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INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES

University of Nebraska Lincoln

Agricultural Research Division News

December 2007 Volume 40, Number 6

Comments from the Dean

Congratulations are due IANR faculty for their outstanding success over the last six months in generating grant funding to support their research, extension and teaching efforts. Since July 1, 2007, IANR scientists and their collaborators at UNL and other institutions have received new and continuing grants totaling more than $74 million. This is remarkable even for a faculty who over the past several years has generated close to 40% of the grant funds obtained by UNL scientists. Perhaps even more important than the overall total funding is the fact that almost 80% of the $74 million was awarded in 44 grants, each of which is greater than $300,000. This surely reflects a healthy level of collaborative interdisciplinary work that will lead to useful new knowledge and productive relationships for the future.

Another remarkable feature of these grants is the extent to which the work they support aligns with the IANR strategic plan and with the planned programs of our CSREES plan-of-work. Ten of the 44 grants totaling over $6 million address issues directly relevant to "a quality environment and effective natural resource management." Thirteen of the grants are supporting research that should lead to "more sustainable and economically viable food and biomass systems." These include both crop and livestock systems. Research and education leading to "viable communities and appropriate quality of life for individuals and families" are supported by eight of the grants. Thirteen of the grants address fundamental scientific questions whose answers can and will lead to new understandings and novel approaches to addressing issues in agriculture, natural resources, and human health and well-being.

While attracting these very important large awards from a diverse group of federal agencies that primarily focus on research relevant to national needs, IANR scientists have maintained their strong commitment to addressing immediate issues relevant to the people of Nebraska. This commitment is reflected in over $3 million in grants received during the past six months from Nebraska's commodity boards to support research, extension, and teaching efforts identified as high priorities for the state.

IANR's grant funding reflects healthy balances across:

- our land-grant missions of teaching, research and extension;
- the spectrum from fundamental science to practiced applications;
- the three themes of our strategic plan; and
- results relevant to state, national, and global issues.

IANR faculty are doing important work and doing it well.

Gary Cunningham, Dean and Director
Z B Mayo, Interim Associate Dean and Director

Wishing you a New Year of Peace and Happiness!
ARD Staff

Gary Z B Dan Dora Nelvie Karen

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IANR

William G. Whitmore Student Travel Endowment

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 income from the fund supports a travel grant program for graduate students within IANR whose advisor or co-advisor has an ARD research appointment. In accordance with the donor instructions, this program will support attendance to professional society meetings in the fields of animal science, agricultural education and leadership, and veterinary and biomedical sciences. Priority for grants will be given to graduate students who are personally presenting the results of their research and/or scholarly investigations.

The Whitmore Research Travel Committee makes grants for expenses, including transportation (which is not to exceed coach class airfare), registration, lodging, meals, etc. Grants under this program are limited to a maximum of $500 per individual per fiscal year. The following IANR student received William G. Whitmore memorial funds for travel during the period January 1 through June 31, 2008:

Name: Jolene Kelzer
Department: Animal Science Department
Meeting: Midwest Section American Dairy Science
Place: Des Moines, Iowa

The next call for these travel funds will be sent to the unit administrators around the second week in April 2008 for travel from July 1 to December 31, 2008.

Undergraduate Honors Research Program

Funds for the 2008 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. Two proposals were received and funded. The following students have received funding:

Lindsey Hofman (Animal Science) $2,500
Mentor: Dr. Jennifer Wood
"Insulin Regulation of Mitotic Kinases and Connexins in Mouse Granulosa Cells"

Scott Kindle (Biochemistry) $2,500
Mentor: Joan Krush
"A Unicellular Model for Insights into Human Disease: Understanding DJ-1 Function"

David H. and Annie E. Larrick Fund, 2008

The David H. and Annie E. Larrick fund supports travel of graduate students who are conducting research in fields other than animal science, agricultural education and leadership, and veterinary and biomedical sciences. The Larrick endowment will assist the following students with $500 travel grants to present research findings at national or regional meetings.

Name: Neal Bryan
Department: Agronomy and Horticulture
Meeting: Society for Range Management/American Forage
Place: Louisville, Kentucky

Name: Ramesh K. Singh
Department: Agronomy and Horticulture
Meeting: American Society of Agriculture and Biological Engineers
Place: Providence, Rhode Island

Name: Ai Pheeng Wee
Department: Biological Systems Engineering
Meeting: American Society of Agriculture and Biological Engineers
Place: Providence, Rhode Island

Name: Ajay Kumar
Department: Biological Systems Engineering
Meeting: American Society of Agriculture and Biological Engineers
Place: Providence, Rhode Island

Name: Brian Twombly
Department: Biological Systems Engineering
Meeting: American Society of Agriculture and Biological Engineers
Place: Providence, Rhode Island

Name: Dwight Easterly
Department: Biological Systems Engineering
Meeting: American Society of Agriculture and Biological Engineers
Place: Providence, Rhode Island

Name: Michael Burgert
Department: Biological Systems Engineering
Meeting: American Society of Agriculture and Biological Engineers
Place: Providence, Rhode Island

Name: Kim Cluff
Department: Biological Systems Engineering
Meeting: American Society of Agriculture and Biological Engineers
Place: Providence, Rhode Island

Name: Parikshit K. Ranade
Department: Biological Systems Engineering
Meeting: American Society of Agriculture and Biological Engineers
Place: Providence, Rhode Island

Name: Abby R. Stilwell
Department: Entomology
Meeting: North Central Branch/Entomological Society of America
Place: Columbus, Ohio

Name: Harsha Ariyarathna
Department: Food Science and Technology
Meeting: American Academy of Allergy, Asthma and Immunology
Place: Philadelphia, Pennsylvania

Name: Sugjeemdra Kadkol
Department: Food Science and Technology
Meeting: Annual Meeting/Food Expo
Place: New Orleans, Louisiana

Name: Afua O. Ofori-Anti
Department: Food Science and Technology
Meeting: American Academy of Allergy, Asthma and Immunology
Place: Philadelphia, Pennsylvania

Name: David M. Guderian
Department: Nutrition and Health Sciences
Meeting: American Society for Nutrition
Place: San Diego, California

Name: Heather Rasmussen
Department: Nutrition and Health Sciences
Meeting: American Society for Nutrition
Place: San Diego, California

Name: Karina R. Lora
Department: Nutrition and Health Sciences
Meeting: American Society for Experimental Biology
Place: San Diego, California

Name: Sarah Ehlers
Department: Nutrition and Health Sciences
Meeting: Etomological Society of America
Place: San Diego, California

Name: Yap Ching Chew
Department: Nutrition and Health Sciences
Meeting: American Society for Nutrition
Place: San Diego, California

Name: Yousef Hassan
Department: Nutrition and Health Sciences
Meeting: American Society for Nutrition
Place: San Diego, California

Name: Young-Ki Park
Department: Nutrition and Health Sciences
Meeting: American Society for Nutrition
Place: San Diego, California

Name: John Quinn
Department: School of Natural Resources
Meeting: Upper Midwest Organic Farming Conference
Place: La Crosse, Wisconsin

Name: Courtney Quinn
Department: School of Natural Resources
Meeting: National Water Conference
Place: Sparks, Nevada

Name: Weijie Xu
Department: Textiles, Clothing and Design
Meeting: American Chemical Society
Place: New Orleans, Louisiana

Mussehl Endowment

Seven 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)
Mahmoud K. Masa'deh (Animal Science)
"Dried Distillers Grains with Solubles in Laying Hen Rations"
Funded: $25,000 November 1, 2007- October 31, 2008

Sheila Scheideler (Animal Science)
Patricia Weber (Animal Science)
"The Effects of Social and Environmental Enrichments on Leg Strength and Welfare of Turkeys"
Funded: $25,000 November 1, 2007 - October 31, 2008

Jayne Stratton (Food Science and Technology)
Tamra Jackson (Plant Pathology)
Lloyd Bullerman (Food Science and Technology)
Soo-Hyun Chung (Food and Nutrition - Seoul, Korea)
"Prevalence & Detection of Mycotoxins in Dried Distillers Grains from Nebraska and Other Midwestern States"
Funded: $12,500 November 1, 2007 - October 31, 2008

Jens Walter (Food Science and Technology)
Sheila Scheideler (Animal Science)
Robert Hutkins (Food Science and Technology)
"Use of Probiotic Lactobacilla and Prebiotic Carbohydrates to Reduce Infections in Poultry"
Funded: $25,000 November 1, 2007 - October 31, 2008

Harshavardhan Thippareddi (Food Science and Technology)
Glenn Froning (Emeritus/Food Science and Technology)
"Microbiological Safety in Egg White Hydrolysate Manufacturing Process: *Bacillus cereus* and *Clostridium perfringens* Risk Evaluation"
Funded: $25,000 November 1, 2007 - October 31,2008

Randy Wehling (Food Science and Technology)
Jeyamkondan Subbiah (Biological Systems Engineering)
"Determination of Yolk Contamination in Egg White by Raman Spectroscopy"
Funded: $25,000 November 1, 2007 - October 31, 2008

Michael Zeece (Food Science and Technology)
Stephanie Jung (Food Science and Technology)
"Enhanced Egg White Functionality by Use of High Hydrostatic Pressure Treatment"
Funded: $25,000 November 1, 2007 - October 31, 2008

New or Revised Projects September and October 2007

NEB 21-139 SCD-325, The science and engineering for a biobased industry and economy
Investigator: Milford Hanna, Biological Systems Engineering
Status: Multistate project effective Oct. 1, 2007, through Sept. 30, 2012

NEB 24-159 Understanding effective rural economic development
Investigator: David Peters, Agricultural Economics
Status: Hatch project effective Oct. 1, 2007, through Sept. 30, 2012

NEB 26-181 NE1027, Ovarian influences on embryonic survival in ruminants
Investigator: Jennifer Wood, Animal Science
Status: Multistate project effective Oct. 1, 2007, through Sept. 30, 2012

NEB 31-112 Discovering the molecular foundations of lactobacillus reuteri autochthony in gut ecosystems
Investigator: Jens Walter, Food Science and Technology
Status: Hatch project effective Sept. 1, 2007, through Aug. 31, 2012

NEB 35-108 Development of plant disease management strategies in soybean
Investigator: Loren Giesler, Plant Pathology
Status: Hatch project effective Oct. 1, 2007, through Sept. 30, 2012

NEB 38-055 Alluvial architecture and late quatemare evolution of the Platte River Valley in East-central Nebraska
Investigator: Paul Hanson, School of Natural Resources
Status: Hatch project effective Aug. 1, 2007, through July 30, 2012

NEB 38-056 Ecology of deer and chronic wasting disease in Nebraska
Investigator: Scott Hygnstrom, School of Natural Resources
Status: Hatch project effective July 31, 2007, through July 31, 2012

NEB 38-057 Mapping, quantifying, and predicting current and future invasive plant species spread in the North Platte corridor
Investigator: Sunil Narumalani, School of Natural Resources
Status: Hatch project effective Aug. 1, 2007, through July 31, 2012

NEB 39-146 *Mannheimia haemolytica*: Characterization of isolates associated with fatal bronchopneumonia of cattle
Investigator: David McVey, Veterinary and Biomedical Sciences
Status: Hatch project effective Sept. 1, 2007, through Aug. 31, 2012

NEB 39-147 NC 1041, Enteric diseases of swine and cattle: prevention, control and food safety
Investigator: Rodney Moxley, Veterinary and Biomedical Sciences
Status: Multistate project effective Oct. 1, 2007, through Sept. 30, 2012

Proposals Submitted for Federal Grants September and October 2007

The following is a listing of proposals that were submitted during September and October 2007 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.

Richard Koelsch and Loren Isom – USDA-CSREES – Co-location of a bio-diesel plant, oilseed crush facility, methane digester and hog operation – $26,575

Scott Hygnstrom – USDA-APHIS – Toward the development of spatially explicit models of wildlife disease – $120,000

James Specht – USDA-ARS – Genetic mapping and applications of single nucleotide polymorphism (SNP) DNA markers in soybean – $38,000

David Peters, Miguel Carranza, Bruce Johnson and Randolph Cantrell – North Central Regional Center for Rural Development – The community, social and economic effects of immigration enforcement: A case study of Grand Island, Nebraska – $17,812

Robert Hutkins and Rodney Moxley – BARD Binational Agricultural Research and Development Fund – Commercial probiotic oligosaccharides as anti-adhesive agents for the prevention of bacterial infectious diseases – $201,600

James Van Etten – NIH – DNS replication and gene expression of chlorella viruses – $297,635

Steve Thomas – NSF – NPARS2: A stoichiometric approach to coupled N and P cycling in headwater streams – $51,345

Sally Mackenzie – USDA-CSREES – Training graduate students in plant breeding using crop drought tolerance improvement as a model – $399,999

Daniel Snow – U.S. Fish and Wildlife Service – Water Science Lab/Agreement between UNL Water Sciences Laboratory and the U.S. Fish and Wildlife Service – $31,410

Paul Hanson – NSF – Dune Undergraduate Geomorphology and Geochronology Project in Wisconsin – $82,680

Steve Hu – NOAA – Transition of weather and climate forecasts into effective decision-making tools – $99,953

Yiqi Yang and Narendra Reddy – NSF – Grafted and crosslinked starch fibers and films for tissue engineering applications – $195,473

Gary Cunningham – USDA-ARS – Research at MARC – $4,709,700

Yiqi Yang and Narendra Reddy – NSF – Plant protein based fibers and their products for controlled release applications – $196,637

P. Stephen Baenziger and Stephen Wegulo – U.S. Wheat and Barley Scab Initiative – To enhance variety development of scab resistant hard winter wheat varieties in Nebraska – $99,426

Stephen Wegulo – U.S. Wheat and Barley Scab Initiative – Integrating strategies to mitigate fusarium head blight and DON in winter wheat – $26,536

Kenneth Cassman – University of Minnesota – Sustainable biorefining systems for corn ethanol in the North Central Region: Local Impact Study – $25,000

Steven Harris – U.S.Wheat and Barley Scab Initiative – GPI-anchored proteins and virulence in *fusarium graminearum* – $47,586

Charles Wood, Peter Angeletti, Luwen Zhang and You Zhou – NIH – Viral latency and persistent infections in AIDS associated oral malignancies – $5,527,544

Brian Fuchs – NOAA – Enrichment of drought-monitoring information for the United States – $107,675

Raul Barletta – USDA-CSREES – Testing and development of *mycobacterium paratuberculosis* live attenuated vaccines – $84,136

Raul Barletta – USDA-CSREES – Role of PPE and related proteins in the immunopathogenesis of paratuberculosis – $95,698

Marjorie Lou – NIH – Protein-thiol mixed disulfide in cataractogenesis – $494,711

James Steadman – USDA-Michigan State University – Bean and Cowpea CRSP Project – $11,187

Mark Svoboda, Meghan Sittler, Kelly Smith, Cody Knutson and Donna Woudenberg – NOAA-SARP – Development of a Drought Ready Communities Program – $288,670

Kenneth Hubbard, Christy Carlson, William Sorensen, Jun Li, Sebastien Korner and Jae Ryu – NOAA-TRACS – A temporal and spatial climate analysis tool for ACIS – $284,593

Mark Svoboda – NOAA-Storm Center Communication Inc. – Implementing a rapid response drought DSS for decision makers and the media – $80,054

Xiaomao Lin and Kenneth Hubbard – NOAA-CCDD – Bayesian daily homogeneity and assessment of uncertainty in the U.S. daily max/min temperatures and their extremes – $447,584

Jae Ryu, Mark Svoboda, Cody Knutson, Tsegaye Tadesse, Meghan Sittler, Soren Scott and Christy Carlson – NOAA – A methodology for improving hydrologic drought predictions and visualization – $467,653

David Billesbach – U.S. Department of Energy-Lawrence Berkeley National Laboratory – Carbon flux measurements at the ARM Southern Great Plains Central Facility – $62,051

Kenneth Hubbard and Jinsheng You – NOAA – Implementing the Lincoln Accord: A QA framework for essential climate variables of temperature, precipitation, and snow – $199,956

Qi Hu, Robert Oglesby and Song Feng – NOAA – Understanding the role of North Atlantic SST forcing on warm season precipitation and drought in North America – $354,672

Kenneth Hubbard and Xiaomao Lin – NOAA-CCDD – A regional signal of climate change in observed vertical temperatures of the near surface layer – $270,836

Ji-Young Lee and Jens Walter – NIH – Evaluation of anti-atherogenic role of blue-green algae – $1,264,323

Donald Rundquist – NOAA-Florida A&M University – Remote sensing services in support of the Florida A&M Environmental Cooperative Science Center – $40,000

Rhae Drijber – USDA-ARD – Developing technologies to improve soil and nutrient management – $43,000

John Yohe – USAID – INTSORMIL - Sorghum, Millet and Other Grains Collaborative Research Support Program – $2,900,000

Dean Eisenhauer – U.S. Forest Service-Southern Research Station – Estimates of riparian evapotranspiration in the Arid Great Plains – $9,000

Shashi Verma – U.S. Department of Energy – Carbon sequestration in dry land and irrigated agroecosystems: Qualifications at different scales for improved prediction – $350,000

Gary Hein – USDA-ARS – Mite transmission of wheat streak mosaic virus mutants – $60,000

Greg Somerville – NIH – Aconitase mediated signal transduction in staphylococcus epidermidis – $1,385,823

Janos Zempleni – NIH – Biotin deficiency impairs silencing of repeat regions and retrotransposons – $1,643,045

George Graef – USDA-ARS – Sclerotinia resistance enhanced by accumulation of QTL transgenic approaches – $69,978

David Jones and Amalia Yiannaka – USDA-Oklahoma State University – Interdisciplinary innovation education to solve real business and design problems – $139,405

Yiqi Yang and Narendra Reddy – The Consortium for Plant Biotechnology Research – High quality protein fibers from wheat gluten for industrial applications – $50,000

Fernando Osorio – National Pork Board – Rational design of a new generation of PRRSV differential (marker) vaccines (renewal 2007) – $109,313

David Steffen – USDA-APHIS – AI lab testing for state of Nebraska – $8,000

Yiqi Yang and Narendra Reddy – NIH – Plant protein fibers and fibrous substrates as a new class of materials for tissue – $565,389

Paul Hanson, Robert Joeckel and Mark Kuzila – USGS – FY2008 State Map – $82,836

John Yohe – USAID-Agency for International Development – Transfer of Sorghum and Millet Production, Processing and Marketing Technologies Program in Mali – $750,000

Donald Becker – NIH – Coordination of functions by proline metabolic proteins – $566,381

Gary Brewer and Frederick Baxendale – USDA-ARS – Identifying critical stimuli for the attraction and oviposition of stable fly (*Stomoxys calcitrans* L.) populations – $80,000

Grants and Contracts Received for September and October 2007

Agricultural Research Division:

Gary Cunningham – USDA-ARS-NPA	$923,600.00

Agronomy and Horticulture:

Ken Cassman, James Specht, Daniel Walters, Achim Dobermann, Haishun Yang and Suat Irmak – Nebraska Soybean Board	$58,484.00
Kenneth Cassman – Kansas State University	$25,000.00
Kenneth Cassman – University of Minnesota	$25,000.00
George Graef – United Soybean Board	$74,619.00
George Graef – Nebraska Soybean Board	$51,500.00
George Graef and James Specht – Nebraska Soybean Board	$176,768.00
George Graef, Loren Giesler and James Specht Nebraska Soybean Board	$16,660.00
Roy Spalding and Mary Spalding – Nebraska Ethanol Board	$25,122.00
James Specht – USDA-ARS	$38,000.00
Miscellaneous Grants under $10,000 each	$46,000.00

Animal Science:

Andrea Cupp, John Weber and Brett White – NIH-NICHD	$252,588.00
Phillip Miller – Nebraska Corn Board	$26,000.00
Sheila Scheideler – Midwest Poultry Research Program	$31,869.00
Miscellaneous Grants under $10,000 each	$7,500.00

Biochemistry:

Thomas Clemente and George Graef – Nebraska Soybean Board	$71,796.00

Biological Systems Engineering:

David Jones and Amalia Yiannaka – USDA-Oklahoma State University	$139,405.00

Entomology:

Leon Higley and Stephen Spomer – Nebraska Game and Parks Commission	$138,000.00
Miscellaneous Grants under $10,000 each	$2,500.00

Food Science and Technology:

Miscellaneous Grants under $10,000 each	$7,957.00

Northeast Research and Extension Center:

Stevan Knezevic, Charles Shapiro, Thomas Hunt, Mark Bernards and Craig Allen – USGS	$182,286.00
Miscellaneous Grants under $10,000 each	$18,475.00

Panhandle Research and Extension Center:

Miscellaneous Grants under $10,000 each	$54,700.00

Plant Pathology:

Amit Mitra – Nebraska Soybean Board	$28,060.00
James Steadman – USDA-Michigan State University	$11,187.00
James Van Etten – NIH	$297,635.00
Gary Yuen – USDA-ARS	$36,976.00
Miscellaneous Grants under $10,000 each	$16,200.00

School of Natural Resources:

Kyle Hoagland – National Park Service	$10,616.00
Steve Hu – NOAA	$99,953.00
Ken Hubbard, Haishun Yang, Ken Cassman, Achim Dobermann and Jinsheng You – NOAA	$68,927.00
Scott Hygnstrom – USDA-APHIS	$120,000.00
Cody Knutson, Mark Svoboda and Jae Ryu – NOAA	$108,088.00
Mark Kuzila – Nebraska Department of Natural Resources and USDA-NRCS	$75,000.00
John Lenters – NSF	$114,087.00
James Merchant – Nebraska Department of Health and Human Services	$128,100.00
Sunil Narumalani – National Park Service	$125,341.00
Donald Rundquist – NOAA-Florida A&M University	$40,000.00
Steve Thomas – NSF	$51,345.00
Shashi Verma – U.S. Department of Energy	$350,000.00
Miscellaneous Grants under $10,000 each	$19,500.00

Statistics:

Kent Eskridge – Nebraska Department of Health and Human Services	$23,427.00
Marjorie Lou – NIH	$494,711.00
David Steffen – Nebraska Department of Agriculture-USDA	$94,052.00

Veterinary and Biomedical Sciences:

Miscellaneous Grants under $10,000 each	$8,000.00

Water Center:

Daniel Snow – U.S. Fish and Wildlife Service	$11,410.00

West Central Research and Extension Center:

Miscellaneous Grants under $10,000 each	$8,000.00
TOTAL:	**$4,734,444.00**