

Quarterly Newsletter

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A report on Scholarship and Academic Activities of Interdepartmental Food Science Graduate Program (IFSGP)



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The Interdepartmental Food Science Graduate Program is pleased with the continued support and contribution to the success of our graduate newsletter. Your contributions support the graduate committee's mission to highlight the scholarship and academic success of graduate students, postdoctoral scientists and the faculty members in the Food Science program. Please continue to send articles with complete journal citation, book chapters, presentations and achievements/award information. If any information is missing from this issue, it is truly unintentional and will be included in the next issue. Please continue to send information to Mitzi Barnett for future issues.

Sincerely,

Prof. Arun Bhunia
Chair, Interdepartmental Food Science Graduate Program

Peer-reviewed Publications

1. Bishehsari, F., P. A. Engen, N. Z. Preite, **Y. E. Tuncil**, A. Naqib, M. Shaikh, M. Rossi, S. Wilber, S. J. Green, and **B. R. Hamaker**. 2018. Dietary Fiber Treatment Corrects the Composition of Gut Microbiota, Promotes SCFA Production, and Suppresses Colon Carcinogenesis. *Genes* 9(2):102.
2. **Bonilla, J.C., V. Ryan, G. Yazar, G., J.L. Kokini, and A.K. Bhunia**. 2018. Conjugation of Specifically Developed Antibodies for High- and Low-Molecular-Weight Glutenins with Fluorescent Quantum Dots as a Tool for Their Detection in Wheat Flour Dough. *Journal of Agricultural Food Chemistry* 66:4259-4266.
3. Cantu-Jungles, T. M., A. C. Ruthes, **M. El-Hindawy**, R. B. Moreno, **X. Zhang**, L. M. Cordeiro, **B. R. Hamaker**, and M. Iacomini. 2018. In vitro fermentation of *Cookeina speciosa* glucans stimulates the growth of the butyrogenic *Clostridium* cluster XIVa in a targeted way. *Carbohydrate Polymers* 183:219-229.
4. Charnley, M., **J. Gilbert, O. G. Jones**, and N. P. Reynolds. 2018. Characterisation of amyloid fibril networks by atomic force microscopy. *Bio-protocol* 8:DOI:10.21769/BioProtoc.2732.
5. **Chegeni, M.**, M. Amiri, B. L. Nichols, H. Y. Naim, and **B. R. Hamaker**. 2018. Dietary starch breakdown product sensing mobilizes and apically activates α -glucosidases in small intestinal enterocytes. *The FASEB Journal* 32: doi.org/10.1096/fj.201701029R.
6. **Cisse, F., D. P. Erickson, A. M. Hayes**, A. R. Opekun, B. L. Nichols, and **B. R. Hamaker**. 2018. Traditional Malian Solid Foods Made from Sorghum and Millet Have Markedly Slower Gastric Emptying than Rice, Potato, or Pasta. *Nutrients* 10(2):124.
7. **Drolia, R., S. Tenguria**, A.C. Durkes, J.R. Turner, and **A.K. Bhunia**. 2018. *Listeria* Adhesion Protein Induces Intestinal Epithelial Barrier Dysfunction for Bacterial Translocation. *Cell Host & Microbe* 23(4): 470-480.e7
8. Karimi, M., **Sadeghi, R.**, and **Kokini, J.** 2018. Human exposure to nanoparticles through trophic transfer and the biosafety concerns that nanoparticle-contaminated foods pose to consumers. *Trends in Food Science & Technology* 75:129-145.
9. Kaur, A., **Y. E. Tuncil**, M. Sikaroodi, P. Gillevet, J. A. Patterson, A. Keshavarzian, and **B. R. Hamaker**. 2018. Alterations in the amounts of microbial metabolites in different regions of the mouse large intestine using variably fermentable fibres. *Bioactive Carbohydrates and Dietary Fibre* 13:7-13.
10. **Ketnawa, S.**, M. Wickramathilaka, and **A. M. Liceaga**. 2018. Changes on antioxidant activity of microwave-treated protein hydrolysates after simulated gastrointestinal digestion: Purification and identification. *Food Chemistry* 254:36-46.
11. Mobberley, J. M., M. F. Romine, J. K. Cole, Y. Maezato, **S. R. Lindemann**, and W. C. Nelson. 2018. Draft Genome Sequence of *Cyanobacterium* sp. Strain HL-69, Isolated from a Benthic Microbial Mat from a Magnesium Sulfate-Dominated Hypersaline Lake. *Genome Announcements* 6(6):e01583-01517.
12. **Maldonado, L.**, and **Kokini, J. L.** (2018). An optimal window for the fabrication of Edible Polyelectrolyte Complex Nanotubes (EPCNs) from bovine serum albumin (BSA) and sodium alginate. *Food Hydrocolloids* 77:336-346
13. **Moser, S., I. Aragon, A. Furrer**, J.-W. Van Klinken, M. Kaczmarczyk, **B.-H. Lee**, J. George, **B. R. Hamaker, R. Mattes**, and **M. G. Ferruzzi**. 2018. Potato phenolics impact starch digestion and glucose transport in model systems but translation to phenolic rich potato chips results in only modest modification of glycemic response in humans. *Nutrition Research*. (Published online Feb 12, 2018) doi.org/10.1016/j.nutres.2018.02.001
14. **Peng, X.** and **Y. Yao**. 2018. Small-granule starches from sweet corn and cow cockle: Physical properties and amylopectin branching pattern. *Food Hydrocolloids* 74:349-357.
15. **Rouf, T. B., G. Schmidt**, and **J. L. Kokini**. 2018. Zein–Laponite nanocomposites with improved mechanical, thermal and barrier properties. *Journal of Materials Science* 53(10):7387-7402.
16. **Sanchez, J. O., Y. Ismail, B. Christina**, and **L. J. Mauer**. 2018. Degradation of L-Ascorbic Acid in the Amorphous Solid State. *Journal of Food Science* 83(3):670-681.
17. Santiago-López, L., J. E. Aguilar-Toalá, A. Hernández-Mendoza, B. Vallejo-Cordoba, **A. M. Liceaga**, and A. F. González-Córdova. 2018. Invited review: Bioactive compounds produced during cheese ripening and health effects associated with aged cheese consumption. *Journal of Dairy Science* 101(5):3742-3757
18. **Schmidt, G., B. R. Hamaker**, and J. J. Wilker. 2018. High Strength Adhesives from Catechol Cross-Linking of Zein Protein and Plant Phenolics. *Advanced Sustainable Systems* (Published online January 17, 2018), doi.org/10.1002/adsu.201700159.
19. Shen, P., **J. C. Kershaw**, Y. Yue, O. Wang, **K.-H. Kim**, D. J. McClements, and Y. Park. 2018. Effects of conjugated linoleic acid (CLA) on fat accumulation, activity, and proteomics analysis in *Caenorhabditis elegans*. *Food Chemistry* 249:193-201

20. **Suwal, S.**, C. P. Coronel-Aguilera, **J. Auer**, **B. Applegate**, A. L. Garner, and **J.-Y. Huang**. 2018. Mechanism characterization of bacterial inactivation of atmospheric air plasma gas and activated water using bioluminescence technology. *Innovative Food Science & Emerging Technologies*. (Published online February 2, 2018), doi.org/10.1016/j.ifset.2018.01.007
21. **Suwal, S.**, **S. Ketnawa**, **A. M. Liceaga**, and **J.-Y. Huang**. 2018. Electro-membrane fractionation of antioxidant peptides from protein hydrolysates of rainbow trout (*Oncorhynchus mykiss*) by products. *Innovative Food Science & Emerging Technologies* 45:122-131.
22. **Suwal, S.**, Li, J., Engelberth, A.S., **J.-Y. Huang**. 2018. Application of electro-membrane separation for recovery of acetic acid in lignocellulosic bioethanol production. *Food and Bioproducts Processing* 109:41-51.
23. **Turasan, H.**, **Barber, E.A.**, **Malm, M.**, and **J.L. Kokini**. 2018. Mechanical and spectroscopic characterization of crosslinked zein films cast from solutions of acetic acid leading to a new mechanism for the crosslinking of oleic acid plasticized zein films, *Food Research International* 108:357-367.
24. Wu, J., A. Sabag-Daigle, M. A. Borton, L. F. Kop, B. E. Szkoda, B. L. D. Kaiser, **S. R. Lindemann**, R. S. Renslow, S. Wei, and C. D. Nicora. 2018. *Salmonella*-mediated inflammation eliminates competitors for fructose-asparagine in the gut. *Infection and Immunity* 86(5):e00945-17.
25. **Xie, Y.** and **Y. Yao**. 2018. Octenylsuccinate hydroxypropyl phytoglycogen, a dendrimer-like biopolymer, solubilizes poorly water-soluble active pharmaceutical ingredients. *Carbohydrate Polymers* 180:29-37.
26. **Xu, Q.**, **I. Adyatni**, and **B. Reuhs**. 2018. Effect of Processing Methods on the Quality of Tomato Products. *Food and Nutrition Sciences* 9(02):86-98.

Book Chapters

1. **Assisi, C.**, **A. J. Etter**, and **H. F. Oliver**. 2018. Use and Impacts of Whole Genome Sequencing in Retail Food Safety. in *Food and Feed Safety Systems and Analysis*. Elsevier. Pages 309-321
2. **Rouf, T. B.** and **J. L. Kokini**. 2018. Natural Biopolymer-Based Nanocomposite Films for Packaging Applications. *Bionanocomposites for Packaging Applications*. Springer. Pages 149-177.

Presentations

1. **Bhunja, A.K.** 2018. (Invited Speaker). LAP Disrupts Intestinal Epithelial Barrier for *Listeria monocytogenes* Translocation 2018. Technische Universität Braunschweig, Braunschweig, Germany, March 15-16, 2018.
2. **Hayes, A.M.R.**, **M.M. Martínez**, C. Swackhamer, Y.A. Mennah-Govela, G.M. Bornhorst, and **B.R. Hamaker**. 2018. Insights to the delayed gastric emptying rate and slow digestibility of pearl millet couscous. Sorghum in the 21st Century, Cape Town, South Africa. April 9-12, 2018 (Poster presentation).
3. **Kokini, J.L.** 2018. (Keynote Speaker) 4th Latin American Cereals Conference. Mexico City, Mexico. March 11-17 2018.
4. **Kokini, J.L.** 2018. (Invited Speaker) "Rheology: Concepts and Fundamentals" and at AACCI Rheology Division, Rheology and Texture of Cereal Foods. Purdue University, IN. March 13-15, 2018.
5. **Kokini, J.L.** 2018. (Invited Speaker) "Phase transitions of starch and gluten polymers; Role of phase transitions in dough rheology and finished product texture" at AACCI Rheology Division, Rheology and Texture of Cereal Foods. Purdue University, IN. March 13-15, 2018.
6. **Kokini, J.L.** 2018. (Invited Speaker) "Recent advances in nanotechnology for food applications". Department of Food Science and Human Nutrition, Graduate Seminars. University of Illinois at Urbana-Champaign. February 23, 2018.
7. **Kokini, J.L.** 2018. (Invited Speaker) "Introduction to the Rheology of Foods for Industrial Food Scientists". Institute of Food Technologists Webinar. March 2018.

Graduated Students with Thesis/Dissertation Titles

Spring 2018

1. **Irma Adyatni-MS (Xu)**: Processing technology for improving the quality of tomato product and developing a value-added tomato processing derivative
2. **Matthew Allan-PhD (Mauer)**: Food materials science: RH-temperature phase diagrams of deliquescent and/or hydrate forming crystals, effects of sweeteners on starch gelatinization, and the water activity of wines
3. **Ingrid Aragon Gallegos-PhD (San Martin)**: Impact of processing of biofortified cassava and peach palm fruits on provitamin A carotenoid recovery and bioaccessibility

4. **Chuyan Chen-MS (Applegate)**: Determining the potential for phase based detection of *Escherichia coli* O157:H7 in ground beef samples during shipment
5. **Aminata Diatta-MS (Hamaker)**: Using corn zein to improve the quality of gluten-free bread
6. **Cheikh Ndiaye-PhD (Hamaker)**: Quality and nutritional impacts of extrusion on pearl millet and nutrient dense native blends
7. **Elizabeth Pletsch-PhD (Hamaker)**: Controlling the gastric emptying rate of whole grain foods using physical properties and methods to slow starch digestion
8. **Celina To-MS (Bhunja)**: A novel 3D-cell based assay to detect Shiga-toxin producing *Escherichia coli*
9. **Alyssa West-MS (Oliver)**: Impact of disinfectant type, concentration, and contact time on bactericidal efficacy against healthcare-associated pathogens

Graduate Student/Post Doctorate Achievements/Awards

1. **Pablo Torres Aguilar**- B.J. Liska Outstanding Teaching Assistant Award for the Spring 2018
2. **Jose Bonilla**-Second Place in Agriculture and Biological Engineering Industrial and Research Annual Symposium 2018, Walter Bushuk Graduate Research Award in Cereal Protein Chemistry 2018
3. **Collin Felten**-Third Place, American Society of Baking Product Development National Competition
4. **Rishi Drolia** – ASM (American Society for Microbiology) Travel Award, 2018
5. **Sarah Gafter**-Third Place, American Society of Baking Product Development National Competition
6. **Luis Maldonado**-B.J. Liska Outstanding Teaching Assistant Award, Department of Food Science 2018; Center for Instructional Excellence Teaching Academy Graduate Teaching Award 2018
7. **Anbukani Muniandy**- PRF Research Grant; Third Place, American Society of Baking Product Development National Competition
8. **Xingyun Peng**-Bilsland Fellowship, 2018
9. **Yizhe Zhang**-Purdue Graduate Student Government (PGSG) Travel Grant, 2018

Other Noteworthy Recognitions

1. Congratulations to alumni **Dr. Rebecca Lipasek Jutkus (BS '08, PhD '12)** with The Hershey Company and Dr. **Andrew Neilson (PhD '09)** with Virginia Tech for receiving the Purdue Food Science Early Career Award
2. Congratulations to **Dr. Haley Oliver** who has been named a Purdue Murphy Award recipient, Purdue's highest teaching honor!