudenberg and Ronald Bonnstetter** – NASA – Global climate change literacy for educators: Using on-line professional development to integrate content and pedagogy – \$146,688

**Melanie Simpson** – NIH – Structure-function of the HA receptor for endocytosis – \$500,503

**Kenneth Cassman, Shashi Verma, David Wedin, Daniel Walters and Richard Perrin** – NSF – IGERT: Connecting crops and chemical conversions in a sustainable bioeconomy – \$836,285

**Mark Bernards** – USDA-CSREES – Safer, non-selective weed control for organic growers – \$9,500

**Tian Zhang, Patrick Shea, Yongfeng Lu and Mohamed Dahab** – NSF – Interactions between nanomaterials and microbial communities – \$79,936

**Kyle Hoagland** – USGS – Standards of practice for adaptive management – \$84,332

## Grants and Contracts Received for September and October 2008

### Agricultural Research Division:

**Gary Cunningham** – USDA-ARS \$901,900.00

### Agronomy and Horticulture:

**Peter Baenziger** – NRI \$114,414.00

**Kenneth Cassman, James Specht, Haishun Yang, Daniel Walters and Suat Irmak** – Nebraska

Soybean Board \$45,000.00

**Ismail Dweikat** – Nebraska Sorghum Board \$13,500.00

**George Graef** – USDA-ARS \$38,756.00

**George Graef** – United Soybean Board \$79,931.00

**George Graef** – Nebraska Soybean Board \$66,125.00

**George Graef and James Specht** – Nebraska Soybean Board \$203,443.00

**Paul Read** – Nebraska Department of Agriculture-Grape and Winery Board \$34,540.00

**James Specht** – USDA-ARS \$74,227.00

**James Specht and George Graef** – Nebraska Soybean Board \$46,300.00

Miscellaneous grants under \$10,000 each \$99,750.00

### Animal Science:

**Kathryn Hanford** – USDA-CSREES \$20,000.00

**Phillip Miller and Thomas Burke** – Pioneer Hi-Bred International \$43,500.00

Miscellaneous grants under \$10,000 each \$4,000.00

### Biochemistry:

**Donald Becker** – NIH \$134,000.00

**Vadim Gladyshev** – NIH \$79,589.00

### Biological Systems Engineering:

**Viacheslav Adamchuk, Charles Shapiro, Charles Wortmann, Richard Ferguson and Richard Perrin** – Nebraska Soybean Board \$51,260.00

**David Billesbach** – Department of Energy \$33,848.00

**Suat Irmak** – Central Platte Natural Resources District \$150,000.00

**Erkan Istanbuluoglu** – NSF \$117,599.00

Miscellaneous grants under \$10,000 each \$8,500.00

**Entomology:**  
 Miscellaneous grants under \$10,000 each \$48,400.00

**Food Science and Technology:**  
**Andrew Benson, Jens Walter and Robert Hutkins** – USDA-NRI \$370,927.00  
**Rolando Flores** – Nebraska Corn Board \$49,570.00  
**Jens Walter, David Jackson and Vicki Schlegel** – Nebraska Corn Board \$32,260.00

**Northeast Research and Extension Center:**  
**Tom Hunt and Robert Wright** – Nebraska Soybean Board \$20,732.00  
**Donald Levis** – Nebraska Pork Producers Association \$19,040.00  
 Miscellaneous grants under \$10,000 each \$53,350.00

**Panhandle Research and Extension Center:**  
**Robert Harveson** – USDA-CSREES-WRIPMC \$24,310.00  
 Miscellaneous grants under \$10,000 each \$40,850.00

**Plant Pathology:**  
**James VanEtten** – University of California-San Francisco \$28,429.00  
**Stephen Wegulo** – Nebraska Wheat Board \$34,275.00  
 Miscellaneous grants under \$10,000 each \$47,951.00

**School of Natural Resources:**  
**Xun-hong Chen** – Lower Platte North Natural Resources District \$100,954.00  
**Scott Hygnstrom** – USDA-APHIS \$138,015.00  
**Scott Hygnstrom** – USDA-APHIS \$50,000.00  
**Susan Lackey** – Lower Elkhorn Natural Resources District \$95,600.00  
**James Merchant** – AmericaView Inc. \$23,989.00  
**Sunil Narumalani** – Nebraska Military \$66,290.00  
**Donald Rundquist** – Florida A&M University \$37,907.00  
**Donald Rundquist** – Nebraska Department of Agriculture \$20,000.00  
**Mary Spalding and Roy Spalding** – Nebraska Department of Environmental Quality \$62,176.00  
**Mark Svoboda, Brian Wardlow and Tsegaye Tadesse** – USGS \$58,726.00  
**Mark Svoboda, Brian Wardlow, Brian Fuchs and Soren Scott** – NASA \$147,985.00  
**Sashi Verma** – Nebraska Department of Environment Quality \$19,200.00  
**Sashi Verma** – U.S. Department of Energy \$350,000.00  
 Miscellaneous grants under \$10,000 each \$18,434.00

**Statistics:**  
**Kent Eskridge** – Nebraska Department of Health and Human Services \$10,412.00

**Veterinary and Biomedical Sciences:**  
**Clinton Jones** – USDA-NRI \$375,000.00  
**David McVey** – USDA-CSREES \$49,805.00  
**David Steffen** – Nebraska Game and Parks Commission \$100,000.00

**West Central Research and Extension Center:**  
 Miscellaneous grants under \$10,000 each \$19,500.00

**TOTAL: \$4,874,269.00**

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*Wishing you a New Year of Peace and Happiness!*

*ARD Staff*

*Gary David Dan Dora Nelvie Karen Deb*

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