

Future Interdisciplinary Research Explorations (FIRE)

College of ACES Office of Research – Seed Grant Awards

Title	Principle Investigator(s)	Collaborators	Funding Cycle
Targeting Tumor Metabolic Heterogeneity Using Dietary Interventions to Improve Therapy Response in Metastatic Breast Tumor	Zeynep Madak-Erdogan , Associate Professor, FSHN	Rohit Bhargava, Professor, Bioengineering	FY2022-2023: \$60,000
Using Food Waste-derived Products to Fabricate Triboelectric Devices for Energy Harvesting and Biomechanical Monitoring	Yi-Cheng Wang , Assistant Professor, FSHN	Wei Zheng, Principal Research Scientist, ISTC; Manuel Enrique Hernandez, Assistant Professor, AHS	FY2022-2023: \$60,000
I-SEEDS: Illinois System for Electronic Estrus Detection and Stimulation	Isabella Cardoso Ferreira S Condotta , Assistant Professor, ANSCI	Robert V. Knox, Professor, ANSCI; Matthew Caesar, Associate Professor, CS	FY2022-2023: \$60,000
Demand for Genetic Traits on US Dairy Farms and their Implications for Profitability and Sustainability	Jared Hutchins , Assistant Professor, ACE	Derek Nolan, Teaching Assistant Professor and Extension Faculty Specialist, ANSCI; Phil Cardoso, Associate Professor, ANSCI; Courtney Hayes, AACUP Veterinarian, AACUP UIUC	FY2022-2023: \$60,000
Integrating Narratives of Engagement Between People and Birds to Support Environmental Stewardship	Carena Van Riper , Associate Professor, NRES	Mark Hauber, Professor, Evolution, Ecology, and Behavior; Riley Andrade, Post-doctoral Research Associate, NRES; Susannah Lerman, Research Ecologist, USFS; Devin Goodson, MS student, NRES	FY2022-2023: \$59,977

Future Interdisciplinary Research Explorations (FIRE)

College of ACES Office of Research – Seed Grant Awards

Genetically Constrained Deep Reinforcement, GenCoR Learning and Multi-trait Analysis to Reveal Genotype-to-phenotype Relationships from High-throughput Phenotyping without Training Data	Alex Lipka , Assistant Professor, CPSC	Mohammed El-Kebir, CS; Oluwasanmi O. Koyejo, CS; Andrew Leakey, Plant Biology, CPSC	FY2021-2022: \$59,848
Predicting Cooperative Degradation of Complex Substrates in Synthetic Rumen Communities	Josh McCann , Assistant Professor, ANSCI	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	Jasmine Collins , Assistant Professor, ALEC	Marci Rockey, CCRR; Matt Giani, UT Austin	FY2021-2022: \$49,488
Hydroponic production of safe lettuce using treated wastewater	Paul Davidson , Associate Professor, ABE	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	Kaiyu Guan , Assistant Professor, NRES	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	Rabin Bhattarai , Assistant Professor, ABE	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	Andrew Steelman , Assistant Professor, ANSCI	Jeff Woods, AHS	FY2021-2022: \$60,000

Future Interdisciplinary Research Explorations (FIRE)

College of ACES Office of Research – Seed Grant Awards

The Role of Bradyrhizobium in N Cycling and Sustainability of Miscanthus	Angela Kent , Professor, NRES	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	Nicholas Seiter , Assistant Professor, CPSC	Esther Ngumbi, Entomology; Sarah Hind, CPSC; Joseph Spencer, INHS	FY2021-2022: \$58,057
Machine Learning Methods for Conservation Policy	Kathy Baylis , Associate Professor, ACE	Daniel Miller, NRES; Robert Brunner, Physics; Jana Diesner, iSchool	FY2020-21: \$59,971
Signals in the Soils and Signals Through the Soils	Andrew Margenot , Assistant Professor, CPSC	Andrew Singer, COE; Chowdhary, ABE; Tugce Baser, CEE; Youssef Hashash, CEE	FY2020-21: \$60,000
Cholesterol Metabolism and Systemic Inflammatory Responses	Daniel McKim , Assistant Professor, ANSCI	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	Hannah Holscher , Assistant Professor, FSHN	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?	Jason Ridlon , Assistant Professor, ANSCI	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	Nancy McElwain , Assistant Professor, HDF5	Mark Hasegawa-Johnson, ECE; Romit Roy Choudhury, ECE; David Hyde, Psychology	FY2020-21: \$59,946

Future Interdisciplinary Research Explorations (FIRE)

College of ACES Office of Research – Seed Grant Awards

Examining the impact of parental leave decisions on parents' career and family outcomes: A mixed-method, cross-cultural study	Karen Kramer , Assistant Professor, HDFS	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	Sarah Refi Hind , Assistant Professor, CPSC	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	Margarita Terán García , Assistant Research Professor, HDFS	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	Zeynep Madak-Erdogan , Associate Professor, FSHN	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	Nathan Schroeder , Assistant Professor, CPSC	Lav Varshney, Electrical and Computer Engineering; David Hall, Albert Einstein College of Med.	FY2019-20: \$60,000
Comparative transcriptomic approach to identify genes involved in sperm storage and fertility in females	David Miller , Professor, ANSCI	Derek Wildman, IGB; Gene Robinson, IGB	FY2019-20: \$60,000

Future Interdisciplinary Research Explorations (FIRE)

College of ACES Office of Research – Seed Grant Awards

Advancing methods to identify behavioral signatures of relationship health in older adult couples	Brian Ogolsky , Associate Professor, HDFS	Shannon Mejía, Kinesiology and Community Health; Alexandra Chronopoulou, Industrial and Enterprise Systems Engineering; Helmut Strey, Stony Brook Univ., NY	FY2019-20: \$60,000
Biosecurity, environmental and agronomic assessment of biochar use in animal mortality composting	Neslihan Akdeniz Onuki , Clinical Assistant Professor, ABE	Paul Curtis Davidson, ABE; Maria Bonita Villamil, CPSC	FY2019-20: \$60,000
Enhancing agro-ecosystem services using integrated hydro-ecologic and socio-cultural analytics	Maria Chu , Assistant Professor, ABE	Carena van Riper, NRES	FY2018-19: \$60,000
Identifying Agriculturally Relevant Climate Shocks and Their Effect on Civil Conflict	Benjamin Crost , Assistant Professor, ACE	Kathy Baylis, ACE; Kaiyu Guan, NRES	FY2018-19: \$50,400
Obesity-induced epigenetic modification of stem cells and abnormal tissue function in pigs	Megan Dailey , Assistant Professor, ANSCI	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	Sandy Dall'Erba , Associate Professor, ACE	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	Rex Gaskins , Professor, ANSCI	Paul Kenis, Chemical & Biomolecular Engineering; Jason Ridlon, ANSC	FY2018-19: \$60,000

Future Interdisciplinary Research Explorations (FIRE)

College of ACES Office of Research – Seed Grant Awards

Fate, transport, and prevalence of <i>Cyclospora</i> in a natural environment	Paul Davidson , Assistant Professor, ABE	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	Maria de Godoy , Assistant Professor, ANSCI	Hans Stein, ANSC; Carl Parsons, ANSC; Peter Goldsmith, ACE; Sajid Alavi, Kansas State Univ.	FY2017-18: \$60,000
Whole exome sequencing of uterine leiomyomas	Matthew Hudson , Professor, CPSC	Romana Nowak, ANSC	FY2017-18: \$57,700
Understanding cancer disparities using integrative –omics approaches	Zeynep Madak-Erdogan , Assistant Professor, FSHN	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	Nancy McElwain , Associate Professor, HDFS	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	Jason Ridlon , Assistant Professor, ANSCI	Derek Wildman, Molecular & Integrative Physiology; Michael Miller, FSHN	FY2017-18: \$57,600
Novel bioengineering approaches for defining pathological mechanisms underlying renal fibrosis	Rex Gaskins , Professor, ANSCI	Hyunjoon, Joon Kong, Chemical & Biomolecular Engineering; Amelia Bartholomew, UIUC	FY2015-16: \$50,000

Future Interdisciplinary Research Explorations (FIRE)

College of ACES Office of Research – Seed Grant Awards

Sodium reduction in snack foods via optimized microstructural design of sodium delivery system	Youngsoo Lee , Assistant Professor, FSHN	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	Jeffrey Matthews , Assistant Professor, NRES	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	Brian Ogolsky , Assistant Professor, HDFS	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	Kelly Swanson , Professor, ANSCI	Hannah Holscher, ANSC; John Farrell, College of Medicine at Peoria	FY2015-16: \$50,000
Personality and Financial Behavior	Yilan Xu , Assistant Professor, ACE	Brent Roberts, Psychology; Jeffrey Brown, Finance	FY2015-16: \$34,500
Development of a high throughput analysis platform to enable virulence evolution studies in field populations of virus---infected soybean cyst nematodes	Kaustabh Bhalerao , Associate Professor,	Kris Lambert, CPSC	FY2014-15: \$50,000
A model system for the disruption of one carbon metabolism and the subsequent effects of creatine deficiency on skeletal muscle strength and cognitive function	Timothy Garrow , Professor, FSHN	Kenneth Wilund, Department of Kinesiology and Community Health, College of Applied Health Sciences; Joshua Gulley, Psychology	FY2014-15: \$50,000

Future Interdisciplinary Research Explorations (FIRE)

College of ACES Office of Research – Seed Grant Awards

Developing a methodology for a participatory plant selection and breeding program for sustainable urban agriculture	Sarah Taylor Lovell , Assistant Professor, CPSC	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	Nancy McElwain , Associate Professor, HDFS	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	Graciela Padua , Research Professor, FSHN	Logan Liu, Electrical and Computer Engineering	FY2014-15: \$49,853
The role of genetic polymorphisms of toll-like receptor genes in dairy goat mastitis	Alfred Roca , Associate Professor, ANSCI	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	Nathan Schroeder , Assistant Professor, CPSC; Megan Dailey , Assistant Professor, ANSCI	Terry Powley, Purdue University	FY2014-15: \$50,000
Efficacy of nutritional labeling and its contributions to sensory acceptability and food choice	Soo-Yeun Lee , Associate Professor, FSHN	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.	Brian Ogolsky , Assistant Professor, HDFS	Andrea Braundmeier-Fleming, ANSC; Bryan White, ANSC; Alan Peaceman, Northwestern University	FY2014: \$30,000

Future Interdisciplinary Research Explorations (FIRE)

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Targeted Delivery of Anti-Inflammatory Prodrugs to Adipose Macrophages for Preventative Treatment of Obesity-Induced Insulin Resistance	Kelly Swanson , Associate Professor, ANSCI	Andrew Smith, Bioengineering; Matthew Wallig, VetMed	FY2014-15: \$40,000
Using On-farm Experimentation with Precision Agriculture Technology to Improve Fertilization	David Bullock , Professor, ACE	Donald Bullock, CPSC; Tony Grift, ABE; Luis Rodriguez, ABE	FY2013-14: \$40,000
High throughput crop phenotyping through remote sensing	Brian Diers , Professor, CPSC	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	Jennifer Fraterrigo , Assistant Professor, NRES	Bethany Cutts, NRES; Jonathan Greenberg, Geography and Geographic Information Science	FY2013-14: \$31,451
Phenotyping Technology to Accelerate Crop Cultivar Development	Tony Grift , Associate Professor, ABE	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	James R. Miller , Associate Professor, NRES	Brian F. Allan, Entomology	FY2013-14: \$38,973

Future Interdisciplinary Research Explorations (FIRE)

College of ACES Office of Research – Seed Grant Awards

Illinois-Building Research Interactions to Distinguish Genetic and Environmental Factors	Margarita Teran-Garcia , Assistant Professor, FSHN; Angela Wiley , Associate Professor, HDFS	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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ABE = Agricultural and Bioengineering; ACE = Agricultural and Consumer Economics; ALEC = Agricultural Leadership, Education, and Communications; ANSCI = Animal Sciences; CPSC = Crop Sciences; FSHN = Food Science and Human Nutrition; HDFS = Human Development and Family Studies; NRES = Natural Resources and Environmental Sciences