

Jinhe Bai  
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Dr. Jinhe Bai's research projects encompass quality and safety of fruits and vegetables affected by postharvest storage, transportation and marketing. He developed various packaging systems for apples, citrus, bananas, small fruits, and fresh-cut fruits to prevent food loss of fresh produce. Dr. Bai's modified humidity clamshell is a low cost and high efficient packaging system for small fruits. A combination of the clamshell and slow release natural fungicides was tested and showed great potential for commercial uses.

## ANGELA M. SHAW PhD

Associate Professor, Department of Food Science and Human Nutrition, Iowa State University  
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Dr. Angela Shaw is an Associate Professor of Food Safety at Iowa State University in the Department of Food Science and Human Nutrition and Food Safety Extension Specialist. Dr. Shaw is also the co-director of the North Central Region Center for FSMA Training, Extension, and Technical Assistance ([www.ncrfsma.org](http://www.ncrfsma.org)). The Center focuses on providing food safety education to produce growers and educators in the 12 states in the Midwest. Dr. Shaw received her B.S. and M.S. in animal and meat science at Iowa State University and continued on for her PhD and a post doc in food science from Texas Tech University. At Iowa State University her research has a primary focus on the produce industry but has completed research with many other industries (such as nuts, eggs, meat, poultry, animal feed, grain, and by-products). Her extension work focuses on education of emerging food safety concerns and food regulations on the local, state, and federal levels.

Dr. Shaw's research program has three main themes along with examples of projects:

- Characterizing foodborne pathogens survival;
  - Survival of STEC *E.coli*, *Salmonella*, and *Listeria* in hydroponic/ controlled atmosphere growth environment
  - Survival of *Salmonella* and *Campylobacter* in poultry and produce rotational systems
  - Influence of retail grocery setting (i.e. display case) on microbial safety and quality of produce
- Establishing research based food safety interventions against foodborne pathogens within food environment;
  - Use of cover crop to reduce risk of *Listeria* in cantaloupe production
  - Use of lactic acid bacteria to reduce risk of STEC *E.coli* in leafy green environment
  - Effectiveness of stressed STEC *E.coli*, *Salmonella*, and *Listeria* on chemical sanitizers used on produce
- Developing, implementing and evaluating educational strategies to change food safety risky behaviors, attitudes, and motives in growers and food manufactures.
  - Use of minimal text educational materials to change behaviors in farm, restaurant, and retail settings
  - Evaluation of the knowledge, attitudes, and motives of produce growers on adopting the Food Safety Modernization Act Produce Safety Rule

Google Scholar: [https://scholar.google.com/citations?user=WJVQ\\_pcAAAAJ&hl=en](https://scholar.google.com/citations?user=WJVQ_pcAAAAJ&hl=en)

BIOGRAPHICAL SKETCH  
**RAMAKRISHNA NANNAPANENI**  
Mississippi State University  
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**PROFESSIONAL POSITIONS HELD**

Professor (2019-Present), Associate Professor (2012-2019) and Assistant Professor (July 2007-2012), Food Microbiology, Dept. of Food Science, Nutrition and Health Promotion, Mississippi State University. Duties: Microbial stress adaptation, antimicrobial resistance, biofilms, whole-cell microbiology, immunology, food safety and molecular food microbiology of *Listeria monocytogenes*, *Campylobacter jejuni*, *Vibrio*, *Salmonella*, and *E. coli* O157:H7.

**EDUCATION**

Ph.D., Dept. Bioscience & Biotechnology, University of Strathclyde, Glasgow, UK.  
M.S. (Agriculture, Plant Pathology), G.B. P.U. of Agriculture and Technology, India.  
B.S. (Agriculture and Animal Husbandry), G.B. P. U. of Agriculture & Technology, India.

**RESEARCH FOCUS**

The long-term goal of our research focus is in understanding how foodborne pathogenic bacteria sense, adapt, resist and recover from different food processing stresses and antimicrobials that may lead to food safety risks in raw, raw-further processed and ready-to-eat food products of animal and plant origin. Our research is demonstrating the persistence of a subpopulation of foodborne bacterial pathogens, especially *L. monocytogenes* after exposure to sublethal acid, alkali, oxidative and heat stress. Our recent findings show that high-risk *L. monocytogenes* serotypes when pre-exposed to mild acid, alkali, heat or oxidative stress can easily survive by 2-4 logs greater than the non-stressed cells. This knowledge of the role of sublethal stress factors on the induction of stable stress resistant phenotypes of *L. monocytogenes* and *Salmonella* and their persistence as biofilms in lethal concentration of disinfectants will aid in risk-assessment models for foodborne bacterial pathogens. Our work will also address the high-risk low-moisture and intermediate-moisture dry foods for *Salmonella* presence, growth, survival, persistence and destruction. Our research has led to 80 peer-reviewed journal articles, over 100 refereed national abstracts, 6 peer-reviewed book chapters, over 60 non-refereed proceedings, and over 50 oral presentations, and recipient of the State Pride Award of Mississippi State University.

Dr. Jeffrey K. Brecht received his B.A. in Biology from Whittier College (1979) and Ph.D. in Plant Physiology from the University of California, Davis (1984). He has been on the faculty of the University of Florida since 1984, where he is currently a Professor of Postharvest Plant Physiology. His research program involves studies of harvesting, handling, storage, transport, and the physiological and metabolic processes related to the development, maturation and senescence of horticultural crops. He also shares statewide postharvest extension responsibilities and co-teaches a beginning graduate level course, "Principles of Postharvest Horticulture." Dr. Brecht and his colleagues work closely with companies involved in the distribution and selling of perishable foods to conduct multidisciplinary research and, through his interactions with commodity associations, packers, shippers, distributors, importers, exporters, processors and retailers he extends information regarding advances in perishable food handling. Dr. Brecht has been involved in international postharvest research and extension projects in Central and South America, Asia and Africa. He has authored over 500 technical publications including 170 refereed journal papers. He was named a University of Florida Research Foundation Professor in 2002, a Fellow of the American Society for Horticultural Science in 2006, and an Honorary Member of the Florida State Horticultural Society in 2014.

- Familiar with recommendations of best practices and optimum conditions to use for storage and transport of fresh fruits and vegetables to best maintain their quality
- Teaches the course, *Principles of Postharvest Horticulture*
- Conducts research into how commercial practices affect fruit and vegetable physiology and quality and the relationship between produce aging or senescence and its quality
- Also a member of the NE1836 USDA Multi-State Research Project, *Improving Quality and Reducing Losses in Specialty Fruit Crops through Storage Technologies*

Selected publications:

1. Brecht, J.K., S.A. Sargent, P.E. Brecht, J. Saenz, and L. Rodowick. 2019. J.K. Brecht (ed.). Protecting Perishable Foods During Transport by Truck or Rail. University of Florida and USDA AMS, Gainesville, Fla., HS1328. 204 p. (a revision of USDA Handbook 669)
2. Brecht, J.K., I. Uysal, M. C. N. Nunes, J. P. Emond, S. Mercier, and U. McCarthy. 2020. Smart distribution to maintain shelf-life of horticultural produce, p. 409-432. In: C. Watkins (ed.). Advances in Postharvest Management of Horticultural Produce. Burleigh Dodds, Cambridge, U.K.
3. Boz, Z., B.A. Welt, J.K. Brecht, W. Pelletier, E. McLamore, G.A. Kiker, and J.E. Butler. 2018. Review of challenges and advances in modification of food package headspace gases. J. Applied Packaging Res. 10:62-97.
4. Diehl, D.C., N.L. Sloan, J.K. Brecht, and E.A. Mitcham. 2015. What factors do retailers value when purchasing fruits? Perceptions of produce industry professionals. J. Food Dist. Res. 46:81-91.
5. Diehl, D., N. Sloan, C. Bruhn, A. Simonne, J.K. Brecht, and E.A. Mitcham. 2013. Exploring produce industry attitudes: Relationships between postharvest handling, fruit flavor, and consumer purchasing. HortTechnology 23:642-650.

<https://scholar.google.com/citations?user=XVBFy3EAAA&hl=en>

**BYRON BREHM-STECHER**  
**Rapid Microbial Detection and Control Laboratory**  
**Iowa State University**  
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**Education**

University of Wisconsin-Madison	Food Science	Ph.D., 2002
University of Wisconsin-Madison	Bacteriology	M.S., 1996
University of Wisconsin-Madison	Bacteriology	B.S., 1995

**Professional Experience**

2011-present	Associate Professor, Rapid Microbial Detection and Control Laboratory, Iowa State University, Department of Food Science & Human Nutrition
2004-2011	Assistant Professor, Rapid Microbial Detection and Control Laboratory, Iowa State University, Department of Food Science & Human Nutrition
2003-2004	Molecular Biologist, Advanced Research and Technology Group, Applied Biosystems, Inc. Bedford, MA
2002-2003	Postdoctoral Research Associate, University of Wisconsin-Madison

**Research Interests**

Dr. Brehm-Stecher's research is focused on two major areas: the development of improved methods for the rapid detection and characterization of bacterial pathogens, and novel antimicrobial approaches for the control of food pathogens or spoilage organisms.

- Technology platforms for detection work include flow cytometry and other single cell analytical methods.
  - A recurring theme in our detection work is pre-analytical sample preparation – the often-neglected processing steps needed to get from a raw sample to the final answer.
- Key tools used in our antimicrobial work include natural antimicrobial compounds, including plant essential oils, and synthetic biomimetic antimicrobial polymers or small molecules.
  - An underlying theme of our antimicrobial work is enhancement – approaches for boosting antimicrobial potency through additive or synergistic interactions among system components.

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Postharvest Physiologist  
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### **Research Interest:**

Dr. Floyd Woods is an Associate Professor, Graduate Faculty Member, and Postharvest Physiologist with 29.5 years of experience at Auburn University within the College of Agriculture. Dr. Woods's research program focuses on the characterization of ripening, senescence and safety of diverse horticultural commodities and health benefitting qualities and functional properties of horticultural commodities emphasizing cultural practices that influence fruit and vegetable and specialty crop (short cycle banana, kiwifruit and lotus) quality, antioxidant and nutritional content. This newly expanded area identifies the potential oxidative changes which influence fruit quality, shelf life and nutritional content of short cycle / cold hardy banana cultivars adaptable to southeastern United States. To date, there have been no information available concerning consumer quality characteristics as affected by maturity, ethylene treatment or postharvest best management practices for short-cycle cultivars grown in Southeast regions of the United State. Given the increasing interest and demand for cold-hardy short-season banana Dr. Woods within the last five years has initiated and published detailed preharvest and postharvest nutritional (vitamin C, E, carotene, and antioxidant properties) and consumer studies (color, sweetness, soluble solid content and organic acid content) that reflect consumer demand for this specialty crop commodity.

Dr. Woods's research interests have further expanded to include the linkage between functional properties of fruits and vegetables and *in vitro* dietary management strategies to reduce hyperglycemia and hypertension. This expanded focus has resulted in a request from the School of Nursing at Auburn University for Dr. Woods to become an Adjunct Associate Professor. This expanded research emphasis has facilitated new opportunities to explore *Enhancement of Rural Health Promotion in Alabama*.

### **Dr Woods research program has five main related themes / focus areas:**

- Molecular and enzymatic characterization of ripening, senescence, and food safety of horticultural commodities.
- Role of cell wall components and tissue changes during development and senescence processes.
- Physiological ripening disorders which affect fruit quality i.e., oxidative stress, low and high temperature stress
- Quality and safety of fresh - cut fruit and vegetables.
- Pathogen reduction methods and quality assessment on fruit and vegetables.

<http://hort.auburn.edu/woods/>

Jorge Fonseca is the Research Leader at the USDA-ARS Food Quality Laboratory. Prior to his current position he held several positions with the United Nations Food and Agriculture Organization (FAO), including serving as programme advisor of the Food System management team, food system analyst and agroindustry officer. He served as the lead officer of a multi-unit team that guided the overall strategy for FAO innovative engagement with sub-national governments. He designed, planned, and managed directly a number of projects/programs in Sub-Saharan Africa, Asia, Middle East and Latin America.

Prior to joining FAO he was an Associate Professor at The University of Arizona, where he led the state's postharvest systems research and extension program. He has been actively involved in the fresh fruit and vegetable industry in tropical and temperate areas since early 90s consulting for international firms and institutions. He has been hired to consult multiple private agro-industry enterprises in 9 countries, and public entities and stakeholders in over 30 countries. Fonseca received a Ph.D. in food technology from Clemson University, South Carolina. He also completed three masters, including a M.Sc. in Horticulture, a Master in Business Administration, and a Master in International Food Governance and Society.

As the principal investigator or lead technical officer he has secured funding for research and development through multiple and diverse sources exceeding US\$ 30 million. He has provided volunteering work on a year basis including long term stays under the Farmers to Farmers initiative and served as Chair of the Fruit and Vegetable Division of the Institute of Food Technology, where he was also voted Outstanding Volunteer in 2010. He is the author of over 200 scientific and trade-technical publications pertaining to food safety, post-production food systems, and agro-industry development, including over forty referee journal articles, with one publication receiving a national press award. He is a co-author of flagship global independent knowledge products, including a chapter of the International assessment of Agricultural Science and Technology for Development (IAASTD) and 2018-2020 Global Nutrition Report.

Dr. Fonseca current interests aims at using multi-disciplinary approaches (including pre- and post-harvest practices) to deliver more nutritious and appealing fresh and fresh-cut food and vegetables to consumers. His research ultimate's goal is to deliver new ways to add value to fresh produce including maximizing pre-biotic functionality and beneficial microbiome and ensuring safety and desirable flavor of final products.

Anne Plotto  
Research Plant Physiologist  
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Dr. Anne Plotto received her Agricultural Engineering degree from Ecole Nationale Supérieure d'Agronomie, Montpellier, France, and MS and PhD in Horticulture and Plant Physiology from Oregon State University, USA. Throughout her career, she has worked towards improving eating quality in fruit by using horticultural practices and evaluating breeding lines of many temperate and subtropical fruits. Her current research at the USDA-ARS, US Horticultural Research Laboratory (USHRL) in Fort Pierce (FL) focuses on flavor analysis and sensory evaluation of fruit and fruit products as affected by postharvest conditions and/or processing. With her Citrus and Other Subtropical Products Research Unit collaborators, she formally determined the effect of Huanglongbing on orange juice flavor by sensory evaluations, and determined the chemical components of off-flavor. That team now evaluates quality of new citrus hybrids that are potentially tolerant to HLB. She has had multiple collaborations with fruit breeders, one long-standing with University of Florida strawberry and tropical fruit breeders, confirming the quality of ready-to-release selections and determining the chemistry of strawberries and other tropical fruits. Postharvest projects include fresh-cut mango, microgreens, effect of chilling on chilling-sensitive commodities, maturity of West-Indian / Guatemalan / Mexican hybrid avocados, etc.

Dr. Steven A. Sargent received his B.S. (1976) and M.S. (1979) in Horticulture, and his Ph.D. (1984) in Agricultural Engineering Technology from Michigan State University. He began his career at the University of Florida in 1987, where he is currently Professor of Horticulture and Associate Department Chair. He has developed a multidisciplinary research/extension program that addresses the effects of postharvest operations from harvest, through shipping on the quality and safety of high-value, fresh fruits and vegetables. Recent projects include:

- 1) improving harvest, cooling and handling efficacy for strawberry, blueberry, peach, sweetcorn, lettuce and broccoli,
- 2) ideal harvest time for “new” potato,
- 3) quality aspects of mandarin selections from UF breeding program,
- 4) postharvest handling of red-fleshed pitaya (dragon fruit),
- 5) reducing postharvest losses in mandarin oranges (Tanzania) and mangos (Haiti).

In addition to graduate student training, he co-teaches a graduate-level course, “Postharvest Technologies for Horticultural Crops”. He has more than 80 refereed journal articles, is past president of the Florida State Horticulture Society, and currently is past chair of the Postharvest Interest Group of the American Society for Horticultural Science. He was awarded Researcher of the Year in 2010 from the Florida Fruit & Vegetable Association. His international activities have led to partnerships around the globe, most notably with colleagues in universities and Embrapa in Brazil, and in Tanzania.

Selected publications:

Sargent, S.A., F. Takeda, J.G. Williamson and A.D. Berry. 2020. [Harvest of Southern Highbush Blueberry with a Modified, Over-The-Row Mechanical Harvester: Use of Handheld Shakers and Soft Catch Surfaces](#). *Agriculture* 10(1), 4; [doi:10.3390/agriculture10010004](https://doi.org/10.3390/agriculture10010004) Featured cover story.

Brecht, J.K., S.A. Sargent, A.A. Kader, E.J. Mitcham, F. Maul, P.E. Brecht and O. Menocal. 2014. *Mango Postharvest Best Management Practices Manual (1<sup>st</sup> revision)*. Univ. of Fla. Horticultural Sciences Department, Gainesville. Publ. HS1185. 74 pp. <http://edis.ifas.ufl.edu/hs1185>

Carnelossi, M.A.G., E.O.A. Sena, A.D. Berry and S.A. Sargent. 2019. Effect of forced-air cooling, hydrocooling, or their combination on fruit quality of two southern highbush blueberry cultivars. *HortScience* 54(1):136-142.

Pereira, M.E.C., S.A. Sargent and D.J. Huber. 2015. Delayed and prolonged ethylene treatment alleviates firmness asynchrony enhanced by 1-methylcyclopropene exposure in Guatemalan-West Indian avocado. *Postharvest Biology and Technology* 108:54-60.

Sreedharan, A., O. Tokarsky, S. Sargent and K.R. Schneider. 2015. Survival of *Salmonella* spp. on surface-inoculated forced-air cooled and hydrocooled intact strawberries, and in strawberry puree. *Food Control* 51:244-250.

Google Scholar: <https://scholar.google.com/citations?user=bpO8rcoAAAAJ&hl=en&oi=ao>

## Keith R. Schneider, Ph.D., Professor

Keith Schneider is currently a professor in the Food Science and Human Nutrition Department at the University of Florida. His work specializes in food microbiology, with a specific focus on produce safety. In addition to his research and teaching duties at the University of Florida, he is engaged in numerous extension outreach activities, generates educational materials and conducts food safety training workshops primarily focusing on FSMA and other related topics. He received his Master's in Public Health from the University of South Florida and his PhD from the University of Florida's Food Science and Human Nutrition Department.

### PUBLICATIONS

1. Schneider, K.R., R. Goodrich Schneider, D.L. Archer, M.D. Danyluk, G.L. Baker, and C. Thomas. 2018. The Food Recall Manual (Version 2). EDIS University of Florida. FSHN0410, <http://edis.ifas.ufl.edu/pdf/files/FS/FS10800.pdf>.
2. Bartz, J.A., M.K. Fatica and K.R. Schneider. 2017. Sanitation in Fresh-cut and Vegetable. In: Postharvest Pathology of Fruits and Vegetables (Eds. J. Adaskaveg and D. Prusky). American Phytopathological Society.
3. Baker C.A., J. De, B. Bertoldi, L. Dunn, T. Chapin, M. Jay-Russell, M.D. Danyluk and K.R. Schneider. 2019. Prevalence and concentration of stx+ E. coli and E. coli O157 in bovine manure from Florida farms. PLoS ONE 14 (5): e0217445. Doi: <https://doi.org/10.1371/journal.pone.0217445>.
4. De, J., A. Sreedharan, Y. Li, A. Gutierrez, J.K. Brecht, S.A. Sargent, and K.R. Schneider. 2019. Comparing the efficacy of postharvest cooling methods to enhance fruit quality and reduce Salmonella in artificially inoculated southern highbush blueberry. HortTechnol. 29(30):314-319. doi: <https://doi.org/10.21273/HORTTECH04238-19>
5. Tokarsky, O. and K.R. Schneider. 2019. Influence of temperature, humidity, and diluent type on survival of Salmonella spp. on the surface of raw tomatoes. Potravinarstvo.13(1):325-330. doi: <https://doi.org/10.5219/1121>
6. De, J., Y. Li, A. Sreedharan, R. Goodrich Schneider, A. Gutierrez, M. Jubair, M.D. Danyluk, K.R. Schneider. 2018. A three-year survey of Florida packinghouses to determine microbial loads on pre- and post-processed tomatoes. Food Control 86:383-388.
7. Tokarsky, O., J. De, J. Brecht, and K.R. Schneider. 2018. Survival of Escherichia coli O157:H7 and Salmonella on bruised and unbruised tomatoes from three ripeness stages at two temperatures. J. Food Protect. 81(12):2028-2033. doi:10.4315/0362-028X.JFP-18-220.
8. Gurtler, J.B, N.A. Harlee, A.M. Smelser and K.R. Schneider. 2018. Salmonella enterica contamination of market fresh tomatoes: A review. J. Food Protect. 81(7):1193–1213. doi:10.4315/0362-028X.JFP-17-395.
9. Underthun, K., J. De, A. Gutierrez, R. Silverberg, K.R. Schneider. 2018. Survival of Salmonella and Escherichia coli in two different soil types at various moisture levels and temperatures. J. Food Protect. 81(1):150-157. doi:10.4315/0362-028X.JFP-17-226.
10. Sreedharan, A., Li, Y., De, J., Gutierrez, A., Silverberg, R. and Schneider, K.R. 2017. Determination of Optimum Sanitizer Levels for Prevention of Salmonella Cross-contamination of Mature Round Tomatoes in a Laboratory Model Flume System. J Food Prot. 80(9):1436-1442. doi: 10.4315/0362-028X.JFP-17-032.
11. Schneider, K.R., De, J., Li, Y., Sreedharan, A., Goodrich Schneider, R., Danyluk, M.D., Pahl, D.M, Walsh, C.S., Todd-Searle, J., Schaffner, D.W., Kline, W. and Buchanan, R.L. 2017. Microbial evaluation of pre- and post-processed tomatoes from Florida, New Jersey and Maryland packinghouses. Food Control. 73:511-517.

Dr. Eva Almenar received her Ph.D. in 2005 from the Institute of Agrochemistry and Food Technology-Spanish Council for Scientific Research (IATA-CSIC) for her work in active packaging. Since then, she has acquired over 15 years of experience in developing and validating novel packaging in order to prolong the shelf life of food, in particular fresh produce. Most of this work has been done in close collaboration with a large variety of companies. Dr. Almenar is currently an associate professor at the School of Packaging, Michigan State University (<https://www.canr.msu.edu/people/eva-almenar>; <https://www.canr.msu.edu/almenar/research-team/>). Her research experience includes:

- (1) Extension of the shelf life of food products using varied packaging technologies including modified atmosphere packaging, active packaging, and edible films.
- (2) Development and validation of packaging alternatives/concepts for food products predominantly using both bio-based and petroleum-based plastics packaging materials.
- (3) Formulation and processing of new packaging materials made from renewable feedstock including agrowaste and their commercial applications including characterization and validation.
- (4) Studies of physicochemical, microbiological and sensorial changes caused by product/package interactions.
- (5) Evaluation of consumer and industry attitudes toward packaged food and packaging formats.
- (6) E-commerce food packaging.

Dr. Almenar has co-authored a variety of publications (<https://scholar.google.com/citations?user=DUNVWvQAAAAJ&hl=en>). Some of this work has been highlighted in media (<https://www.canr.msu.edu/almenar/outreach/work-highlighted-in-media/>) and disseminated through invited talks all over the world (<https://www.canr.msu.edu/almenar/outreach/invited-communications/>). Dr. Almenar teaches undergraduate/graduate food packaging courses (<https://www.canr.msu.edu/almenar/teaching/>), short courses for industry (<https://www.canr.msu.edu/almenar/teaching/industry-courses/>), and good agricultural practices, among others. Dr. Almenar is an active member and former chair of the S-294 Multi-State Project on Postharvest Quality and Safety in Fresh-cut Vegetables and Fruits and of the Food Packaging Division at the Institute of Food Technologists (IFT).

Dr. Tianbao Yang received his Ph.D. in plant molecular biology and genetics from Weizmann Institute of Science in 1998. He is a research plant physiologist at USDA-ARS Food Quality Laboratory (<https://www.ars.usda.gov/people-locations/person/?person-id=44970>). Prior to his current position, Dr. Yang was a research associate professor in Horticulture department of Washington State University. He developed a genome-wide screening approach and cloned nearly 500 novel plant calcium/calmodulin-regulated genes/proteins involved in growth, development, and response to biotic and abiotic stresses. He discovered several important genes involved in plant senescence, disease resistance, symbiosis, reactive oxygen species homeostasis, and tolerance to temperature and other abiotic stresses. Since joining USDA-ARS in 2009, Dr. Yang has developed new knowledge and innovative approaches that solve problems in postharvest science. He discovered that calcium-regulated genes act on tomato fruit development and ripening, and overexpressing one specific gene enhanced the resistance to decay, and delayed the ripening. Dr. Yang demonstrated that preharvest application of calcium to strawberry can increase fruit total phenolics, anthocyanins, and postharvest quality and storage life, and revealed that calcium acts on a transcription factor upstream of the flavonoid pathway to regulate anthocyanin biosynthesis. He identified important genes controlling fruit ripening and antioxidant accumulation. He also found that calcium and UVB treatment can significantly increase broccoli microgreen yield and quality, especially antioxidant levels, and extend shelf life. Dr. Yang's expertise and important results have drawn support from National Science Foundation, USDA-NIFA, and the Washington Tree Fruit Research Commission. Dr. Yang is the secretary for the USDA NE1836-multi-state program for Improving Quality and Reducing Losses in Specialty Fruit Crops. His current research involves basic and applied research on genetic and/or molecular factors influencing the quality of fresh and fresh-cut produce, and develop methods for industry to maintain postharvest quality and extend the shelf-life of fresh produce and fresh-cut food.