

DESERT AGRICULTURE RESEARCH SYMPOSIUM

Opening Session Panel:



Dr. Shane C. Burgess

Vice President, Division of Agriculture, Life & Veterinary Sciences, and Cooperative Extension
Charles-Sander Dean, College of Agriculture & Life Sciences
University of Arizona

A first-generation college graduate, Dr. Shane Burgess joined the University of Arizona in 2011, as the youngest dean and vice president to lead his division and oversee its diverse portfolio of academics, research, and outreach at the state of Arizona's Land Grant University.

He holds the titles of Charles-Sander Dean of the College of Agriculture, Life Sciences, and Cooperative Extension, and Vice President for the Division of Agriculture, Life and Veterinary Sciences, and Cooperative Extension.

During his 10-plus years at UArizona, the College of Agriculture and Life Sciences has added nine new majors, created with the intent of student success, job creation, and driving Arizona's economy. He also envisioned and led the creation of two unique entities that directly serve Arizona, the Yuma Center for Excellence in Desert Agriculture (YCEDA) and the Natural Resource Users Law Policy Center (NRULPC). Dr. Burgess has worked around the world as a practicing veterinarian and scientist and served as a professor and associate dean at Mississippi State's College of Veterinary Medicine before coming to Tucson.



Robby Barkley

President & CEO
Barkley Ag Enterprises, LLC

Robby Barkley is President and CEO of Barkley Ag Enterprises, LLC, which provides administration and management oversight to affiliates Barkley Company of Arizona, Barkley Seed, Inc., and GreenGate Fresh, LLP. Barkley Company of Arizona is a family farming operation based in Yuma, Arizona, growing several thousand acres of vegetables, citrus, cotton, and grain annually. Barkley Seed, Inc., also based in Yuma, operates throughout the southwestern United States marketing wheat, grain and forage seeds. GreenGate Fresh, LLP, based both in Yuma and Salinas, California, is committed to providing high quality salads to the foodservice industry.

Robby supports forward movement in agriculture through his leadership and resources. He actively works with federal and state legislative and regulatory bodies to guide agricultural policy. In addition to serving as Chairman of the YCEDA Advisory Council, Robby continues to provide leadership and support to various national, state and community associations including as a Board Member and Past Chairman for Western Growers.



Vic Smith

CEO
JV Smith Companies

Vic Smith is CEO of JV Smith Companies, a diverse group of operations with farming, cooling and distribution facilities and shipping capacities in Arizona, California, Colorado and Baja, Mexico. Skyview Cooling was the companies' first operation, formed in 1970 as a cooling company in Colorado and New Mexico. By 1977, it had expanded to Yuma, and then in 1982 it began operations in northern Mexico. Today, JV Smith Companies farm several commodities including romaine, iceberg lettuce, spinach, celery, mixed leaf and organic spring mix, carrots, and green onions.

Mr. Smith studied Economics and Business Law at the University of Colorado from 1970-1974. He went on to study Finance at Arizona State University in 1975. Since 1991, he has overseen all the companies' farming, packing and cooling operations, including over 32,000 acres of vegetable production annually. Mr. Smith is currently on the Board of Directors of Center for Produce Safety, Equitable Food Initiative, Brighter Bites, and ifoodDecisionSciences, Inc. He is also a member and previously served on the Boards of United Fresh Produce Association, Produce Marketing Association, and Western Growers.

Speaker Bios:

Pedro Andrade-Sanchez is an Associate Professor Specialist in Precision Agriculture at The University of Arizona, Department of Biosystems Engineering. In 2004, Dr. Andrade-Sanchez earned his Ph.D in agricultural engineering from the University of California Davis. Before joining UA, Pedro completed two years in a post-doctoral position at Washington State University, Center for Precision Agricultural Systems. Currently, Pedro leads an innovative research and extension program in precision agriculture and advanced technologies for the State of Arizona. His program focuses on the implementation of information-intensive solutions engineered to increase efficiencies in crop production in farming systems of semi-arid lands. To date, Dr. Andrade-Sanchez has performed extensive work in machine navigation systems, field-level yield monitoring, variable-rate input application, monitoring of ambient drought conditions, among others. In particular, his work with sensor-based characterization of within-field soil variability and crop development in various settings across Arizona has continue evolving and expanding. New emphasis areas in his program include precision planting, on-the-go weed detection using spectral sensors and imaging systems, and use of low-cost electronics for soil respiration monitoring at high spatial/temporal resolution.

Parker Antin is a Professor of Cellular and Molecular Medicine in the College of Medicine, Associate Vice President for Research for the Division of Agriculture, Life and Veterinary Medicine, and Cooperative Extension, and Associate Dean for Research in the College of Agriculture and Life Sciences. In his positions of Associate Vice President and Associate Dean, he is responsible for developing and implementing the research vision for the Colleges of Agriculture and Life Science, Cooperative Extension, and the Arizona Experiment Station, with total research expenditures of approximately \$95M per year. His Division-wide responsibilities include oversight of research programs and portfolio investment for a broad spectrum of research from biomedicine to precision agriculture and high value

crops. He also oversees foundations, grants, and contracts pre award services, faculty hires and retentions, research communication and marketing, research facilities, research compliance services, intellectual property, technology transfer, and entrepreneurial activity, and has shared responsibility for philanthropy, budgets and information technology.

Dr. Antin is a vertebrate developmental biologist whose research is concerned with the molecular mechanisms of cardiovascular development and disease. His research has been supported by numerous federal agencies including the NIH, NSF, NASA, USDA, and the DOE, as well as several private foundations including the American Heart Association and the Muscular Dystrophy Association. From 2015-2021, he served as Principal Investigator of CyVerse, a \$115M NSF funded cyberinfrastructure project whose mission is to design, deploy and expand a national cyberinfrastructure for life sciences research, and train scientists in its use (<http://cyverse.org>).

A. Elizabeth (Betsy) Arnold (Ph.D., ecology and evolutionary biology) leads a diverse group of researchers and educators with interests in the ecology, evolution, and potential applications of symbiotic microbes for host health. The special focus of the lab is on the fungal portion of plant microbiomes, with particular interest in foliar endophytic fungi and the soilborne fungi that interact with seeds -- but their interests also include animal-associated fungi, bacterial biodiversity, fungal-bacterial interactions, and the establishment of complex ecological systems in new environments. Their field sites range from the Arctic to tropical rainforests to Biosphere2, and locally, encompass both wild and agricultural systems. Their expertise includes traditional microbiology, phylogenetics, population biology, molecular ecology, genomics, and field biology, as well as fungal identification for stakeholders and medical professionals.

Arnold co-directs the National Science Foundation graduate training program in Ecosystem Genomics and is Curator of the Robert L. Gilbertson Mycological Herbarium, the southwest's premier reference collection of fungal biodiversity. She is a Fellow of the Mycological Society of America and the American Association for the Advancement of Science and has published over 150 peer-reviewed papers to date. Arnold has been recognized for her teaching excellence as a Bart Cardon Fellow in the College of Agriculture and Life Sciences and by the Mycological Society of America, and for her commitment to diversity. She and her team are active in education and outreach, with strong ties to area high schools.

Joey Blankinship is a soil ecologist who grew up in suburbia south of Richmond, Virginia. He earned his Bachelor's degree in Environmental Sciences in 2002 from the University of Virginia, followed by a PhD in Biology at Northern Arizona University in 2009 and then postdoctoral research positions at University of California in both Merced and Santa Barbara. In 2017, he became an Assistant Professor at the University of Arizona in the Department of Environmental Science addressing both desert soil health problems and solutions. His team's current research tackles grand environmental and agricultural challenges in drylands that are linked to soil health, including dust mitigation, ecological restoration, soil carbon sequestration, crop nutrient density, and improving the efficiency of water and fertilizer in croplands.

Paul Brierley was raised on a family farm in central California growing alfalfa, sugar beets, canning tomatoes, grains, vegetables, flowers for seed and other crops. After earning an Electrical Engineering/Computer Science degree from the University of Colorado, he spent five years conducting applied telecommunications research in the San Francisco Bay area before returning to his agricultural

roots. Paul operated Brierley Custom Hay in southeast Arizona for twelve years where he was an active leader in the Farm Bureau before joining the staff of the organization. As the Bureau's Director of Organization, he helped agricultural producers improve their industry by actively identifying and solving problems. Paul is a graduate of the Project CENTRL Rural Leadership Program and the Flinn-Brown Arizona Civic Leadership Academy. He sits on the board of directors of Arizona Town Hall, Project CENTRL, the Greater Yuma Economic Development Corporation, the Yuma County Chamber of Commerce, the Arizona District Export Council, Aerospace Arizona, and on the Western Growers Food Safety/Science & Technology Committee. With a background in agriculture, research, leadership, and politics, Paul was chosen to serve as the inaugural Executive Director of the University of Arizona's Yuma Center of Excellence for Desert Agriculture.

Changbin Chen has been an associate professor and a plant biologist at ASU since 2021. Chen's research focuses on understanding homologous recombination and DNA damage response. As a breeder, Chen develops novel vegetable varieties for short-season locations and space farming. Prior to ASU, Chen was an associate professor at the University of Minnesota Department of Horticultural Science and a former Chair of ASHS-HSMP working group.

Kerry Cooper earned his Ph.D. in 2007 at the U of A, where he focused on the pathogenesis of necrotic enteritis in poultry in Dr. Glenn Songer's laboratory. Afterwards, he spent four years as a post-doctoral fellow also at the U of A in Dr. Lynn Joens's laboratory. His post-doctoral research focused on the genomics, epidemiology, and pathogenesis of *Campylobacter jejuni*. In 2011, he moved to the Produce Safety and Microbiology Unit of the United States Department of Agriculture, Agricultural Research Service in Albany, CA for a second post-doctoral fellowship, under the mentorship of Dr. Michelle Carter, where his research focused on the comparative genomics of Shiga toxin producing *Escherichia coli*. In 2013, Kerry became an Assistant Professor at California State University, Northridge (CSUN) in Northridge, CA, and in 2017, Kerry moved back to the University of Arizona, where he is now an Assistant Professor of Food Safety and Epidemiology, and his lab focuses on the genomics, epidemiology, and pathogenesis of bacterial foodborne pathogens, produce safety, and microbiome of various fruits and vegetables.

Jairo Diaz is the director of the University of California Desert Research and Extension Center located in the southernmost part of California. He oversees a diverse portfolio of applied research projects and manages center operations, staff, outreach programs, and facilities. Jairo conducts research and extension programs focused on assessing abiotic (drought and heat) and nutrient stresses in crop production.

Samuel Discua is a Postdoctoral Research Associate and Adjunct Lecturer at the University of Arizona working under Dr. John Palumbo's guidance at the University of Arizona Yuma Agricultural Center. Samuel's current research focuses on different aspects of Impatiens Necrotic Spot Virus (INSV), including investigating the role of weeds as hosts of INSV, studying the impact of lettuce transplants on introducing viruliferous thrips in the Yuma growing region, and chemical control strategies for western flower thrips. Prior to joining the University of Arizona, Samuel worked at Helena Agri-Enterprises in the Research and Development Department, as R&D Manager for Arizona and Southern California. Samuel obtained his Doctoral degree in Plant and Soil Science with an emphasis in entomology from Texas Tech University in Lubbock, Texas, his master's degree in Entomology from The Ohio State University in Columbus, Ohio, and his bachelor's degree in Crop Science and Production from Zamorano University in Honduras.

Diaa Elshikha is an Assistant Professor and Irrigation Specialist in the Biosystems Engineering Department at the University of Arizona. He is stationed at the University of Arizona Maricopa Agricultural Center. He has a Ph.D. degree in Agricultural and Biosystems Engineering from the University of Arizona. Dr.

Elshikha's extension program emphasizes adoption of high efficiency irrigation systems, optimization of all irrigation systems, detection of crop water status through remote sensing and in-situ soil sensors, optimization of water application for maximum water use efficiency, irrigation scheduling techniques and models, and adoption of low water use crops.

Bonnie Fernandez-Fenaroli is the Executive Director of the Center for Produce Safety. Ms. Bonnie Fernandez-Fenaroli received her Bachelor of Science in Agriculture Business Management at California Poly State University, San Luis Obispo and her Masters of Business Administration from Sacramento State University. After fifteen years as Executive Director at the California Wheat Commission, she joined the Center for Produce Safety (CPS) in 2008 as its Executive Director working to leverage public and private expertise and research dollars to address critical risk management issues in the growth, harvest, processing and distribution of fresh produce. As Executive Director she focuses the CPC's attention on critical food safety issues affecting the fresh produce industry and establishes collaborations among public agencies and private industry to maximize the impact of research budgets.

Andrew French is a USDA Research Physical Scientist in the Water Management and Conservation Research Unit at the U.S. Arid Lands Agricultural Research Center in Maricopa, Arizona. His research focuses on crop water use in irrigated agriculture and its evaluation using remote sensing and ground surface flux observations. He has conducted research in the use of remotely sensed land surface temperature and emissivity to test surface energy balance models to estimate evapotranspiration. Since 2016 he has been working collaboratively with the U.S. Bureau of Reclamation and the University of Arizona to assess evapotranspiration for all economically significant crops in the Yuma, Arizona region. He is a co-investigator on a USDA/AFRI project to develop artificial intelligence tools to improve crop management in the U.S. Southwest.

David Galbraith is Professor and Director of the University of Arizona School of Plant Sciences. He is a member of the Bio5 Institute, and the Arizona Cancer Center. He is an adjunct in the Department of Biomedical Engineering, and an Associate of the Institute for the Environment. He was appointed Honorary Dean of the School of Life Sciences at Henan University, Kaifeng, China. He was trained at Cambridge University and held a NATO postdoctoral fellowship at Stanford University. His first academic appointment was at the University of Nebraska-Lincoln.

Dr. Galbraith's research interests include biological instrumentation, developmental, tissue and cell-specific gene expression in eukaryotes, functional genomics and proteomics, and issues in biodiversity. He was elected a Fellow of the American Association for Advancement of Science in 2002, and served as Specialty Chief Editor of *Frontiers in Genomic Assay Technology* from 2011-2017. He is also an Associate Editor for *Cytometry Part A*, and was a founding Associate Editor for *Plant Methods*. He served as Secretary of the International Society for Advancement of Cytometry from 2016-2020. He is recognized internationally as a pioneer in plant flow cytometry and sorting.

Specific recent projects include single-cell and single-nucleus classification of different cell types and functions in plant organs and analysis of the molecular mechanisms underlying grape dormancy. On the animal side, projects have involved exploration of early events during prostate and pancreatic oncogenesis, and the development of hand-held devices and rapid assays to track human pathogens.

Matt Halldorson is the director and Ag & Natural Resources agent for Yavapai County Cooperative Extension. Matt completed his bachelor's degree at NAU before moving to Washington state to earn a master's degree in horticulture from Washington State University. Before coming to the University of Arizona, Matt spent a decade working as a viticulturist and grape grower in Washington state, where he gained an appreciation for both the practical aspects of farming and the benefits of a strong University Extension program. As a former resident of Arizona, Matt is excited by the opportunity to return home and support Arizona agriculture and natural resources.

Tanya Hodges began working for the University of Arizona as the regional academic coordinator for the Yuma distance campus in 2007, supporting students living in La Paz, Imperial, and Yuma counties. She was charged with growing the university's Yuma campus by working with local industries and agencies to identify and bring local bachelor's degrees to support the regional workforce. Today, Dr. Hodges manages and provides student and faculty support for the 20 majors that offer degrees to Yuma students. Additionally, she teaches upper-level courses in agriculture systems management and plant sciences.

Dr. Hodges is a College of Agriculture and Life Sciences alumna receiving both a Bachelor of Science and a Master of Education in Agricultural Education. She earned her Doctor of Education degree in Innovation and Leadership from Arizona State University.

Prior to working for UA, Dr. Hodges worked in the agriculture industry for 16 years. She served for three terms as president of the Yuma County Farm Bureau, the only woman to attain that position to date, and on the Women's Governors Board under Janet Napolitano. In 2006, she was selected Yuma County Farmer of the Year. CALS awarded her its Young Achievers Award in 1998 and Outstanding Achievement Award in 2010. She was recently recognized with the UA Award for Excellence and UAAA Sidney S. Woods Alumni Service Award.

Lisa James is the Grant Program Manager for the Arizona Department of Agriculture's Ag Consultation and Training. Lisa has 22 years of service with the State of Arizona and more than 13 years of experience in federal grants management. She is dedicated to assisting grant applicants and grantees with the many complexities of grant management. Along with the Grant Program Coordinator, Ashley Estes, she oversees all grant funds distributed by the AZDA to ensure compliance with federal and state requirements.

Edward C. Martin is the Interim Director of Extension, Professor, and Extension Irrigation Specialist at the Department of Biosystems Engineering; University of Arizona. Dr. Martin is the chief administrator for over 600 employees who bring science-based research to help solve real-life problems to improve people's lives, communities, and the economy in the state of Arizona. With annual expenditures of over \$40 million, Arizona Cooperative Extension works with communities, schools, local governments, NGOs, and private industry to address the issues concerning the citizens throughout the state. Dr. Martin is also an Extension Irrigation Specialist and Professor in the Biosystems Engineering Department at the UA. With almost 30 years of working with on-farm irrigation management and strategies in Arizona, Dr. Martin has done extensive work in the Navajo nation and throughout the state. His work has concentrated on system design and management to help improve irrigation efficiency and reduce water applications. He has worked on crop water use, irrigation scheduling, and the effects of irrigation applications on groundwater quality. In 2021, he was inducted into the National Association of County Agricultural Agents Hall of Fame.

Robert Masson began his professional career in the United States Navy, where he served aboard the aircraft carrier USS Harry S Truman repairing aircraft. He later worked seven years as a USDA-ARS plant breeding technician in North Carolina, conducting nursery, yield, and abiotic stress trials for a public

soybean breeding program, as he pursued his master's degree in breeding part-time. Upon graduation he transitioned to private industry, working at Weaver Popcorn Company in Indiana as a research scientist developing quality and efficiency advancements for the Hybrid Research, R&D, Quality Assurance, and Grain Conditioning departments. He moved to Yuma, Arizona, and continued his work in private industry at RD4AG, an agricultural contract research company, where he performed field trial services for demonstration, breeding, product development, and GLP Registration. He currently works for the Yuma County Cooperative Extension service as an Assistant Extension Agent for Yuma County, where he works on addressing grower needs with research and connecting them with research specialists and industry advancements.

Ethan Orr is a fourth generation Arizonan. He is the Associate Director for Agriculture, Natural Resources, and Economic Development for the University of Arizona and an Associate Professor of Economic and Community Development. In this role, he supported rural economic development. He has taught government and business at the UA, NAU, and Pima College for over 21 years. He has served in senior level economic development positions for the City of South Tucson and the City of Tucson. He started the Empowerment Zone in Pima County, which has generated over \$500 million in tax credits and supported downtown revitalization. At the City of South Tucson, he partnered with HUD and USDA to create nationally recognized housing and employment programs. In addition, he was a Chief of Staff for the Tucson City Council. He also was the Executive Director of a statewide non-profit which helped over 1100 people with disabilities find meaningful employment every year and he started a small business helping ex-offenders transition into the workplace. He also served in the Arizona legislature working to secure funding for education, and create economic incentives, including creating the mental health first aid program, bringing commercial spaceflight to Arizona, and resolving a number of difficult issues in education and natural resources.

Ethan as served as the Assistant Vice President for Government Affairs and Community Relations for the University of Arizona and helped secure funding for the Cooperative Extension from the state and counties, the Phoenix Bio-Medical Campus, and the College of Veterinarian Sciences. He has a Doctorate in Behavioral Health from Arizona State University and a Master of Public Administration from the University of Arizona. He and his wife Kristen have been married for over 21 years and have three wonderful children.

Alex Putman is a Cooperative Extension Specialist in plant pathology at the University of California, Riverside. His extension and research program focuses on vegetables and strawberries in southern and coastal California. Before starting at UC Riverside in 2016, Alex was a postdoctoral researcher with Krishna Subbarao in Salinas working on Verticillium wilt of lettuce.

Duke Pauli is an Assistant Professor in the School of Plant Sciences at the University of Arizona where his lab focuses on elucidating the genetics of abiotic stress tolerance, and specifically heat and drought. He received his Ph.D. in Plant Sciences from Montana State University with an emphasis on the application of genomic assisted breeding for the development of superior malting barley varieties for agricultural production. He did his postdoctoral research at Cornell University where his work centered on the use of field-based, high-throughput phenotyping technologies to investigate stress adaptive traits in cotton as well as the temporal dynamics of QTL expression. His research group at UA uses a combination of phenomic technologies, from UAVs to the world's largest outdoor phenotyping robot (please see story in the Wall Street Journal: <https://youtu.be/da2gKRdMeXY>), to study and understand the physiological response of plants to adverse environmental conditions.

Channah Rock is a Professor and Water Quality Specialist with the University of Arizona Cooperative Extension. She was recently named Endowed Professor in Extension, Fresh Produce Safety by the College of Agriculture and Life Sciences. Dr. Rock is PI on several projects relating to microbial evaluation of water quality for the protection of public health. She currently leads a multi-year Longitudinal Study evaluating growing practices and environmental impacts within the Southwest growing region. Additionally, Dr. Rock supports the CA and AZ LGMA's by providing science-based recommendations for water treatment. She holds a BS in Microbiology from New Mexico State University and an MS and Ph.D. in Environmental Engineering from Arizona State University.

Charles Sanchez received his B.S. in Plant Science and his M.S. in Soil Science from New Mexico State University in 1980 and 1982, respectively. He received his Ph.D. in Soil Chemistry and Fertility from Iowa State University in 1986. From 1986 through 1991, he served as assistant and associate professor of vegetable nutrition at the University of Florida's Everglades Research and Education Center. His work in Florida was focused on the development of "Best Management Practices" for the reduction of non-point source pollution in the Everglades. In 1991, he joined the faculty at the University of Arizona's Yuma Agricultural Center where he served as the center's Director and as Professor of Soil, Water, and Environmental Sciences for 15 years. He stepped down as the center administrator in 2011 to devote more time to research. His research over the past 20 years has been focused on soil and water management and non-point source pollution issues in vegetable crop production systems. He also works in salinity management and fate, transport, and human exposure of abiotic environmental contaminants.

John Paul SanGiovanni is an internationally-recognized scientist serving as Director of The Food and Nutrition Program of the National Science Foundation Industry-University Center for Collaborative Research Center for Streaming Healthcare in Place (C2SHIP) and directing the Center for the Study of Nutrient-Responsive Systems. He joined UA (CALs and BIO5 Institute) in 2019, after nearly twenty years as a GS-13|14-level scientist at the National Institutes of Health, where he was the scientific director and responsible party for NIH nutrition-based projects funded at > \$50M (Age-Related Eye Disease Study (AREDS) and AREDS2). He is a two-time recipient of the NIH Director's Award for key contributions in developing the NIH Database on Genotype and Phenotype (dbGaP); he was awarded the Early Career Award from the International Society on the Study of Fatty Acids and Lipids. Dr. SanGiovanni has published in *Science* (cover feature), *Nature Medicine* (cover), *Science Translational Medicine* (cover), *JAMA*, *PNAS* and *AJCN*. His works have been cited over 20,000 times, with > 1000 citations per year over the past decade. He has six works with over 800 citations, five with over 1000 citations, two with over 3000 citations and one with over 5000. Dr. SanGiovanni recently provided invited testimony to the National Parliament of Italy on molecular targets of nutrients food constituents in the Mediterranean diet. Dr. SanGiovanni trained as a scholar and researcher in nutritional science, neuroscience, visual psychophysics, biostatistics, and epidemiologic research design at Harvard University for over a decade, where he earned his master and doctoral degrees.



Debankur Sanyal is a Soil Health Specialist and Assistant Professor. He has a Ph.D. in Soil Science from North Dakota State University and is a soil biogeochemist broadly trained in soil health management for sustainable crop production. As a researcher, he seeks answers to the fundamental questions about soil carbon nutrient cycling in the agroecosystems at multiple scales, using approaches that range from laboratory-based experiments to extensive field trials. His research interests include but are not limited to quantifying the impacts of various soil management tools to improve soil health with an aim to create climate-resilient, sustainable and healthy agro-environments for human welfare. Understanding soil-

plant-microbe interactions that influence soil biogeochemical properties in arid and semi-arid environments is one of his major research goals.

Dr. Sanyal runs a statewide soil health extension program and collaborates with stakeholders in studying soils under diverse agroecosystems. To design applied research questions and identify priority research needs in the desert southwest, his team conducts surveys that are distributed to more than a thousand stakeholders around the state, both electronically or physically during field events. I and my team also present research outcomes and deliver lectures on field days, meetings, and conferences, and publish research and extension articles for outreach and education.

Stephanie Slinski is the Associate Director of Applied Research and Development at the Yuma Center of Excellence for Desert Agriculture. She has degrees in Plant Science, Microbiology and a Ph.D. in Plant Pathology. Dr. Slinski started her plant pathology career in a plant disease diagnostic clinic working with fungal, bacterial, viral, and nematode diseases of vegetable and ornamental crops at the University of Massachusetts, Amherst. During her studies at UMass, she evaluated the populations of *Phytophthora capsici* and *Plectosporidium tabacinum* in the MA growing regions. She continued her studies at the University of California working with the fungal disease of conifers, *Fusarium circinatum*. She received postdoctoral training at the University of Pretoria in South Africa studying chromosome polymorphisms and genomics of *F. circinatum*, before returning to working with the agriculture industry as a scientific project manager at the Citrus Research and Development Foundation in Florida. Her current work is in support of the desert agriculture industry in the southwestern US. Her research program mainly focuses on Fusarium wilt of lettuce and includes yearly field trials supporting the development of management tools and supporting breeding programs. Her research is only part of her role as the Associate Director of Research, she works across disciplines to help develop solutions to pressing production needs.

Mark Van Dyke was born and raised in Michigan and graduated from Central Michigan University with a Bachelor of Science degree (chemistry, biology) in 1988. He began his professional career as an analytical chemist at the Dow Chemical Company in Midland, MI. As part of the Environmental Sciences Department, he served as a study director for research programs supporting US Environmental Protection Agency approval of new herbicides. In 1991, he moved to the Dow Corning Corporation and began work in toxicology, silicone biomaterials, and medical devices. After receiving the Dow Corning Fellowship, he attended graduate school at the University of Cincinnati in the Department of Chemical and Materials Engineering, earning his PhD in 1998. That same year, Dr. Van Dyke joined Southwest Research Institute (SwRI) in San Antonio, TX, the largest independent non-profit research and development lab in the US. During his tenure with SwRI, Dr. Van Dyke was a principal investigator and study director for several large biomaterial development programs. His primary area of interest was in the development of naturally-derived biomaterials and their application to wound healing and tissue engineering. In 2004, Dr. Van Dyke joined the faculty of the Wake Forest University School of Medicine where he expanded his investigations into the use of keratin biomaterials for regenerative medicine applications. In 2012 he joined the faculty of Virginia Tech in the Department of Biomedical Engineering and Mechanics where his research included investigation of the solution behavior and self-assembly of keratin nanomaterials and their development into products for medical devices, tissue engineering, drug and cell delivery, and trauma applications. In 2020, Dr. Van Dyke joined the University of Arizona as the Associate Dean of Research in the College of Engineering, and a Tenured Professor in the Department of Biomedical Engineering. Dr. Van Dyke has published more than 80 papers and book chapters, is an inventor or co-inventor on 34 issued US patents and more than 80 US and international patents pending, many related to keratin biomaterials and their application to tissue engineering and trauma, and a co-founder of three startup companies. His teaching interests include regenerative medicine, biomaterials and entrepreneurship. He currently leads major

project development and funding efforts for the College of Engineering, as well as strategic planning activities across the College's eight departments.

Glenn Wright has a Ph.D. in Horticulture from Texas A&M University. He joined the University of Arizona in August 1992 and is located at the Yuma Agriculture Center. He works with the commercial citrus and date palm industries in Southwest Arizona and Southern California, and with other fruit-bearing crops, such as pomegranates and olives. His research interests encompass all horticultural and post-harvest aspects of these crops. Dr. Wright has developed a course titled Citrus and Date Production taught for the University of Arizona teaching program in Yuma, and he teaches citrus, date, and fruit tree culture to master gardeners and the general public.