



## CAHNRS Office of Research Activity Report – July 2016

### FACULTY HIGHLIGHTS

**Jill McCluskey** (associate director of the School of Economic Sciences) was named to the Washington State Academy of Sciences. **Dr. McCluskey has been with CAHNRS since 1998 and has lead or collaborated on over \$3.5M in extramurally-funded research.** Her interests include product quality and industrial organization, consumer preferences for food, technology and information, and environmental quality and energy.

### GRANT FUNDING

**Robert Wielgus** (School of the Environment), director of the Large Carnivore Conservation Lab, was awarded a **\$118K grant from the Washington Department of Fish & Wildlife** to quantify the demographics of the black bear population in the state. It is expected that the findings will be used to provide management recommendations.

**Juming Tang** (Biological Systems Engineering) secured a \$50K Special Testing Agreement with the CJ Group for his microwave-assisted thermal sterilization (MATS) technology. During his time at WSU, **Dr. Tang has received over \$2.5M in Special Testing Agreements** from companies such as Kraft Foods, Campbell Soup, Del Monte and Pepsi Co, among others. He was recently featured in an article by the global research journal *International Innovation*, which details how **the technologies he developed through years of discovery research could revolutionize the pre-packaged food industry.** A reprint of the article is available [here](#).

In July, **CAHNRS faculty submitted 13 research proposals to the USDA-NIFA Agriculture and Food Research Initiative (AFRI) Foundational Program.** They address diverse challenges such as using hormones to control parasitic nematodes in potatoes, the design and fabrication of high-performance textiles using cellulose nanofibrils, and increasing the participation of Hispanic farmers in conservation programs, to name a few.

### PUBLICATIONS

*CAHNRS faculty published a total of **56** articles in peer-reviewed journals and conference proceeding, which are cataloged online in our Weekly Published Research Archive ([available here](#)). A selection of these publications is provided below with hyperlinks.*

#### Discovery

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- “Accurate Profiling of Gene Expression and Alternative Polyadenylation with Whole Transcriptome Termini Site Sequencing (WTTS-Seq)” GENETICS – Impact Factor 5.9 – **Zhihua Jiang** (Animal Science) ([here](#))
- “Surface-enhanced Raman spectroscopy coupled with gold nanoparticles for rapid detection of phosmet and thiabendazole residues in apples” FOOD CONTROL – Impact Factor 3.5 – **Barbara Rasco** (Food Science) ([here](#))
- “Ecological Trade-offs between Migration and Reproduction Are Mediated by the Nutrition-Sensitive Insulin-Signaling Pathway” INTERNATIONAL JOURNAL OF BIOLOGICAL SCIENCES – Impact Factor 3.9 – **Laura Lavine** (Entomology) ([here](#))

- “Joint-linkage mapping and GWAS reveal extensive genetic loci that regulate male inflorescence size in maize” PLANT BIOTECHNOLOGY JOURNAL – Impact Factor 5.8 – **Zhiwu Zhang** (Crop and Soil Sciences) ([here](#))
- “Inhibitory effects of grape seed extract on growth, quorum sensing, and virulence factors of CDC “top-six” non-O157 Shiga toxin producing E. coli” INTERNATIONAL JOURNAL OF FOOD MICROBIOLOGY – Impact Factor 4.2 – **Meijun Zhu** (Animal Science) ([here](#))
- “Directed evolution increases desaturation of a cyanobacterial fatty acid desaturase in eukaryotic expression systems” BIOTECHNOLOGY AND BIOENGINEERING – Impact Factor 4.2 – **John Browse** (Institute of Biological Chemistry) ([here](#))

#### Translational and Collaborative

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- ❖ “*Smad7* gene delivery prevents muscle wasting associated with cancer cachexia in mice” SCIENCE TRANSLATIONAL MEDICINE – **Impact Factor 15.8** – **Dan Rodgers** (Animal Science) ([here](#)), **see accompanying CAHNRS press release** ([here](#))
- “Enhancement of jet fuel range alkanes from co-feeding of lignocellulosic biomass with plastics via tandem catalytic conversions” APPLIED ENERGY – Impact Factor 6.2 – **Shulin Chen** (Biological Systems Engineering) ([here](#))
- “Children’s perceptions of emotion regulation strategy effectiveness: links with attachment security” ATTACHMENT & HUMAN DEVELOPMENT – Impact Factor 2.5 – **Sara Waters** (Human Development) ([here](#))
- “Effects of Vineyard and Winemaking Practices Impacting Berry Size on Evolution of Phenolics during Winemaking” AMERICAN JOURNAL OF ENOLOGY AND VITICULTURE – Impact Factor 1.6 – **James Harbertson** (Viticulture and Enology) ([here](#))

#### Invited Reviews

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- “Modeling Soil Processes: Review, Key Challenges, and New Perspectives” VADOSE ZONE JOURNAL – Impact Factor 2.2 – **Markus Flury** (Crop and Soil Sciences) ([here](#))
- “Insect-induced plant phenotypes: Revealing mechanisms through comparative genomics of galling insects and their hosts” AMERICAN JOURNAL OF BOTANY – Impact Factor 2.6 – **Paul Nability** (Entomology) ([here](#))

#### Events

##### WSU Mt. Vernon Northwestern Washington REC Hosts the Grain Gathering on July 28-30, 2016.

The Bread Lab at the Mt. Vernon REC is an integral part of the Plant Breeding Program and supports a vibrant regional grain economy in western Washington. **Their mission is to breed and develop publicly available varieties of grains and other crops for craft baking, cooking, malting, brewing and distilling.** In July, the Lab hosted its annual three-day Grain Gathering with the support of corporate sponsors such as Whole Foods, Patagonia, the Clif Bar Family Foundation and others. The event was **sold-out with 250 attendees from 25 states and nine countries**, including **congresswoman Suzan Delbene, Ardent (the largest flour miller in the US) and ARYZTA (the second largest baking group in the world)**, as well as a mixture of regional

millers and bakers. Activities included 40+ workshops, panel discussions, demonstrations, and a talk by the menu planner for the New York Schools food program, who is responsible for 1 million meals per day in her state. Contact: **Chad Kruger** (Center for Sustaining Agriculture and Natural Resources, CSNAR) and **Stephen Jones** (Crop and Soil Sciences).

#### WSU Wine Science Center Hosts WAVE Conference on July 14, 2016 in Richland, WA.

The inaugural Washington Advancements in Viticulture and Enology (WAVE) Conference was held July 14 at the WSU Ste. Michelle Estates Wine Science Center, a state-of-the-art teaching and research facility in Richland, Washington. The conference was co-hosted by the WSU Viticulture and Enology Program and the Washington State Wine Commission, who **made the creation of the Center possible through a \$7.4M pledge**. The goal of WAVE is to raise awareness about the value of WSU research to support the Washington wine industry, which is second only to California in total production throughout the country. A series of research seminars were given to **80 growers and winemakers** – topics included advances in irrigation techniques, recommendations for preventing wine spoilage, integrated pest management and plant viruses, among others. Contact: **Thomas Henick-Kling** (Viticulture and Enology) and **Melissa Hansen** (Washington State Wine).

#### WSU Hosts Organic Farm Field Day on July 28, 2016 at Eggert Family Farm in Pullman, WA.

Washington State University is a leader in organic agricultural research and **one of the few institutions in the country that offers an undergraduate degree program in this booming sector**. The Eggert Farm, a 30-acre site located just outside of Pullman on Terre View Road, is a **critical resource to develop cutting edge technologies and innovation**. The Farm hosted its second annual field day in July, where undergraduate researchers, graduate students and postdoctoral fellows gave presentations on organic herbicide effectiveness, cover crop variety trials and natural pest prevention through soil health, among other important topics. Contact: **Brad Jaeckel** (Crop and Soil Sciences)

#### WSU Mt. Vernon Northwestern Washington REC Hosts Summer Field Day on July 7, 2016.

The Mt. Vernon REC is a hub for researchers, scientists, extension specialists, growers and stakeholders in northwest Washington state. The surrounding region of the Skagit Valley is known for its mild, marine climate, rich alluvial soils, diverse small and mid-sized farming enterprises, and unique rural-urban interface. The Center hosted its annual Summer Field Day on July 7<sup>th</sup>. The **135 attendees** were given a tour of research plots by graduate students, followed by discussions, a poster session, children's art contest, and tours of the Discovery Garden led by Master Gardeners. The Discovery Garden first opened in 1996 to inspire and educate the public. **Nearly 140 Master Gardeners from around the region volunteer some 4,000+ hours annually** to ensure its continued availability for community use and enjoyment (more information [here](#)). Contact: **Chad Kruger** (CSNAR)