

**Future Interdisciplinary Research Explorations (FIRE)**  
**College of ACES Office of Research – Seed Grant Awards**

<b>Y2020 Funding Cycle</b>			
<b>Title</b>	<b>Principle Investigator(s)</b>	<b>Collaborators</b>	<b>Funding</b>
Genetically Constrained Deep Reinforcement (GenCoR) Learning and Multi-trait Analysis to Reveal Genotype-to-phenotype Relationships from High-throughput Phenotyping without Training Data	<b>Alex Lipka</b> , Assistant Professor in Crop Sciences	Mohammed El-Kebir (CS); Oluwasanmi O. Koyejo (CS); Andrew Leakey (Plant Biology, Crop Sciences)	FY2021-2022: \$59,848
Predicting Cooperative Degradation of Complex Substrates in Synthetic Rumen Communities	<b>Josh McCann</b> , Assistant Professor in Animal Sciences	Tin Lu (Bioengineering); Roderick Mackie (ANSC); Christopher Fields (High Performance Computing in Biology)	FY2021-2022: \$60,000
Tailoring Intervention Strategies to Support College-Going in Rural Illinois High School Contexts	<b>Jasmine Collins</b> , Assistant Professor in Agricultural Leadership, Education, and Communications	Marci Rockey (CCRR); Matt Giani (UT Austin)	FY2021-2022: \$49,488
Hydroponic production of safe lettuce using treated wastewater	<b>Paul Davidson</b> , Associate Professor in Agricultural and Biological Engineering	Yuanhui Zhang (ABE); Andrew Margenot (CPSC); Michael Stablein (ABE)	FY2021-2022: \$60,000
Advancing Sustainable Agriculture: An Integrative Airborne-satellite Framework to Monitor Crop Nitrogen Status in the U.S. Corn Belt	<b>Kaiyu Guan</b> , Assistant Professor in Natural Resources and Environmental Sciences	Elizabeth Ainsworth (Plant Biology, CPSC); Sheng Wang (iSEE); Alexander Schwing (ECE); Christopher Harbourt (ABE)	FY2021-2022: \$60,000
Probabilistic assessment of adequacy and development of nutrient load reduction goals under a changing climate	<b>Rabin Bhattarai</b> , Assistant Professor in Agricultural and Biological Engineering	Trent Ford (ISWS); Momcilo Markus (ISWS); Elia Getahun (ISWS); Laura Keefer (ISWS)	FY2021-2022: \$59,685
Lifestyle strategies to reduce disease pathogenesis of SARS-CoV	<b>Andrew Steelman</b> , Assistant Professor in Animal Sciences	Jeff Woods (AHS)	FY2021-2022: \$60,000

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The Role of Bradyrhizobium in N Cycling and Sustainability of Miscanthus	<b>Angela Kent</b> , Professor in Natural Resources and Environmental Sciences	Di Lang (IGB); Wendy Yang (Plant Biology); Zhongjie Yu (NRES)	FY2021-2022: \$59,620
Fighting fire with FIRE: Exploiting Corn Rootworm Attraction to Manipulate Pest Behavior	<b>Nicholas Seiter</b> , Assistant Professor in Crop Sciences	Esther Ngumbi (Entomology); Sarah Hind (CPSC); Joseph Spencer (INHS)	FY2021-2022: \$58,057

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<b>FY2019 Funding Cycle</b>			
<b>Title</b>	<b>Principle Investigator(s)</b>	<b>Collaborators</b>	<b>Funding</b>
Machine Learning Methods for Conservation Policy	<b>Kathy Baylis</b> , Associate Professor in Agricultural and Consumer Economics	Daniel Miller (NRES); Robert Brunner (Physics); Jana Diesner (iSchool)	FY2020-21: \$59,971
Signals in the Soils and Signals Through the Soils	<b>Andrew Margenot</b> , Assistant Professor in Crop Sciences	Andrew Singer (COE); Chowdhary (ABE); Tugce Baser (CEE); Youssef Hashash (CEE)	FY2020-21: \$60,000
Cholesterol Metabolism and Systemic Inflammatory Responses	<b>Daniel McKim</b> , Assistant Professor in Animal Sciences	Andrew Steelman (ANSC); Gee Lau (VetMed); Aditi Das (VetMed)	FY2020-21: \$60,000
The Microbial and Metabolic Impact of Walnut Consumption in Adults with Obesity	<b>Hannah Holscher</b> , Assistant Professor in Food Science and Human Nutrition	Nicholas Burd (AHS); Jason Ridlon (ANSC); Sharon Thompson (DNS)	FY2020-21: \$60,000
Utilization of the Gnotobiotic Porcine Model to Settle an Endocrine Controversy: Are Gut Bugs a Major Source of 11-oxy-androgens?	<b>Jason Ridlon</b> , Assistant Professor in Animal Sciences	Sharon Donovan (FSHN); Andrew Steelman (ANSC)	FY2020-21: \$60,000
Machine Learning Approaches to Characterizing Normative Variation in Early Caregiving Processes and Links to Toddler Brain Development	<b>Nancy McElwain</b> , Assistant Professor in Human Development and Family Studies	Mark Hasegawa-Johnson (ECE); Romit Roy Choudhury (ECE); David Hyde (Psychology)	FY2020-21: \$59,946

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<b>FY2018 Funding Cycle</b>			
<b>Title</b>	<b>Principle Investigator(s)</b>	<b>Collaborators</b>	<b>Funding</b>
Examining the impact of parental leave decisions on parents' career and family outcomes: A mixed-method, cross-cultural study	<b>Karen Kramer</b> , Assistant Professor in Human Development and Family Studies	Eunmi Mun (Sociology); Teresa Cardador (School of Labor and Employment Relations)	FY2019-20: \$60,000
Relating soil copper accumulation to copper resistant pathogens in high-value Illinois agriculture	<b>Sarah Refi Hind</b> , Assistant Professor in Crop Sciences	Andrew Margenot (CPSC); Mohammad Babadoost (CPSC); Elizabeth Wahle (U of I Extension); Catherine J. Murphy (Chemistry)	FY2019-20: \$60,000
Genetic and epigenetic contributions to child health outcomes in the STRONG Kids 2 cohort	<b>Margarita Terán García</b> , Assistant Research Professor in Human Development and Family Studies	Sharon Donovan (FSHN); Naiman Kahn (Kinesiology and Community Health, DNS); Kelly Bost (HDFS); Barbara Fiese (HDFS, Family Resiliency Center); Salma Musaad (Interdisciplinary Health Sciences Initiative, Family Resiliency Center); Yuan-Xiang Pan (FSHN, DNS)	FY2019-20: \$60,000
Geospatial toxicology to understand and reduce rural liver cancer disparities	<b>Zeynep Madak-Erdogan</b> , Associate Professor in Food Science and Human Nutrition	Luidmila Sergeevna Mainzer (NCSA); Jong Sung Lee (NCSA); Nohra Mateus-Pinilla (INHS); Hongbo Shao (ISGS); Martin Pentrak (ISGS)	FY2019-20: \$60,000
Comparative connectome of the soybean cyst nematode and establishment of an online anatomical atlas	<b>Nathan Schroeder</b> , Assistant Professor in Crop Sciences	Lav Varshney (Electrical and Computer Engineering); David Hall, (Albert Einstein College of Med.)	FY2019-20: \$60,000

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Comparative transcriptomic approach to identify genes involved in sperm storage and fertility in females	<b>David Miller</b> , Professor in Animal Sciences	Derek Wildman (IGB); Gene Robinson (IGB)	FY2019-20: \$60,000
Advancing methods to identify behavioral signatures of relationship health in older adult couples	<b>Brian Ogolsky</b> , Associate Professor in Human Development and Family Studies	Shannon Mejía (Kinesiology and Community Health); Alexandra Chronopoulou (Industrial and Enterprise Systems Engineering); Helmut Strey (Stony Brook University, NY)	FY2019-20: \$60,000
Biosecurity, environmental and agronomic assessment of biochar use in animal mortality composting	<b>Neslihan Akdeniz Onuki</b> , Clinical Assistant Professor in Agricultural and Biological Engineering	Paul Curtis Davidson (ABE); Maria Bonita Villamil (CPSC)	FY2019-20: \$60,000

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<b>FY2017 Funding Cycle</b>			
<b>Title</b>	<b>Principle Investigator(s)</b>	<b>Collaborators</b>	<b>Funding</b>
Enhancing agro-ecosystem services using integrated hydro-ecologic and socio-cultural analytics	<b>Maria Chu</b> , Assistant Professor in Agricultural and Biological Engineering	Carena van Riper (NRES)	FY2018-19: \$60,000
Identifying Agriculturally Relevant Climate Shocks and Their Effect on Civil Conflict	<b>Benjamin Crost</b> , Assistant Professor in Agricultural & Consumer Economics	Kathy Baylis (ACE); Kaiyu Guan (NRES)	FY2018-19: \$50,400
Obesity-induced epigenetic modification of stem cells and abnormal tissue function in pigs	<b>Megan Dailey</b> , Assistant Professor in Animal Sciences	Larry Schook (ANSC); Brendan Harley (Chemical & Biomolecular Engineering)	FY2018-19: \$60,000
Global Virtual Water Trade: Unraveling complexity in the international food-water nexus, identifying impacts of climate change, and evaluating opportunities to save domestic water resources	<b>Sandy Dall’Erba</b> , Associate Professor in Agricultural & Consumer Economics	Francina Dominguez (Atmospheric Sciences); Megan Konar (Civil & Environmental Engineering)	FY2018-19: \$60,000
A bioengineered host-microbe platform and multi-omic approach to define microbial metabolic pathways that generate genotoxic hydrogen sulfide from sulfur amino acids	<b>H. Rex Gaskins</b> , Professor in Animal Sciences	Paul Kenis (Chemical & Biomolecular Engineering); Jason Ridlon (ANSC)	FY2018-19: \$60,000

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<b>FY2016 Funding Cycle</b>			
<b>Title</b>	<b>Principle Investigator(s)</b>	<b>Collaborators</b>	<b>Funding</b>
Fate, transport, and prevalence of <i>Cyclospora</i> in a natural environment	<b>Paul Davidson</b> , Assistant Professor in Agricultural and Biological Engineering	Michelle Green (ANSC, Illinois Natural History Survey); William Witola (Pathobiology, VetMed)	FY2017-18: \$58,800
Soybean hulls as a sustainable, functional, and economical ingredient in monogastric feeding systems: A comparative approach	<b>Maria de Godoy</b> , Assistant Professor in Animal Sciences	Hans Stein (ANSC); Carl Parsons (ANSC); Peter Goldsmith (ACE); Sajid Alavi (Kansas State Univ.)	FY2017-18: \$60,000
Whole exome sequencing of uterine leiomyomas	<b>Matthew Hudson</b> , Professor in Crop Sciences	Romana Nowak (ANSC)	FY2017-18: \$57,700
Understanding cancer disparities using integrative –omics approaches	<b>Zeynep Madak-Erdogan</b> , Assistant Professor in Food Science & Human Nutrition	Jodi Flaws (Comparative Biosciences, VetMed); Rebecca Smith (Pathobiology, VetMed)	FY2017-18: \$60,000
Maternal Speech Prosody and the Development of Young Children's Stress Regulation across Brain, Body, and Behavior	<b>Nancy McElwain</b> , Associate Professor in Human Development & Family Studies	Jennifer S. Cole (Linguistics, LAS); Daniel Berry (Educational Psychology, College of Education); Brad Sutton (Bioengineering); Ryan Larsen (Biomedical Imaging Center, Beckman)	FY2017-18: \$60,000
The role of <i>Clostridium paraputrificum</i> in antibiotic-induced inactivation of oral contraceptives	<b>Jason Ridlon</b> , Assistant Professor in Animal Sciences	Derek Wildman (Molecular & Integrative Physiology); Michael Miller (FSHN)	FY2017-18: \$57,600

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<b>FY2015 Funding Cycle</b>			
<b>Title</b>	<b>Principle Investigator(s)</b>	<b>Collaborators</b>	<b>Funding</b>
Novel bioengineering approaches for defining pathological mechanisms underlying renal fibrosis	<b>H. Rex Gaskins</b> , Professor in Animal Sciences	Hyunjoon (Joon) Kong (Chemical & Biomolecular Engineering); Amelia Bartholomew (UIUC)	FY2015-16: \$50,000
Sodium reduction in snack foods via optimized microstructural design of sodium delivery system	<b>Youngsoo Lee</b> , Assistant Professor in Food Science & Human Nutrition	Pawan Takhar (FSHN); Scott Robinson (Beckman Institute); Jan Ilavsky (Argonne National Laboratory); Soo-Yeun Lee (FSHN)	FY2015-16: \$49,500
Restoring for the future: Expected outcomes of wetland restoration in the context of regional precipitation change scenarios	<b>Jeffrey Matthews</b> , Assistant Professor in Natural Resources & Environmental Sciences	Rabin Bhattarai (ABE); Geoffrey Pociask (Illinois State Geological Survey)	FY2015-16: \$33,000
The Impact of Access to Marriage on the Daily Lives of Same-Sex Couples	<b>Brian Ogolsky</b> , Assistant Professor, Human Development & Family Studies	Robin Fretwell Wilson (College of Law); Ramona Faith Oswald (HDFS)	FY2015-16: \$45,600
Discovering Dietary Predictors of Success in Fecal Microbiota Transplant (FMT) Patients	<b>Kelly Swanson</b> , Professor in Animal Sciences	Hannah Holscher (ANSC); John Farrell (College of Medicine at Peoria)	FY2015-16: \$50,000
Personality and Financial Behavior	<b>Yilan Xu</b> , Assistant Professor in Agricultural & Consumer Economics	Brent Roberts (Psychology); Jeffrey Brown (Finance)	FY2015-16: \$34,500



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<b>FY2014 Funding Cycle</b>			
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Development of a high throughput analysis platform to enable virulence evolution studies in field populations of virus---infected soybean cyst nematodes	<b>Kaustabh Bhalerao</b> , Associate Professor in Agricultural & Biological Engineering	Kris Lambert (CPSC)	FY2014-15: \$50,000
A model system for the disruption of one carbon metabolism and the subsequent affects of creatine deficiency on skeletal muscle strength and cognitive function	<b>Timothy Garrow</b> , Professor in Food Science & Human Nutrition	Kenneth Wilund (Department of Kinesiology and Community Health, College of Applied Health Sciences); Joshua Gulley (Psychology)	FY2014-15: \$50,000
Developing a methodology for a participatory plant selection and breeding program for sustainable urban agriculture	<b>Sarah Taylor Lovell</b> , Assistant Professor in Crop Sciences	John Taylor (CPSC); Jack Juvik (CPSC); Robin Jarrett (HDFS); Sam Wortman (CPSC)	FY2014-15: \$50,000
The Role of Maternal Prosody in Young Children’s Physiological and Behavioral Regulation Under Low- and High-Stress Conditions	<b>Nancy McElwain</b> , Associate Professor in Human Development & Family Studies	Jennifer S. Cole (Linguistics, LAS); Daniel Berry (Educational Psychology, College of Education)	FY2014-15: \$48,122
Zein nanofabricated structures for entrapment and retrieval of circulating cancer cells	<b>Graciela Padua</b> , Research Professor in Food Science & Human Nutrition	Logan Liu (Electrical and Computer Engineering)	FY2014-15: \$49,853
The role of genetic polymorphisms of toll-like receptor genes in dairy goat mastitis	<b>Alfred Roca</b> , Associate Professor in Animal Sciences	Gila Kahila Bar-Gal (HUJ, Israel); Phil Cardoso (ANSC); Juan Loor (ANSC); Nikolas Nikolaidis (Calif. State University at Fullerton)	FY2014-15: \$50,000
From worm to rat: investigating the role of proprotein convertases in visceral afferent neuroplasticity	<b>Nathan Schroeder</b> , Assistant Professor in Crop Sciences; <b>Megan Dailey</b> , Assistant	Terry Powley (Purdue University)	FY2014-15: \$50,000

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	Professor in Animal Sciences		
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<b>FY2013 Funding Cycle</b>			
<b>Title</b>	<b>Principle Investigator(s)</b>	<b>Collaborators</b>	<b>Funding</b>
Using On-farm Experimentation with Precision Agriculture Technology to Improve Fertilization	<b>David Bullock</b> , Professor in Agricultural & Consumer Economics	Donald Bullock (CPSC); Tony Grift (ABE); Luis Rodriguez (ABE)	FY2013-14: \$40,000
High throughput crop phenotyping through remote sensing	<b>Brian Diers</b> , Professor in Crop Sciences	Lei Tian (ABE); Fred Kolb (CPSC); Jack Juvik (CPSC); Randy Nelson (CPSC, USDA-ARS)	FY2013-14: \$27,732
Foreclosure as a natural experiment to quantify effects of residual landscape on carbon storage and identify controls on the outcome of potential urban sustainability initiatives	<b>Jennifer Fraterrigo</b> , Assistant Professor in Natural Resources & Environmental Sciences	Bethany Cutts (NRES); Jonathan Greenberg (Geography and Geographic Information Science)	FY2013-14: \$31,451
Phenotyping Technology to Accelerate Crop Cultivar Development	<b>Tony Grift</b> , Associate Professor in Agricultural & Biological Engineering	Martin Bohn (CPSC); Pat Brown (CPSC); Erik Sacks (CPSC); Geir Dullerud (Mechanical Sciences & Engineering); David Forsyth (Computer Science)	FY2013: \$14,940
Forest Fragmentation, Wildlife Habitat Use, and the Geographic Expansion of Lyme Disease	<b>James R. Miller</b> , Associate Professor in Natural Resources & Environmental Sciences	Brian F. Allan (Entomology)	FY2013-14: \$38,973
Illinois-Building Research Interactions to Distinguish Genetic and Environmental Factors	<b>Margarita Teran-Garcia</b> , Assistant Professor in Food Science & Human Nutrition; <b>Angela Wiley</b> , Associate Professor in Human Development & Family Studies	Marcela Raffaelli (HDFS); Flavia Andrade (Kinesiology & Community Health); Celia Aradillas-Garcia (UASLP, Mexico); Omar Sanchez-Armass (UASLP, Mexico)	FY2013-14: \$40,000

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Efficacy of nutritional labeling and its contributions to sensory acceptability and food choice	<b>Soo-Yeun Lee</b> , Associate Professor in Food Science & Human Nutrition	Brenna Ellison (ACE); Youngsoo Lee (FSHN); Brittany Duff (Advertising-College of Media); Alejandro Lleras (Psychology)	FY2014-15: \$40,000
The effect of maternal stress on the immune system and the gastrointestinal microbiome for idiopathic preterm labor.	<b>Brian Ogolsky</b> , Assistant Professor in Human Development & Family Studies	Andrea Braundmeier-Fleming (ANSC); Bryan White (ANSC); Alan Peaceman (Northwestern University)	FY2014: \$30,000
Targeted Delivery of Anti-Inflammatory Prodrugs to Adipose Macrophages for Preventative Treatment of Obesity-Induced Insulin Resistance	<b>Kelly Swanson</b> , Associate Professor in Animal Sciences	Andrew Smith (Bioengineering); Matthew Wallig (VetMed)	FY2014-15: \$40,000