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COLLEGE OF ENGINEERING  
RESEARCH QUARTERLY

FEBRUARY 2018



FROM THE COE

# ADR



MARK RILEY, PH.D.

Hello and welcome to the reconfigured Engineering Research Quarterly. This avenue was previously used by the college's ADR Namas Chandra to share news of awarded projects, federal funding trends and on-campus activities and equipment available to college researchers.

Times and people have changed since then; however, we still have a need to convey our ongoing projects and opportunities. We will be using this approach on a quarterly basis, along with updates sent within the biweekly COE Update and in updates to the college Research website.

I have been in the position of Associate Dean for Research now for six months and am very impressed by the people and impactful projects in the college. One of my primary goals as ADR is to support faculty in developing and funding impactful research programs, especially in building multidisciplinary teams that address major socio-technological challenges facing Nebraska, the nation and the world.

I have been meeting with faculty and seeking concepts of grand challenges for which the college has expertise and interest in pursuing for large-scale initiatives. Common themes that have developed are Big Data in the Built Environment, Biomedical Engineering, Energy, Materials and Advanced Manufacturing, Defense and Security, and Engineering in Agriculture. The college has numerous cross-departmental activities in each of these spaces, has funding from internal and external sources, and has potential for deep impact on grand challenges.

We are in the midst of a major revision to the Research website to focus around these six research themes. We have already made many changes to the site to provide information on support, activities and policies. We will be asking for your feedback and ideas on these topical areas and how we can organize teams to raise the profile of our research.

I am happy to meet with our faculty and staff to talk about research and opportunities. While there is much discussion on challenges related to budget, we are fortunate at the university to have a strong financial foundation and opportunities to gain support for developing our research initiatives.

This report is intended as a brief summary of new projects and activities in the college.

I look forward to working with you all to grow and strengthen our research programs.

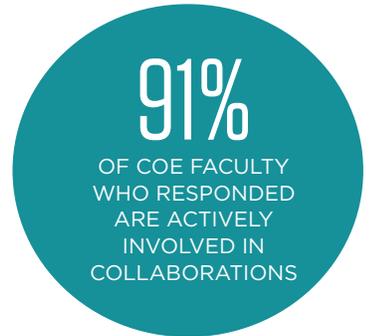
# COE ENGAGEMENT SURVEY SUMMARY

This past fall, ADR Mark Riley worked with UNL's Bureau of Sociological Research to survey the COE faculty on their experiences and goals for collaborations and partnerships.

Surveys were sent to 236 faculty; 128 (53%) responded.

The results of this survey will be posted to the college Research website. A few of the more notable responses include:

- 91% of respondents are currently involved in an active collaboration, and 82% of collaborations are outside of the college.
- Many respondents reported no major barriers to forming their most impactful collaborations; however, many mentioned challenges in obtaining and sustaining funding.
- Nearly 40% of faculty expressed an interest in participating in a regularly scheduled proposal writing group.
- While about 36% of faculty respondents participate in a Research Center and 36% of respondents participate in a Core Facility, about 61% of faculty expressed an interest in participating in Research Communities. Major barriers to forming such communities included a lack of knowledge of others' research expertise and lack of communication between fields. To address these points, faculty expressed an interest in the college hosting interdisciplinary meetings, workshops, seminars and task forces across departments to encourage interactions across departments and with external stakeholders.



The responses to the open-ended question on the types of research communities respondents are interested in forming showed a broad array of interests:

Topical area	# of responses
Big Data, Computational Science, Data Science	22
Biomedical Engineering	11
Manufacturing (additive, advanced, bio)	10
Built environment	9
Materials	6
Energy	5
Defense / security	5
Environmental	3
Human performance / ergonomics / biomechanics	3

Several individuals answered that they were supportive of participating in communities but had no specific areas to suggest. The most notable response was, "Any activity that can facilitate scientific discussions is of great importance." *[More on Page 3]*

In summary, this survey provides a good foundation for areas of need for developing programming and activities to support COE faculty research. Clearly, we need to place a larger emphasis on communications and sharing information on the activities in which our faculty are engaged.

One step we are taking toward this end is a major update of the college Research website to make this a source of timely information for our faculty, staff, and students, and for making connections with partners. Some of these updates are described on page 4, while other updates to the college research areas are in process.

If you see ideas or opportunities to increase our communications, please contact ADR Riley: [mriley3@unl.edu](mailto:mriley3@unl.edu).

### **Budgeting for collaborative proposals at UNMC, UNO or UNK**

When developing a new project with collaborators at another NU campus, please engage the UNL pre-award office in the development of your budget.

Several recent projects have been submitted directly by other campuses but have not included full budget information on UNL COE faculty.

### **Core Facility Grant Program for Users New to a Technology**

This grant program is aimed at encouraging faculty to employ University of Nebraska (NU) core facilities in their research. Awards are intended to be used to gather new or additional data for strengthening a grant proposal (new or resubmission) or for addressing reviewer concerns associated with a peer-reviewed manuscript. Applications will be reviewed on a rolling basis through May 1, 2018. Note that if you are already a user of a core facility, you can still apply for support if you are using equipment or an analysis you have not used previously.

<https://engineering.unl.edu/downloads/Labs/NERcF/NU-Core-Facility-New-User-Program-Program-Description.pdf>

### **NSF I-Corps proposal for development of commercialization**

UNL is submitting an NSF I-Corps proposal in February to form what it terms an I-Corps Site. Such programs work with academic scientists and engineers to extend their focus beyond the university laboratory to accelerate the economic and societal benefits of NSF-funded, basic-research projects. The aim is to support multiple local teams to transition their technology concepts into the marketplace. The sites provide infrastructure, advice, resources, networking opportunities, training and modest funding to enable groups to transition their work into the marketplace or into becoming NSF I-Corps Team applicants. Sites are single-institution efforts to support innovation locally; the proposal here will be for the NU system. More information: [https://www.nsf.gov/news/special\\_reports/i-corps/](https://www.nsf.gov/news/special_reports/i-corps/)

# UPDATES TO COE RESEARCH WEBSITE

The college has made a number of substantial changes to the Research website so we can provide up-to-date information on events, projects and activities.

## STUDENT OPPORTUNITIES

*Student Opportunities: reachable from the drop down navigation on the Research page or at: <https://engineering.unl.edu/research/student-research-opportunities/>.*

This site has been reconfigured to help students and potential students see opportunities to perform research in COE faculty laboratories, in UNL programs, and national programs (like REU's, National Laboratories, etc).

When a faculty member posts a student opportunity, it appears on this page and on their personal faculty page. Each faculty member can add and delete their own opportunities (Matt Honke <mhonke10@unl.edu> can show individuals how). As the number of faculty laboratory opportunities grow, we will continue to reorganize.

## RESEARCH CALENDAR

The Research Calendar (bottom of the Research page) includes upcoming research events such as seminars, workshops and application deadlines.

We are seeking input from COE faculty and staff to update these events to help publicize your activities to the college and beyond. We encourage you to include announcements of graduate student dissertation defenses, faculty interviews, and additional open activities.

Each department has a coordinator who can add events to the web calendar. Matt Honke <mhonke10@unl.edu> is the college contact for technical difficulties.

### College of Engineering Research - Upcoming Events

<b>FEB</b> <b>5</b> 12:00 AM	UCARE Application Period: Academic Year 2018-19 LOVE LIBRARY SOUTH	<b>FEB</b> <b>7</b> 4:00 PM	UCARE Application Workshop NEBRASKA EAST UNION	<b>FEB</b> <b>7</b> 10:00 PM	XSEDE HPC Monthly Workshop - Big Data UNIVERSITY OF NEBRASKA-OMAHA
<b>FEB</b> <b>16</b> 12:30 PM	Biomedical Engineering Seminar Series SCOTT ENGINEERING CENTER ROOM: 237	<b>FEB</b> <b>17</b> 8:30 AM	Master's Thesis Defense: Rachel Stevens (MSYM) CHASE HALL ROOM: 219	<b>MAR</b> <b>16</b> 8:30 AM	Writing Winning Grant Proposals NEBRASKA INNOVATION CAMPUS CONFERENCE CENTER ROOM: AUDITORIUM

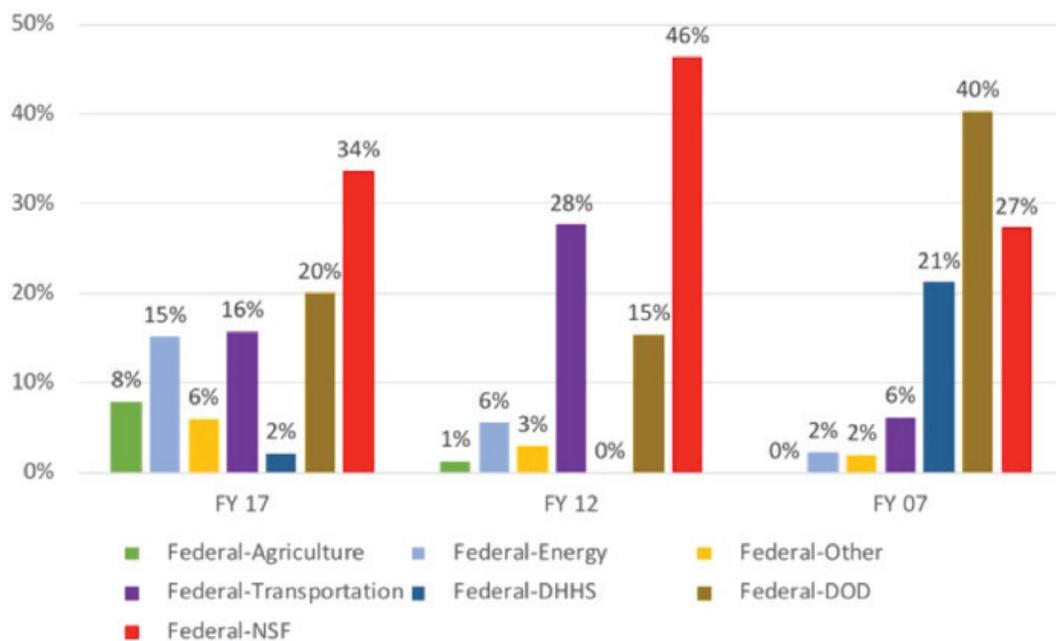
# RESEARCH EXPENDITURES

Historically, the College of Engineering has garnered on average 58% of its research funding from federal sources, with Industry (13%), State Agencies (12%), and collaborations with other Universities (9%) providing somewhat smaller portions.

Over the past 10 years, the proportion of federal funding has shifted from 41% DOD and 24% NSF to now having 23% DOD and 46% NSF. DOT funding has remained fairly steady at around 13%.

UNL Chancellor Ronnie Green has set aggressive growth goals for the institution, and the College of Engineering will be expected to increase and diversify its funding portfolio in the coming years.

COE Federal Research Sponsors (1 yr snapshot)



## Are you seeking support to develop a new research program?

Visit the ORED listing of Internal Funding Opportunities (<http://research.unl.edu/internal-funding-opportunities/>). See the Layman Awards and the Research Council Awards.

## Need funding to travel to a sponsor to discuss research funding or to present your research at a national or international program?

COE has funding available for faculty travel on research missions. The college can provide up to \$750 per trip with 50% cost share from the faculty member's home department. See <https://engineering.unl.edu/downloads/employee-resources/COE%20Request%20for%20Travel%20funds.pdf>

# NEW PROJECTS (July - December 2017)

Below is a listing of new projects garnered by COE faculty over the past six months. Note that the amount awarded represents the total project funds. Collaborators outside the college are generally not listed. The table is organized alphabetically by sponsor name.

Project Title	Sponsor	PI and Other Investigators	Amount
Adobe Systems Donation for Research Activities	Anonymous	Sheng Wei	\$20,000
Tech Transfer and cGMP Production of Hsc70	Anonymous	Wallace Buchholz	\$351,322
Effect of Confinement on Drop Coalescence: Lab Model Study of Oil Drop Coalescence for Enhanced Oil Recovery	Amer Chem Soc/Petrol Rsch Fund	Sangjin Ryu	\$110,000
ABC Group SRA: Center for Electromagnetic Concrete R&D and Shielding Innovations	Anonymous	Lim Nguyen	\$301,408
900-kg Car Computer Simulation of the RESTORE Barrier	Anonymous	Jennifer Schmidt, Ronald Faller	\$9,216
Ultrasonic Characterization of Steel Microstructures	Anonymous	Joseph Turner	\$12,000
ASHRAE New Investigator Award	ASHRAE	David Yuill	\$50,000
Comparison of Wastewater Derived Biosolids and Anaerobic Digestion Compost	Anonymous	Shannon Bartelt-Hunt	\$20,000
Multifunctional Dressing for Treatment of Diabetic Wounds	Biomedical Research Seed Grants	Ali Tamayol, Ryan Pedrigi	\$50,000
Ergonomic Back Injury Risk Factors in Construction Glass and Glazing Work	Ctr for Construction Research and Training	Terry Stentz, Changbum Ahn	\$30,000
Genomics and Phenomics to Identify Yield and Drought Tolerance Alleles for Improvement of Camelina as a Biofuel Crop	Dept of Agriculture-ARS	Yufeng Ge	\$94,487
Cultivating ACCESS: Agriculture Career Communities to Empower Students in STEM	Dept of Agriculture-NIFA	Deepak Keshwani, Jenny Keshwani	\$94,387
Reconfiguring Farmers Behavior to Reduce Irrigation Water Use through Water Measurements and Social Norms Interventions: A Case Study in the Republican River Basin	Dept of Agriculture-NIFA	Lameck Odhiambo	\$453,539
Hydrological Modeling of Soil and Water Assessment Tool within Big Sandy Creek Watershed	Dept of Agriculture-NRCS	Aaron Mittelstet	\$25,031
Procedure for Updating Yield Reduction Tables	Dept of Agriculture-RMA	Derral Martin	\$4,320
Fiber-Optic Bolometer and Calorimeter Arrays for Magnetically Confined Plasmas	Dept of Energy	Ming Han	\$99,109
Systems Analysis of the Physiological and Molecular Mechanisms of Sorghum Nitrogen Use Efficiency, Water Use Efficiency and Interactions with the Soil Microbiome	Dept of Energy	Yufeng Ge	\$2,648,528
Wireless Digital Train Line for Passenger Trains: Exploring Railroad Requirements, Achieving Synergy, and Designing WIDL for Next-Generation Passenger Rail Services	Dept of Transportation-FRA	Hamid Sharif-Kashani, Michael Hempel	\$100,073
Using Cell Priming and Telecommunications Modeling to Enhance Gene Delivery for Stem Cell Therapies (DP2)	DHHS-NIBIB	Angie Pannier	\$2,197,500
In-Situ Electron Microscopy of DNA-Guided Self-Assembly and Reconfiguration of 3D Nanocrystal Superlattices	DOD-Army Research Office	Eli Sutter, Peter Sutter	\$144,532
Post-Detonation Radiological and Nuclear Forensics Using Laser-Assisted Mass Spectrometry in Open Air Narrow-Linewidth and Wavelength-Tunable Semiconductor Laser for Fiber-Optic Acoustic Emission Sensor System	DOD-Defense Threat Reduction Agency	Yongfeng Lu	\$150,000
Portable Fiber Laser System and Method to Remove Pits and Cracks on Sensitized Surfaces of Aluminum Alloys	DOD-Office of Naval Research	Ming Han	\$150,000
Inspection of Steel-Concrete Components	DOD-Office of Naval Research	Yongfeng Lu	\$400,000
Enhancing Sustainability of Nebraska Business through Process Assessments	Electric Power Research Inst (EPRI)	Jinying Zhu	\$10,036
COBRE: Center for Perception and Communication in Children	Environmental Protection Agency	Bruce Dvorak, George Gogos, Robert Williams	\$19,513
Radar 2021	Father Flanagan's Boys Town	Lily Wang	\$3,111
Development and Dissemination of a Benchmark Dataset to Stimulate 3D Image-Based Plant Phenotyping Research	Anonymous	Yongfeng Lu	\$35,001
ATV Mule	Iowa State University	Sruti Das Choudhury, Ashok Samal	\$5,000
Magnetic Abrasive Finishing (MAF) of Metal 3D Printed Parts	Anonymous	Joe Luck	\$5,976
Enhancing Low-Moisture Food Safety by Improving Development and Implementation of Pasteurization Technologies	Layman Fund	Prahalada Rao	\$10,000
Development of High Performance Lightweight Material for HIPPS Building	Michigan State University	Jeyam Subbiah	\$87,515
Development of High Performance Lightweight Material for HIPPS Building	Anonymous	Jiong Hu, Daniel Linzell	\$48,812
Evaluating Growing Season Length and Productivity across the ABOVE Domain using Novel Satellite Indices and a Ground Sensor	Anonymous	Jiong Hu, Daniel Linzell	\$16,452
RTLS-Scan, A Tool for the Automated Collection of Space Utilization Data	NASA	David Billesbach	\$231,288
Biological Field and Laboratory Support	NASA	Robert Williams, Lance Perez	\$68,579
Detection of Nuclear Threats using Deployable Sensors	Natl Strategic Rsch Inst (NSRI)	Benjamin Terry	\$110,000
En-Route Care for Acute Respiratory Distress Syndrome (ARDS) Maturation	Natl Strategic Rsch Inst (NSRI)	Carrick Detweiler, Sebastian Elbaum, Justin Bradley, Brittany Duncan	\$272,340
Functionalized Metallic Surfaces for Enhanced Heat Transfer, Drag Reduction, and Novel Power Sources	Natl Strategic Rsch Inst (NSRI)	Benjamin Terry	\$1,215,434
Fundamental Studies on Functionalizing Metallic Surfaces with Applications to Enhanced Heat Transfer and Drag Reduction; Novel Power Sources	Natl Strategic Rsch Inst (NSRI)	Dennis Alexander, Craig Zuhlke, Natale Ianno, George Gogos	\$91,253
Industrial Control System Cyber-Security Monitoring Solution	Natl Strategic Rsch Inst (NSRI)	Craig Zuhlke, Dennis Alexander, Natale Ianno, George Gogos, Jeffrey Shield	\$168,727
Advancing the Science of Dry-Aged Beef	Natl Strategic Rsch Inst (NSRI)	Hamid Sharif-Kashani, Michael Hempel	\$8,356
Connecting Nebraska Communities Driving Americas Fuel - II	Ne Beef Council	Jeyam Subbiah	\$38,136
Genomes to Fields (G2F) - Predicting Final Yield Performance in Variable Environments Through Consecutive Phenotyping Measurements Across the Growing Season	Ne Community Energy Alliance	Moe Alahmad	\$13,000
Implementation of Field to Market Sustainability Principles in Nebraska	Ne Corn Board	Yufeng Ge	\$47,945
Source Reduction Assistance and Applied Research to Nebraskas Manufacturers: Building on Partnerships to Maximize Impact	Ne Corn Board	John Hay, Richard Koelsch	\$25,896
A Method for Culturing Induced Pluripotent Stem Cells	Ne Dept Environmental Quality	Bruce Dvorak, Robert Williams	\$99,820
MASH TL-3 Evaluation of the Ohio Single-Slope Concrete Barrier	Ne Dept Health & Human Serv	Yuguo Lei, Anuradha Subramanian	\$110,000
New York State DOT Transition Between Box-Beam & W-Beam Guide Rail Under AASHTO MASH 2016 TL-3 Guidelines	Ne Dept of Transportation	Ronald Faller, Robert Bielenberg	\$135,414
Cost-Efficient, TL-2 Bridge Rail for Low Volume Roads	Ne Dept of Transportation	Ronald Faller, Mojdeh Asadollahipajouh, Jim Holloway, Karla Lechtenberg, Sagheer Ranjha	\$236,626
CPT Based Pile Design	Ne Dept Roads	Scott Rosenbaugh, Ronald Faller, Robert Bielenberg	\$145,053
Development and Implementation of a Moving Nondestructive Evaluation Platform for Bridge Deck Inspection	Ne Dept Roads	Chung Song, Seunghee Kim	\$105,846
Development of a DSR Test Method to Determine Binder Low Temperature Properties	Ne Dept Roads	Jinying Zhu, Chungwook Sim	\$159,583
Development of a Non-Destructive Testing (NDT) Tool for in-Situ Assessment of Prestressed Components	Ne Dept Roads	Yong Rak Kim	\$107,280
Development of High Performance Rapid Patching Materials for Pavement Repair	Ne Dept Roads	Jinying Zhu, George Morcouc	\$79,880
Evaluation of Reducing Cement Content in NDOR Class R Combined Aggregate Gradations	Ne Dept Roads	Jiong Hu, Yong Rak Kim	\$140,796
Feasibility Study of Development of UHPC for Highway Bridge Applications in Nebraska	Ne Dept Roads	Jiong Hu, Yong Rak Kim	\$102,149
Research on High-RAP Mixtures with Rejuvenators and WMA Additives - Phase II	Ne Dept Roads	Jiong Hu, George Morcouc	\$104,595
		Yong Rak Kim	\$149,951

# NEW PROJECTS

## (July - December 2017)

Restricted Crossings on Rural Highways	Ne Dept Roads	John Sangster	\$78,729
Recycling of Carbon from Coal and Natural Gas to Methanol and Carbon Black at Sheldon Station	Ne Public Power District	Yasar Demirel	\$20,000
Implementation of Cover Crops in Nebraska Corn and Soybean Cropping Systems	Ne Soybean Board	Derek Heeren	\$100,000
Integrating High Throughput Field Phenomics into Nebraska Soybean Breeding	Ne Soybean Board	Yufeng He	\$53,000
Influence of Preferential Flow on Coupled Colloid, Nitrogen, and Phosphorus Transport Through Riparian Buffers	North Carolina State Univ	Derek Heeren	\$8,743
Combined Macroscopic and Nanoscopic Studies of the Photovoltaic Behavior of Organic Perovskite Solar Cells	NSF	Jinsong Huang	\$163,694
CPS: Medium: Cyber-Enabled Online Quality Assurance for Scalable Additive Bio-Manufacturing	NSF	Prahalada Rao	\$200,000
EAGER: Bio-Inspired Assurance and Regression Testing to Secure Organic Programs	NSF	Myra Cohen	\$299,371
NeTS: Small: Cooperative Interference-Embracing Communication in Multi-Hop Wireless Networks	NSF	Qiben Yan	\$249,995
SHF:Small: Holistic Analysis: integrating the Semantics of the World and the Code	NSF	Sebastian Elbaum, Carrick Detweiler	\$484,694
SI2-SSI Data Intensive Analysis for High Energy Physics (DIANA/HEP)	NSF	Brian Bockelman	\$65,000
Spatial Skills and Success in Introductory Computing	NSF	Stephen Cooper	\$200,000
SpecEES: CoSeC-RAN: Cognitive Secure Cloud RAN for Efficient Spectrum Sharing	NSF	John Vuran, Qiben Yan	\$435,399
R11 Track-2 FEC: Comparative genomics and phenomics approach to discover genes underlying heat stress resilience in cereals	NSF-EPSCoR	Hongfeng Yu	\$2,998,837
Develop Human Neural Progenitor-Based In Vitro Models for Mild Traumatic Brain Injury	NU Foundation	Lance Perez	\$50,000
6 Oculus Rift and 6 Oculus Touch Units	Anonymous	Christopher Bourke	\$4,788
A Novel, Translational, Multidisciplinary Approach to Control Poultry Respiratory Diseases in the United States	Ohio State University	Wayne Woldt	\$25,000
Create eLearning in NIFA Challenge Areas to Transform Education of Controlled Environment Animal Production (eCEAP) for Sustainability	Ohio State University	Rick Stowell	\$21,791
STTR: Corrosion Resistant Missile Cell Hatch Cover	Anonymous	Yuris Dzenis	\$55,000
Glottal Jet Aerodynamics	Pennsylvania State University	Tim Wei	\$39,999
Securing Water for and from Agriculture through Effective Community & Stakeholder Engagement	Pennsylvania State University	Chittaranjan Ray	\$249,874
Eliminating Rebar Splicing in Transverse Joints of Precast Full Depth Bridge Deck Panels	Anonymous	Chungwook Sim	\$35,000
Development of a Gastrointestinal Tissue Attachment Mechanism	Anonymous	Benjamin Terry	\$250,000
Nucleation control of conjugated polymers through melt-crystallization parameters and self-seeding	Research Council Faculty Seed Grants	Lucia Fernandez-Ballester	\$10,000
Privacy-preserving Mobile Health System Integrated with Social Network for Infectious Disease Analysis	Research Council Faculty Seed Grants	Kuan Zhang	\$6,600
Treatment of nitrate and atrazine impaired surface water using immobilized algae beads for artificial recharge of groundwater	Research Council Faculty Seed Grants	Ashraf Aly Hassan	\$10,000
Model Guided Design, Fabrication, and Characterization of Conducting Polymer-based Supercapacitors	Research Council Grants-in-Aid	Mona Bavarian, Siamak Nejati	\$10,000
A systems biology approach to elucidate the temporal dynamics of rice leaf responses to drought and salinity stress	Research Council Interdisciplinary Grants	Rajib Saha, Harkamal Wallia, Toshihiro Obata	\$20,000
Design and Fabrication of an Enzymatically Active Biogas Upgrading Module	Research Council Interdisciplinary Grants	Siamak Nejati, Nicole Buan, Yasar Demirel	\$20,000
Laser Manufacturing of Advanced Ceramics for Extreme Environments	Research Council Interdisciplinary Grants	Bai Cui, Yongfeng Lu	\$20,000
Two-Photon-Polymerization for Rapid Direct-Writing of Target Components	Anonymous	Yongfeng Lu	\$25,000
Two-Photon-Polymerization for Rapid Direct-Writing of Target Components	Anonymous	Yongfeng Lu	\$37,033
High Through Put Phenotyping to Accelerate Biomass Sorghum Improvement	South Dakota State University-NCRSGC	Yufeng Ge, Sibel Irmak	\$37,772
Construction and Screening of Yeast Strains Producing Perlecan Domain V	Anonymous	Wallace Buchholz, Scott Johnson	\$67,402
Low-Cost, Sacrificial, Energy-Absorbing, Crash Cushion	Anonymous	Ronald Faller, Jennifer Schmidt, Cody Stolle, Robert Bielenberg, Jim Holloway, Karla Lechtenberg, Scott Rosenbaugh	\$135,861
MURI Center for Material Failure Prediction through Peridynamics	Univ of Arizona	Florin Bobaru	\$201,561
Long-Term Maize-Based Agro-Ecosystem Core Sites as Part of the AmeriFlux Management Project Network	Univ of California-Berkeley Natl Lab	Adam Liska	\$56,500
SHF: Small: Efficient Formal Analysis of Evolving Software Systems	Univ of California-Irvine	Hamid Bagheri	\$16,000
CICI: CE: SciTokens: Capability-Based Secure Access to Remote Scientific Data	Univ of Illinois-Urbana/Champaign	Brian Bockelman	\$100,673
Directional Superradiant Light Emission from Epsilon-Near-Zero Plasmonic Nanochannels	Univ of Memphis	Christos Argyropoulos	\$47,951
Producing and Purifying the Plasmodium vivax Circumsporozoite Protein (CSP) from Pichia pastoris	Univ of Sao Paulo	Wallace Buchholz, Scott Johnson	\$84,973
Open Science Grid Consortium: The Next Five Years: Distributed High Throughput Computing for the Nation's Scientists, Researchers, Educators, and Students	Univ of Wisconsin-Madison	David Swanson	\$367,999
Nanoparticle-Mediated Treatment of Traumatic Brain Injury	UNMC-Univ of Ne-Medical Center	Forrest Kievit	\$183,125
The Evolution of Self-Assembled Organic Materials	UNMC-Univ of Ne-Medical Center	Sangjin Ryu	\$20,000
NSF INCLUDES DDLP: Scholars from Under-Represented Groups in Engineering and the Social Sciences: Minority SURGE Capacity in Disasters	UNO-Univ of Nebraska-Omaha	Terri Norton	\$29,999
UNO-NASA Space Grant: Atomic Layer Deposition of Silver on Metal Surfaces Functionalized Using Femtosecond Laser Surface Processing	UNO-Univ of Nebraska-Omaha	Craig Zuhlke, Dennis Alexander	\$10,000
UNO-NASA Space Grant: DTN Network Management for Cis-Lunar Space	UNO-Univ of Nebraska-Omaha	Byrav Ramamurthy	\$10,000
UNO-NASA Space Grant: Experimental Study of Secondary Pool Boiling Effects	UNO-Univ of Nebraska-Omaha	George Gogos	\$10,000
UNO-NASA Space Grant: Fall '17 and Spring '18 UNL/JPL Senior Design Project	UNO-Univ of Nebraska-Omaha	Shane Farrant	\$1,680
UNO-NASA Space Grant: Improving Energy Efficiency in Aerodynamical Flow Processes by Functionalized Surfaces	UNO-Univ of Nebraska-Omaha	Jae Sung Park	\$7,000
UNO-NASA Space Grant: NASA Nebraska Space Grant Fellowship 2017-2018 Bowman	UNO-Univ of Nebraska-Omaha	Francisco Munoz-Arriola	\$2,000
UNO-NASA Space Grant: NASA Nebraska Space Grant Fellowship 2017-2018 Davis	UNO-Univ of Nebraska-Omaha	George Gogos	\$6,000
UNO-NASA Space Grant: NASA Nebraska Space Grant Fellowship 2017-2018 Soundy	UNO-Univ of Nebraska-Omaha	Byrav Ramamurthy	\$2,000
UNO-NASA Space Grant: NASA Nebraska Space Grant Fellowships 2017-2018	UNO-Univ of Nebraska-Omaha	Jae Sung Park	\$6,000
UNO-NASA Space Grant: Parallel Robot with Increased Workspace and Dynamic Performance	UNO-Univ of Nebraska-Omaha	Carl Nelson	\$5,000
UNO-NASA Space Grant: Proton and Hydroxide Ion Conduction under Confinement in Alkaline and Regenerative Fuel Cells for Space Shuttle Applications	UNO-Univ of Nebraska-Omaha	Shudipto Dishari	\$5,000
UNO-NASA Space Grant: Ultrasonic Monitoring of Microstructure during Metal 3D Printing	UNO-Univ of Nebraska-Omaha	Joseph Turner, Michael Sealy	\$15,000
Transforming Manure from "Waste" to "Worth" to Support Responsible Livestock Production in Nebraska	We Support Ag	Richard Koelsch, Amy Schmidt	\$27,255

# PROJECTS: COE Faculty as Co-Investigators

## (July - December 2017)

Project Title	Sponsor	CoE Co-Investigators	CoE Credit	Total Awarded
Emerging Contaminants and Environmental Security in the Syr Darya River Basin	al-Farabi Kazakh National University	Shannon Bartelt-Hunt	\$5,173	\$10,345
RII Track-2 FEC: Low-Cost, Efficient Next-Generation Solar Cells for the Coming Clean Energy Revolution	Brown University	Jinsong Huang	\$79,250	\$317,001
SALSA Project Hot Water Drill Operations with WISSARD Main Drill and Parts of UNL Roving Drill (Prime Mover)	Dartmouth College	James McManis	\$294,799	\$589,597
Occurrence of Veterinary Pharmaceuticals and Metabolites in a Groundwater Discharge Waterway	Dept of Agriculture-ARS	Shannon Bartelt-Hunt	\$15,000	\$30,000
Systems Analysis of the Physiological and Molecular Mechanisms of Sorghum Nitrogen Use Efficiency, Water Use Efficiency and Interactions with the Soil Microbiome	Dept of Energy	Yufeng Ge	\$264,853	\$2,648,528
Nebraska Center for Integrated Biomolecular Communication (CIBC)	DHHS-Nat Inst Gen Medical Sci	Srivatsan Kidambi, Ruiguo Yang, Bill Velander	\$225,062	\$2,250,619
Pipeline Development of Automatic Feature Extraction for Better and High-Throughput Plant Phenotyping	Iowa State University	Juan Cui, Yufeng Ge	\$750	\$5,000
Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically-active subglacial environments	Montana State University	James McManis	\$77,528	\$155,056
Evaluating Growing Season Length and Productivity across the ABoVE Domain using Novel Satellite Indices and a Ground Sensor	NASA	David Billesbach	\$57,822	\$231,288
Advancing the Science of Dry-Aged Beef	Ne Beef Council	Jeyam Subbiah	\$953	\$38,136
Development of a Succinic Acid Production Process Using Corn Fiber Genomes to Fields (G2F) - Predicting Final Yield Performance in Variable Environments Through Consecutive Phenotyping Measurements Across the Growing Season	Ne Corn Board	Rajib Saha	\$42,574	\$85,148
Source Reduction Assistance and Applied Research to Nebraskas Manufacturers: Building on Partnerships to Maximize Impact	Ne Dept Environmental Quality	Bruce Dvorak	\$19,964	\$99,820
Improving INSIGHT to Serve Broader Needs for Stakeholders	Ne Dept Natural Resources	Hongfeng Yu	\$7,249	\$45,307
COMMERCIAL BUILDINGS ENERGY CODE FIELD STUDY	Ne Energy Office	Kevin Grosskopf	\$18,017	\$36,034
Implementation of Cover Crops in Nebraska Corn and Soybean Cropping Systems	Ne Soybean Board	Derek Heeren	\$10,000	\$100,000
Oceanic Exchanges: Tracing Global Information Networks in Historical Newspaper Repositories, 1840-1914	Northeastern University	Leen-Kiat Soh	\$4,629	\$27,770
EAGER: MAKER: Nebraska Innovative Maker Co-Laboratory (NiMC)	NSF	Shane Farritor, Jenny Keshwani	\$197,762	\$299,639
NRT-INFEWS: Training in Theory and Application of Cross-scale Resilience in Agriculturally Dominated Social Ecological Systems	NSF	Sebastian Elbaum, Francisco Munoz-Arriola	\$809,699	\$2,998,886
Nebraska Nanoscale Facility of NNCI	NSF	Jeffrey Shield	\$60,000	\$600,000
Similarity as a Process Model of Intertemporal Choice	NSF	Leen-Kiat Soh	\$37,511	\$468,888
RII Track-2 FEC: Comparative genomics and phenomics approach to discover genes underlying heat stress resilience in cereals	NSF-EPSCoR	Hongfeng Yu	\$158,938	\$2,998,837
Securing Water for and from Agriculture through Effective Community & Stakeholder Engagement	Pennsylvania State University	Chittaranjan Ray	\$7,496	\$249,874
U.S. CMS Operations at the LHC	Princeton University	David Swanson	\$75,603	\$394,721



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