



CAHNRS Office of Research Activity Report – January-June 2016

FACULTY HIGHLIGHTS

Kimberlee Kidwell (Crop and Soil Sciences) was recognized as a fellow of the Crop Sciences Society of America during their 2016 Annual Meeting in Phoenix, Arizona.

Laura Hill (Human Development) was elected to the board of directors for the Society for Prevention Research. Dr. Hill is the chair of the Department of Human Development and a participating member of the new Prevention Science Ph.D. program at WSU.

Kris Johnson (Animal Science) received the Distinguished Teaching Award from the American Society of Animal Science. She is the interim chair of the Department of Animal Sciences. **See accompanying CAHNRS press release ([here](#)).**

Debbie Inglis (Plant Pathology) received the Lifetime Achievement Award by the American Phytopathological Society (APS), Pacific Division during their annual meeting.

GRANT FUNDING

CAHNRS faculty are competitive at the federal level at the USDA (in the top 6 the last five years for competitive USDA NIFA funding) the DOE, and the NSF. Below is a selection of awards that are >\$500K.

- **Juming Tang** (BSysE) was awarded a \$4M grant from USDA to support the creation of a Center of Excellence for Food Safety Technologies Using Microwave Energy. This was the **first Center of Excellence** to be created by USDA in response to a mandate from the Agricultural Act of 2014. (more [here](#))
- **John Browse** (IBC) Chloroplast Lipid Composition: Connecting Biophysics to Photosynthetic Function: NSF-IOS
- **Kiwamu Tanaka** (Plant Pathology) Extracellular ATP signaling in plant defense—a damaged-self recognition system: NSF-IOS
- **Arron Carter** (Crop and Soil Sciences) Next Generation Variety Development and Education for Grains, Apples, Alternative Crops, and Cool Season Legumes: USDA-NIFA AFRI
- **David Gang** (IBC) Development of in vitro biofilm and planktonic culture of *Ca. Liberibacter asiaticus*: a game change in HLB research: USDA-NIFA SCRI
- **Shulin Chen (BsysE)** Realization of Algae Potential: DOE-EERE

PUBLICATIONS

Discovery - In 2016, 70% of published research and grant awards were in mission-oriented, fundamental discovery research. We highlight the recent accomplishments across the diversity of our college in high impact journals on topics ranging from genomics, bioinformatics, biofuels, molecular plant sciences, mammalian physiology, food science, climate change, and stormwater.

- “Unique features of a global human ectoparasite identified through sequencing of the bed bug genome” NATURE COMMUNICATIONS – Impact Factor 11.3 – **Fang Zhu** (Entomology)
- “Separase Promotes Microtubule Polymerization by Activating CENP-E-Related Kinesin Kin7” DEVELOPMENTAL CELL – Impact Factor 10.37 – **Andrei Smertenko** (IBC)

- “Programmed chloroplast destruction during leaf senescence involves 13-lipoxygenase (13-LOX)” PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U.S.A. – Impact Factor 9.4 – **Sachin Rustgi and Diter von Wettstein** (Crop and Soil Sciences)
- “Structural analysis of char by Raman spectroscopy: Improving band assignments through computational calculations from first principles” CARBON – Impact Factor 6.2 – **Matthew Smith and Manuel Garcia-Perez** (BsysE)
- “An Improved Ultrasensitive Enzyme-Linked Immunosorbent Assay Using Hydrangea-Like Antibody-Enzyme-Inorganic Three-in-One Nanocomposites” ACS APPLIED MATERIALS & INTERFACES – Impact Factor 7.1 – **Mei-Jun Zhu** (Food Science)
- “Iterative Usage of Fixed and Random Effect Models for Powerful and Efficient Genome-Wide Association Studies” PLOS GENETICS – Impact Factor 7.5 – **Meng Huang and Zhiwu Zhang** (Crop and Soil Sciences)
- “Severe coal tar sealcoat runoff toxicity to fish and reversal by bioretention filtration” ACS ENVIRONMENTAL SCIENCE & TECHNOLOGY – Impact Factor 5.3 – **Jen McIntyre and John Stark** (School of the Environment)

Translational and Collaborative – CAHNRS faculty engaged in translational and collaborative research in organic agriculture, agricultural economics, climate change and the human condition.

- “Dynamic Adjustment in US Agriculture under Climate Change” AMERICAN JOURNAL OF AGRICULTURAL ECONOMICS – Impact Factor 1.05 – **Sansi Yang and Richard Shumway** (School of Economic Sciences)
- “Development of a Worldwide Consortium on Evolutionary Participatory Breeding in Quinoa” FRONTIERS IN PLANT SCIENCE – Impact Factor 4.5 – **Kevin Murphy and Julianne Kellogg** (Crop and Soil Sciences)
- “The impact of maternal depression and overcrowded housing on associations between autonomic nervous system reactivity and externalizing behavior problems in vulnerable Latino children” PSYCHOPHYSIOLOGY – Impact Factor 2.99 – **Sarah Waters** (Human Dev.)

Book Chapters and Invited Reviews

- “Organic agriculture in the twenty-first century” NATURE PLANTS – Impact Factor available 2017 – **John Reganold and Jonathan Wachter** (Crop and Soil Sciences)
- “Animal model and the current understanding of molecule dynamics of adipogenesis” ANIMAL – Impact Factor 1.84 – **Min Du and Zhihua Jiang** (Animal Science)
- “Fundamental constructs in food parenting practices: a content map to guide future research” NUTRITION REVIEWS – Impact Factor 5.51 – **Thomas Power** (Human Dev.)
- “50 years of Arabidopsis research: highlights and future directions” NEW PHYTOLOGIST – Impact Factor 7.67 – **John Browse** (Crop and Soil Sciences)
- “Role of Bioinformatic Tools and Databases in Cotton Research” COTTON, 2ND EDITION **Jing Yu and Dorrie Main** (Horticulture)

EVENTS

CAHNRS faculty communicate their research results in a diversity of ways. In June 2016, we highlight three field days that occurred across the state of Washington from the far northwest corner to the wheat fields of the east. These field days reach local, regional, national and international audiences and are partnerships between research and extension faculty.

WSU Hosts Anaerobic Digestion Systems Field Day on June 9, 2016 at Lynden, WA in NW WA.

Over 86 participants representing producers, private industry, agricultural support professionals, and individuals who work with state and federal agencies were in attendance. Topics focused on issues facing farmers in the Pacific Northwest and included fine solids recovery; advanced nutrient recovery approaches; and water quality and food safety issues, among others.

WSU Hosts Annual Lind Field Day on June 16, 2016 in Eastern WA.

With the largest attendance at any Field Day in the PNW (over 250 attendees, 95% farmers), the Lind Dryland Research Station presented the latest in low rainfall farming research to diverse stakeholders. CAHNRS researchers met with growers, industry representatives and commissioners to share new research and lessons learned from the USDA Regional Approaches to Climate Change for Pacific Northwest Agriculture (REACCH) project. Topics included updates on Russian thistle, winter wheat and spring wheat breeding, winter pea variety trials and winter triticale agronomy.

WSU Hosts National and Regional Potato Events in Irrigated Cropland on June 20-23, 2016 in Central Washington.

As part of a national effort to protect the industry and raise awareness among industry professionals, WSU recently hosted three days of events on potato research at the WSU Othello Research Farm. Over 130 potato growers, processors, commission members, seed certifiers, and scientists from twelve states, Canada, and India attended. The workshops included a USDA Specialty Crops Research Initiative funded potato virus detection workshop and a Washington State Potato Commission funded commercial seed lot field demonstration of 355 seed samples from all over the U.S and a third general potato field day highlighting research and extension accomplishments for growers and industry representatives in Washington with attendance from Idaho and Oregon.