5th Annual Meeting: National Association of Plant Breeders
9th Annual Meeting: Plant Breeding Coordinating Committee

"Identifying and utilizing genetic diversity"

Hosted by Washington State University
Compton Union Building
Pullman, WA July 28-30, 2015

National Association of Plant Breeders
NAPB
Improving Plants to Improve Lives

College of
Agricultural, Human, and
Natural Resource Sciences
Washington State University

Plant Breeding Coordinating Committee

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Roger Freeman
Jim McFerson*
Rebecca McGee*
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The NAPB meeting is now on Twitter! To comment live from the conference on Twitter, use the hashtag **#NAPB2015**. This hashtag will allow people in your social-media network to easily learn about presentations and events occurring during the conference. Or follow **#NAPB2015** for the latest news and notifications about the NAPB Annual Meeting 2015. *Please check that presenters have agreed to tweeting their information. Do not tweet research results without explicit permission of the presenter, approval will be specified on posters and at the beginning of talks by each speaker. Not familiar with Twitter? Sign-up at twitter.com.

Monday, July 27

Informal welcome reception 6:30-9:00pm *Senior Ballroom*
Registration open

Tuesday, July 28

Four mile fun run 6:00am *Depart from Marriott lobby*

Registration desk open 7:00am-12noon
Poster installation 7:00-10:00am

NAPB and PBCC Business meetings 8:00-10:00am

General Session *Barry Tillman (NAPB President) presiding*

8:00 **Housekeeping and announcements** Kate Evans, WSU
8:15 **NAPB General Session** Barry Tillman, Univ of Florida
8:40 **PBCC General Session** Jamie Sherman, Montana State Univ
8:55 **2016 meeting** Don Jones, Cotton, Inc

Committee breakout sessions 9:00-9:40am (4 groups)
9:45 **Committee reports**

Break 10:00-10.30am

Welcome and Keynote *(Moderator: Kate Evans, WSU)*

10:30 **Housekeeping and announcements**
10:35 **Welcome to WSU** Bob Allan, WSU Emeritus
10:45 **Keynote presentation**
Philosophy and practice of utilizing genetic diversity in plant breeding
Rex Bernardo, Univ Minnesota

Poster mini-presentations #1 *(Moderator: Shelby Ellison, Univ Wisconsin)*

11:15 1-minute poster introductions (Acharya, Ames, Belcher, Bernau, Berry, Bhusal, Cobo, Cordero, Dohle, Dzievit, Falcon, Gilbert, Gizaw, Godoy, Harshman, Howell, Jimenez, Kruse, Levina, Lewien, Liabeuf)

Lunch 11:45am-12:15pm

Poster session #1 12:15-1:00pm (all presenters stand by posters)

Identifying and utilizing genetic diversity in plant breeding programs

1:00-3:30pm *(Moderator: Rebecca McGee, USDA-ARS Pullman)*

1:10 **Identification and conservation of apple genetic diversity**
Gayle Volk, USDA-ARS Ft Collins

1:30 **Sixty years of forest tree improvement in Oregon, Washington and British Columbia**
Keith Jayawickrama, NW Tree Improvement Cooperative

1:50 **Hazelnut breeding at Oregon State University**
Dave Smith, Oregon State Univ

2:10 **Identifying and exploiting genetic diversity in cherry to increase industry profitability**
Amy Iezzoni, MSU

2:30 **The USDA-ARS cool season food legume breeding programs**
Rebecca McGee, USDA-ARS Pullman

2:50 **Extreme makeover potato edition**
Shelley Jansky, USDA-ARS Madison

3:10 **Variation for epicuticular waxes and thrips resistance in onion**
Mike Havey, USDA-ARS Madison

Break 3:30-4:00pm

NAPB 2014 Awardees Presentation *(Moderator: Rita Mumm, Univ Illinois)*

4:00 **Lifetime Achievement**
Ted Crosbie, Monsanto (ret.)

Poster mini-presentations #2 *(Moderator: Arron Carter, Washington State Univ)*

4:15 1-minute poster introductions (Liu, Ma, Masor, Moreno, Muleta, Nankar, Niroula, Roberts, Rodriguez-Armenta, Ruff, Singh, Snodgrass, Spurlock, Stettler, Sykes, Tiede, Tomar, Tseng, Turner, Varella, Wahl, Xiong)

Poster session #2 4:45pm (all presenters stand by posters)

Mixer

6:15pm onwards at the Lewis Alumni Center, featuring **Train of Thought**
Informal dinner featuring regional, identity-preserved products. First-come, first-served **photo session** for professional head shots available until 8:30pm

6:30 **Welcome and housekeeping** Kate Evans, Jim Moyer

8.30 **First downtown taxi departs**

Wednesday, July 29

Field trip to local WSU & ARS sites

8:00 **Depart hotels/dorms**
'Lunch to go' at tour site
12:45 **Load buses & return to CUB**

Graduate student presentations *(Moderator: Shelby Ellison, Univ Wisconsin)*

1:30 **Greenhouse assays predict field performance of dry bean with regard to yield and symbiotic nitrogen fixation**
James A. Heilig, Michigan State University

1:45 **Field screening for selection to tolerance of heat stress in soft red winter wheat using an artificially warmed environment**
Kathleen Russell, University of Kentucky

2:00 **Pedigree-based QTL mapping of resistance to two crown rot pathogens in allo-octoploid strawberry**
Jozer Mangandi, University of Florida

Poster session #3 and refreshment break 2:15-3:00pm

NAPB 2014 Awardees Presentation *(Moderator: Rita Mumm, Univ Illinois)*

3:00 **Early Career**
Maria Salas Fernandez, Iowa State Univ

Plant breeding organization, policy, and funding *(Moderator: Jim McFerson, WTFRC)*

3:15 **Introduction**
Jim McFerson, WTFRC

3:25 **NAPB Strategic Plan**
Barry Tillman, Univ Florida

3:45 **Sustaining the future of plant breeding**
Mike Gore, Cornell Univ

4:00 **Amer Soc Plant Biologists Decadal Vision**
Bill Tracy , Univ Wisconsin

4:15 **USDA REE Plant Breeding Roadmap**
Jose Costa, ARS Beltsville
Ann Marie Thro, NIFA

4:45 **National and International Human Capacity Resources for Plant Breeding**
Fred Bliss, UC Davis & Seminis (ret.)

5:00 **New DNA-Editing Approaches: Policy Implications**
TBD, ASTA

5:30 **PBCC State representatives work session**
Pat Byrne, Colorado State Univ
Location: CUB rm 204 Senate meeting room

First chance for poster removal 5:15pm

Banquet/2015 research awards *(MC: John Clark, Univ Arkansas)*

6:30 **Pre-banquet networking**

7:30 **Dinner**

Welcome to Pullman
Fred Muehlbauer, USDA-ARS (retired)

2015 Research awards Announcements *(Moderator: Rita Mumm)*
Lifetime Achievement: Stephen Baenziger
Plant Breeding Impact: Rex Bernardo

Early Career Scientist: Jennifer Yates

2015 Grad student poster awards (*Moderator: Loren Trimble, Monsanto)*

Thursday, July 30

Workshop 1
Breeding for consumer product quality: successes and challenges

(Moderators: Roger Freeman, Bayer CropScience & John Clark, Univ Arkansas)
8:30-10:00am

Panel A
Roger Freeman, Bayer CropScience
Bill Tracy, Univ Wisconsin
Erin Silva, Univ Wisconsin
Rich Novy, USDA-ARS Aberdeen

Panel B
John Clark, Univ Arkansas
Jim Olmstead, Univ Florida
Stan Hokanson, Univ Minnesota
Micaela Colley, Organic Seed Alliance

Break 10:00-10:30am

Workshop 2
Essential career skills for plant breeders

(Moderator: Kim Kidwell, WSU)
10:30-11:30am

10:30 **Welcome and session overview**
Kim Kidwell, WSU
10:40 **Co-evolution of plant breeding and breeders: Implications for breeder education and career development**
Fred Bliss, UCD & Seminis (ret.)
11:00 **Career development, training, and mentoring panel**
Klaus Koehler, Dow AgroSciences
Kristin Schneider, Monsanto

Phil Simon, USDA-ARS Madison
Maria Salas Fernandez, Iowa State Univ
David Francis, Ohio State Univ

Lunch & Facilitated Roundtable Discussion

Sponsored by Monsanto
12:00 noon

Breakout into tables each with a facilitator for informal lunch and discussion around a particular table topic.

Rotations:
Main course: Table 1
Fruit & Dessert: Table 2
Beverages: Table 3

Workshop 2 De-brief

1:30pm

Adjourn & remove all posters 2:00pm

Speaker Bios (alphabetical order)

ROBERT E. ALLAN, Washington State University, Pullman, WA

Robert E. Allan is an Emeritus Professor of Crops and Soil Sciences at Washington State University and a former Research Geneticist of USDA-ARS. He spent his entire career at Pullman and retired in 1996. He was the Research Leader of the Pullman wheat research unit for 22 years and Coordinator of Western USA regional wheat testing programs for 16 years. His personal research included a broad range of wheat genetic studies and development of wheat varieties and genetic stocks. Most notably he identified and isolated the Rht_1 and Rht_2 semidwarf genes used in the Green Revolution of Wheat. He developed nine winter wheat varieties and numerous genetic stocks. The varieties have been grown on over 18 million total acres. They included the first US varieties with highly stable resistance to eyespot foot rot and club wheat multilines that provided durable resistance to stripe rust. The genetic stocks included euplasmic-alloplasmic lines, cytoplasmic sterility-fertility restorer lines and near-isolines for several morpho-physiological traits. He served on several important international and national assignments including those sponsored by OICD, CIMMYT, USAID, and the National Research Council. He authored or co-authored over 200 publications including book chapters on wheat breeding methodology, soft wheat breeding in the USA and wheat hybridization procedures. He recently wrote a book entitled "Club Wheat". Recognitions included Fellow in both Crop Science Society of America and American Society of Agronomy, USDA-ARS Technology Transfer Award, Genetics and Plant Breeding Award from the National Council of Commercial Plant Breeders and Distinguished Service Award in Agriculture from Kansas State University. He continues to make crosses and conduct wheat genetic studies on his farm near Pullman.

STEPHEN BAENZIGER, University of Nebraska, Lincoln, NE

P. (Peter) Stephen Baenziger is the Nebraska Wheat Growers Presidential Chair and Professor in the Department of Agronomy and Horticulture at the University of Nebraska. He earned degrees from Harvard University (B.A.) in biochemical sciences and from Purdue University (M.S., Ph.D.) in plant breeding and genetics. Before joining the faculty at the University of Nebraska, he worked eight years on wheat and barley germplasm enhancement for the USDA-ARS at Beltsville, MD, and three years with Monsanto Corporation on wheat plant growth regulators and biotechnology. His research focuses on improving the agronomic performance and winterhardiness of winter wheat, barley, and triticale, and on developing new breeding methods. He has co-released 46 cultivars and 36 germplasm lines or populations. His teaching and service activities emphasize graduate education and outreach in plant breeding and genetics. Dr. Baenziger is active in Crop Science Society of America and has been a Division Chair and President, as well as an Associate Editor, Editor, and Editor-in-Chief of Crop Science (their flagship journal). He is also active in the American Association for the Advancement of Science where he was elected Chair of Section O (Agriculture, Food, and Renewable Resources). He is the past Chair of the National Wheat Genomics Committee, and the past Chair of the Plant Breeding Coordinating Committee. He is currently on the Board of Trustees for the International Rice Research Institute, on the Scientific Advisory Boards of BREADWHEAT, and is the Chair of the Hard Winter Wheat Improvement Committee and a member of the National Wheat Improvement Committee. He is an honorary professor of the Ningxia Academy of Agriculture and Forestry Sciences and a Fellow of American Society of Agronomy, Crop Science Society of

America, and the American Association for the Advancement of Science. In 2013, he received the Genetics and Plant Breeding Award from the National Council of Commercial Plant Breeders. He has co-released 46 cultivars and 36 germplasm lines or populations. He has over 250 publications and has received millions of dollars in grants to support his research.

REX BERNARDO, University of Minnesota, St Paul, MN
Dr. Rex Bernardo is Professor and Endowed Chair in Corn Breeding and Genetics at the University of Minnesota, where he conducts research on new ways of breeding maize and breeding maize for new uses. Most of his current work focuses on marker-assisted breeding. Dr. Bernardo obtained his B.S. degree in agriculture in the Philippines in 1984 and Ph.D. degree in plant breeding at the University of Illinois in 1988. He was formerly a research scientist with Limagrain Genetics and a professor at Purdue University. At Minnesota, Dr. Bernardo teaches graduate courses and short courses in plant breeding and in scientific writing. He has written two textbooks, entitled *Breeding for Quantitative Traits in Plants* and *Essentials of Plant Breeding*.

FRED BLISS, U C Davis & Seminis (retired)
Fred Bliss is Professor Emeritus in the Dept. of Plant Sciences at the University of California, Davis and retired from the Vegetable Division of Monsanto. A plant breeder, he has led improvement programs for cowpea, common bean, tomato, stone fruits and tree fruit rootstocks. He is author or co-author of articles and book chapters on topics that include genetic analysis and expression of bean seed protein; breeding dry and snap beans for improved performance; domestication and evolution of common bean; breeding legumes for increased fixation of atmospheric nitrogen; molecular genetic maps for *Prunus* (stone fruits); breeding improved rootstocks for peach and sweet cherry and education of plant breeding students. Fred was a faculty member of the Dept. of Horticulture at UW - Madison from 1966 through 1988, when he accepted the Lester Endowed Chair in the Pomology Dept. at UC Davis. In 1998, he became Director of Worldwide Breeding, Seminis Vegetable Seeds. He held management positions at Seminis (now Monsanto) until retiring in 2010. Recent activities include work with the FAO on the Global Initiative for Plant Breeding, consulting to the Washington Tree Fruit Research Commission and a Delphi study at UC Davis to survey information about education and preparation of future plant breeders. He has participated in research and development projects in Nigeria, Somalia, Honduras and Brazil and as a consultant for numerous international studies. He is a member of the Scientific Advisory Panel for the RosBREED2 program and the Scientific Advisory Council at Driscoll's. Fred holds a B.S. Degree in Agronomy from the Univ. of Nebraska Lincoln and the Ph.D. Degree in Horticulture and Genetics from the University of Wisconsin-Madison followed by post doctoral study at the Univ. of Minnesota.

JOHN R. CLARK, University of Arkansas, AK
John R. Clark is a university professor of horticulture at the University of Arkansas. His research responsibilities are his primary appointment, where he directs the University's Division of Agriculture fruit breeding program. Crops he works with include blackberries, table grapes, muscadine grapes, blueberries, and peaches/nectarines. He also teaches in the areas of plant breeding and fruit production and advises graduate and undergraduate students. He has developed more than 50 varieties of various fruits and has cooperative breeding activities at several locations in the

United States in addition to Europe, Mexico, South America, and Australia. He has worked in fruit breeding since joining the University of Arkansas in 1980.

MICAELA COLLEY, Organic Seed Alliance, Port Townsend, WA

Micaela Colley is the executive director of Organic Seed Alliance. She holds a B.S. in Soil Science, M.S. in Horticultural Agroecology from Oregon State University (1998) and 14 years in the organic seed field. She is the author of several educational publications covering topics on organic seed production, on-farm crop improvement, and variety trials as well as a recently published book on seed saving, The Seed Garden (2015). Micaela leads the organization's national board and staff in fulfilling the mission of advancing the ethical development and stewardship of agricultural seed from their main office in Port Townsend, Washington. OSA's research is focused on developing farmer-participatory breeding for organic cropping systems in collaboration with public breeders and other stakeholders. Colley leads OSA's participation in multi-institutional projects including the Northern Organic Vegetable Improvement Collaborative (NOVIC), the Carrot Improvement for Organic Agriculture (CIOA), Tomato Organic Management Initiative (TOMI), and the Culinary Breeding Network. She is also the group leader of the eOrganic/ eXtension organic seed and plant breeding community of practice. She enjoys her personal time playing in the garden or at the beach with her two young children.

JOSÉ M. COSTA, USDA, ARS, Beltsville, MD

José M. Costa is presently National Program Leader for Plant Genetics and Grain Crops at USDA-ARS. He oversees ARS research projects on genetics and breeding of wheat, barley, oats, switchgrass, corn and sorghum as well as the USDA-ARS-led US Wheat and Barley Scab Inititiative. He led the University of Maryland small grains breeding program until 2013. He has extensive experience in plant breeding and started his plant breeding career at the National Institute of Agricultural Technology (INTA) in Argentina. Currently serves on the Executive board of the Borlaug Rust Initiative, the International Wheat Initiative and the International Wheat Yield Partnership.

THEODORE M. CROSBIE, Chief Technology Officer, State of Iowa

Dr. Ted Crosbie retired in March 2014 as the R&D Lead for the Integrated Farming Systems (IFS) platform, which he started as a member of Monsanto's Global Strategy Group in January of 2010. In this role, he pioneered the effort to develop and implement Monsanto's agronomic solutions and precision agriculture programs for farmers. Dr. Crosbie previously served as Vice President of Global Plant Breeding of the Monsanto Agricultural Sector, from 1998-2010, where he was responsible for seven crops worldwide. Monsanto's Plant Breeding organization is one of the largest breeding efforts in the world with more than 2,000 employees and over 125 sites worldwide in 20 countries. In January 2002, Dr. Crosbie was named a Distinguished Fellow in Science in recognition of his broad strategic impact in Monsanto through scientific leadership. He was a member of the Monsanto Advisory Committee, the Technology Leadership Team, and the Global Strategy Group Leadership team. Dr. Crosbie joined Monsanto in 1996 as the Director of Global Wheat Breeding. In 1997, he joined the Seeds Business Team in the Ag Sector of Monsanto. He, along with Jim Tobin and Mike Morgan, coordinated, integrated and managed Monsanto's seed businesses through the acquisition strategy.

Prior to joining Monsanto, Dr. Crosbie was the President and Chief Executive Officer of ICI Seeds, USA from 1990-95 after spending most of his career in plant breeding research beginning as a Graduate Faculty member of the Agronomy Department at Iowa State University from 1979-82. Dr. Crosbie earned a B.S. in Agricultural Education from Iowa State University in 1973. He earned a M.S. in Plant Breeding and Cytogenetics from Iowa State University in 1976 and his Ph.D. also in Plant Breeding and Cytogenetics from Iowa State University in 1978. In November of 2005, Iowa Governor Tom Vilsack named Dr. Crosbie to the position of Chief Technology Officer for the State of Iowa and he has served three Governors of Iowa in that position. In September of 2007, Iowa Governor Chet Culver named Dr. Crosbie to the Power Fund Due Diligence Committee, a group tasked with reviewing recommendations that came before the Power Fund Board for expenditures from a $100,000,000 annual budget, to be utilized for enhanced energy conservation and biorenewable energy production in Iowa. In February 2011, he was re-appointed as Chief Technology Officer and named the Chair of the Iowa Innovation Council by Governor Terry Branstad. In 2013, Governor Branstad and the Iowa Innovation Corporation recognized him with a Lifetime Achievement Award for his contributions to economic development in the State of Iowa. Dr. Crosbie serves on the following boards. Iowa Economic Development Authority, Kemin Industries Board of Advisors, The Nelson Family Trust, Titan Machinery (TITN), Renewable Energy Group (REGI), Kaiima Bio-Agritech, Inocucor Technologies, and Blue River Technologies.

DAVID FRANCIS, The Ohio State University, Wooster, OH.

David Francis is Professor of Horticulture and Crop Sciences at The Ohio State University. He received his early training in Biology at Pomona College and his PhD in Genetics from UC Davis. He is located on the Wooster campus of the Ohio Agricultural Research and Development Center where he leads the processing tomato breeding and genetics program. He and his students emphasize solving problems caused by bacterial diseases of tomato and the development of genetic resources for studying the effects of carotenoids on human health and nutrition. An expected application of his team's research discovery is the development of germplasm and varieties for commercial use. His varieties and parent lines have accounted for over 1M in seed sales. As part of the Solanaceae Coordinated Agricultural Project (SolCAP), he led development of the tomato SNP resources and has used these as a tool to facilitate practical breeding and to understand the effects of human selection within the context of plant breeding programs. Dr. Francis teaches advanced plant breeding and methods courses related to bioinformatics, data analysis, and genome assisted selection. He has been recognized by the Ohio Agricultural Research and Development Center for "Distinguished Research" and as the "Innovator of the Year"; by the Midwest food processing industry as the "H. D. Brown Food Processing Person of the Year"; and by the United States Department of Agriculture as a recipient of the Honor Award for Excellence.

ROGER E. FREEMAN, Bayer CropScience – Vegetable Seeds, Brooks, OR

Roger started his current job as carrot breeder in August 1982, working in this role at Brooks Oregon for now 33 years. He received his BS (77) in Horticulture from Texas A&M University and his MS (79) in Horticulture from the University of Arkansas, Fayetteville. Roger received his Ph.D. (82) in Plant Breeding and Genetics from the University of Wisconsin, Madison. While at UW, Roger spent three years working within the new USDA Carrot Quality Lab, under the direction of Phil Simon and CE Peterson. Roger's main breeding focus is

developing carrot hybrids for all North American markets which include whole root cello packaging, baby cuts, juice, bunching, and processing. The baby cut carrot market has been a major market segment for 20 years and efforts are being made to expand this globally. Roger's breeding efforts also target carrot markets around the world including Brazil, China and Europe. A significant effort over the last several years has been on colored carrots, bringing yellow, red, purple and white commercial high quality carrots to market. These are starting to show up in mixed color packs, and hopefully will become a mainstream snack product within the next 5-10 years. Thus far, Roger has released over 50 commercial carrot hybrids which have been used to produce several billion dollars in commercial carrot crop value for the carrot industry around the world. Bayer CS Vegetable Seeds (previously Nunhems/Sunseeds) has been a major supplier of hybrid carrot seed for USA/Canada agriculture for over 25 years. Roger looks forward to more years of carrot breeding. He loves living in the Pacific Northwest and enjoys time with his family, friends and spending time outdoors.

MICHAEL GORE, Cornell University, NY

Michael Gore is an associate professor of molecular breeding and genetics for nutritional quality and international professor of plant breeding and genetics at Cornell University, where he is a member of the faculty in the Plant Breeding and Genetics Section in the School of Integrative Plant Science. Mike is also a faculty fellow in the Atkinson Center for a Sustainable Future and Cornell Institute for Food Systems. He holds a BS and MS from Virginia Tech in Blacksburg, Virginia, and a PhD from Cornell University. Before joining the faculty at Cornell, he worked as a Research Geneticist with the USDA-ARS at the Arid-Land Agricultural Research Center in Maricopa, Arizona. His expertise is in the field of quantitative genetics and genomics, especially the genetic dissection of metabolic seed traits related to nutritional quality. He also contributes to the development and application of field-based, high-throughput phenotyping tools for plant breeding and genetics research. Mike teaches two short courses at the Tucson Plant Breeding Institute in Tucson, Arizona, serves on the editorial boards of Crop Science, Theoretical and Applied Genetics, and Plant Breeding and Biotechnology, and serves as the Vice-Chair for the Plant Breeding Coordinating Committee (SCC080)—the USDA-sponsored advisory group of representatives from land grant universities. His career accomplishments in plant breeding and genetics earned him the National Association of Plant Breeders Early Career Scientist Award in 2012 and the American Society of Plant Biologists Early Career Award in 2013.

MICHAEL J.HAVEY, USDA-ARS University of Wisconsin, Madison, WI

Dr. Havey is a USDA Research Geneticist and Professor in the Dept. of Horticulture at the University of Wisconsin-Madison (UW). He received his B.S degree in Plant Pathology from Iowa State University, M.S. degree in Plant Pathology from UW, and Ph.D. degree with a double major in Plant Pathology and Plant Breeding & Plant Genetics from UW. He completed post-doctoral research positions in Brazil and at Washington State University, before joining the USDA and UW faculty in 1988. Dr. Havey's research program focuses on the breeding, genetics, and genomics of the Alliums (onion and garlic) and cucurbits (cucumber, melon, and watermelon), and has published over 100 peer-reviewed papers. He has been chair of the graduate program in Plant Breeding and Plant Genetics (PBPG) at UW-Madison for over 10 years, and served as major professor of 20 PhD and 7 Master's students all in PBPG. Dr. Havey also serves on the editorial boards of the journals Theoretical and Applied Genetics and Plant Breeding.

JAMES A. HEILIG, Michigan State University, East Lansing, MI.
Jim is a Ph.D. candidate in Plant Breeding, Genetics, and Biotechnology at Michigan State University in the Plant, Soil, and Microbial Sciences Department. He works in Dr. James D. Kelly's lab and anticipates graduating in summer 2015. Born and raised in Michigan, Jim received his B.S. degree in Horticulture from MSU. After working as a state agriculture inspector, he returned to MSU to pursue his M.S. in Plant Breeding, Genetics, and Biotechnology. Jim's graduate work has focused on symbiotic nitrogen fixation (SNF) in common bean (*Phaseolus vulgaris*). He is working with a RIL population derived from the black beans 'Puebla 152' and 'Zorro' to find QTLs associated with SNF traits to find markers useful for selection of advanced breeding lines with enhanced SNF characteristics. The population has been phenotyped in both the greenhouse and in the field in Michigan and Puerto Rico. Additionally, Jim has conducted on farm trials to evaluate dry beans grown under organic production systems and investigate the impact of SNF on productivity.

STAN C. HOKANSON, University of Minnesota, St Paul, MN Stan Hokanson grew up in southwest Michigan and got his start in horticulture working summers on the grounds crew at Fernwood Botanical garden in Niles, Michigan. Prior to entering graduate school, he worked in the landscape/nursery industry in central California and managed a landscape plant production and propagation nursery in southwest Michigan. He received my M.S. and Ph.D. degrees from the Department of Horticulture in Plant Breeding and Genetics at Michigan State University. After graduation he did Post-doctoral studies at the USDA Plant Genetic Resources Unit, Geneva, NY, characterizing apple genetic resources there and in Kazakhstan. Subsequently he led the small fruit breeding program for the USDA in Beltsville, Maryland. Since 2001 he has led the Woody Landscape Plant Breeding program at the University of Minnesota. He is currently a Professor in the Department of Horticultural Science at the University of Minnesota. His research interests include breeding and development of new and improved stress tolerant woody landscape plants suitable for upper Midwestern landscapes. In addition, he undertakes research projects that support his breeding efforts, including determination of the genetic basis for traits such as disease resistance, pH tolerance, cold tolerance and flower, foliage and form characteristics in woody landscape cultivars and related germplasm. Current research activities include breeding cold hardy, disease resistant deciduous azaleas, rhododendrons, and weigela, development of new woody landscape plants derived from plants native to the upper Midwest, and the evaluation of woody plant germplasm that is marginally hardy to USDA Zone 4. New research efforts involve identifying resistance genes to the rose black spot disease and developing markers linked to the genes and an evaluation of the genetic diversity and range of variation for horticultural traits for a North American native deciduous azalea species, the swamp azalea. He currently teaches introductory and advanced undergraduate landscape plant materials courses and a graduate course in public garden management.

AMY IEZZONI, Michigan State University, East Lansing, MI
Amy Iezzoni is a University Distinguished Professor in the Department of Horticulture at Michigan State University where she directs the Michigan State University tart cherry scion and cherry rootstock breeding programs, has an active program in cherry genetics, and co-teaches two graduate courses in plant breeding and genetics. Dr. Iezzoni was the Project Director

of the USDA- Specialty Crop Research Initiative (SCRI) coordinated agricultural project entitled "RosBREED: Enabling marker-assisted breeding in Rosaceae", an international collaborative project designed to increase breeding efficiency and the success of new cultivar adoption for apple, cherry, peach and strawberry. She is currently the Project Director of a second coordinated agricultural project, also funded by the USDA-SCRI program, entitled "RosBREED: Combining disease resistance with horticultural quality in new rosaceous cultivars" that seeks to extend the benefits of DNA informed breeding to more rosaceous crops and traits using expanded genomics information.

SHELLEY JANSKY, USDA-ARS, University of Wisconsin-Madison, WI
Shelley Jansky is a Research Geneticist with the USDA-ARS and an associate professor in the Department of Horticulture at the University of Wisconsin-Madison. Her research program focuses on potato germplasm enhancement, with the goal of developing genetics resources and parents for use by breeders in cultivar development. Currently, her program is developing recombinant inbred line populations in interspecific diploid potato populations and self-pollinating cultivated potato to create inbred lines for breeding and genetics analyses. Shelley received her B.S. in Biology at the University of Wisconsin-Stevens Point and M.S. and Ph.D. degrees in Plant Breeding and Plant Genetics at the University of Wisconsin-Madison.

KEITH JAYAWICKRAMA, Oregon State University, Corvallis, OR.
Keith Jayawickrama is Director of the Northwest Tree Improvement Cooperative (NWTIC) at Oregon State University (OSU), where he has served since 2000. His expertise is in forest tree breeding and tree improvement, and he currently assists the tree improvement programs of most of the significant forest growers in western Oregon and western Washington through the NWTIC. Dr. Jayawickrama's work and research for the past 27 years has focused on breeding, testing, selection, and deployment of commercially important conifer timber species (Douglas-fir, western hemlock, radiata pine and loblolly pine) through field-based breeding approaches. His research publications include work on realized genetic gain, inheritance of various traits, improvement of wood quality and breeding strategy. Prior to joining OSU, he worked in applied tree improvement programs at the Universidad Austral de Chile and the New Zealand Forest Research Institute. Keith earned a B.Sc. Special degree in Botany from the University of Colombo in 1986, and M.S. and Ph.D. degrees in Forest Tree Improvement from the North Carolina State University in 1990 and 1996.

KLAUS KOEHLER, Dow AgroSciences, Indianapolis, IN
After earning a PhD at the University of Hohenheim, Germany in 1986, Klaus Koehler began his professional career at KWS Saat AG, Germany as a Corn Breeder. In 1988 he moved to Champaign, IL to establish a proprietary KWS corn breeding program in the US Corn Belt. He became the NA Director of Corn Research in 1992 and added several breeding stations in the corn belt and a winter nursery site in Puerto Rico. In 1999 he became Head of Global Corn Breeding for AgrEvo with a strong emphasis on development of tropical corn breeding programs in South American and Asia. He maintained that position during the Aventis merger and the acquisition of that company by Bayer Crop Science. During this time period he established a site for event selection and trait QC for corn and soybeans in Champaign, IL. In

2004 he became Global Head of Product Development for MTI GmbH. In 2006 he joined Dow AgroSciences first as the NA Northern Corn Breeding Leader, responsible for northern breeding sites and early corn breeding strategy, then became Global Temperate Corn Breeding Leader in 2009. In this role, he developed the corn breeding strategy to adopt di-haploid technology, marker-assisted breeding and novel decision making tools. Since January 2014 he became the NA Breeding and Product Development Leader, responsible for all DAS breeding stations and all crops in the lower 48 states, Ontario and Puerto Rico. He is the current secretary of NAPB.

JOZER MANGANDI, University of Florida, Gainesville, FL
Jozer Mangandi is a PhD candidate in Horticultural Sciences at the University of Florida, advised by Drs. Vance Whitaker and Natalia Peres. He is originally from El Salvador, earning his B.S. in Agricultural Science and Production from the Pan-American Agricultural University "Zamorano", Honduras in 2005. He joined the University of Florida's Gulf Coast Research and Education Center in 2006, pursuing research on disease resistance on strawberries and ornamentals. He earned an M.S in Horticultural Sciences from University of Florida in 2010 and expects to complete his Ph.D. in December, 2015. His dissertation research is part of a concerted breeding effort to increase disease resistance in UF strawberry cultivars. Specifically, he is uncovering the inheritance of resistance to two strawberry crown rot pathogens *(Phytophthora cactorum* and *Colletotrichum gloeosporioides*), identifying and validating QTL associated with high levels of resistance. After graduation he will pursue his goal of a career in the plant breeding industry, with a strong focus on disease resistance traits.

REBECCA MCGEE, USDA-ARS, Washington State University, Pullman, WA
Dr. Rebecca McGee is a USDA-ARS Research Geneticist located at WSU in Pullman, Washington. She received a B.S. from the University of Washington, an M.S. from the University of Alaska and a Ph.D. from Oregon State University. Prior to joining the ARS, she was a Principal Scientist at General Mills, Inc. and directed the vegetable legume breeding programs. Currently, her research focuses on breeding cool season food legumes, primarily spring- and autumn-sown peas and lentils. The priorities of her breeding program include breeding for resistance to biotic and abiotic stresses and mineral biofortification. During her career in both the private and public sectors, she has contributed to the release of more than 35 varieties of peas and lentils. She is a member of the Executive Committee of the North American Pulse Improvement Association, the Chair of the Pisum Crop Germplasm Committee, and serves on the editorial board of the Journal of Plant Registrations.

RICH NOVY, USDA-ARS, Aberdeen, ID
Rich Novy is a potato breeder/geneticist with the USDA-ARS at Aberdeen, Idaho and has been in this position since 1999. Prior to accepting his current position he was the potato breeder/geneticist at North Dakota State University, Fargo, ND. He attended Washington State University and obtained his B.S. in Horticulture and his M.S. and Ph.D. in Plant Breeding and Genetics at the University of Wisconsin-Madison. He is a member of the Northwest (Tri-State) Potato Variety Development team comprised of state and federal researchers in the states of Idaho, Oregon, and Washington and during his career has contributed to the release of 37 potato varieties. His contribution to potato variety development has been recognized with

two ARS technology transfer awards, a Federal Laboratory Consortium for Technology Transfer Award from the Far West region, a USDA-NIFA Partnership Award for a SCRI grant in controlling zebra chip disease, and an Outstanding Extension Award for the storage management of new potato cultivars from the Potato Association of America. In addition, he has authored or co-authored 59 breeding and genetics publications in peer-reviewed journals.

JAMES OLMSTEAD, University of Florida, Gainesville, FL

Dr. James W. Olmstead is an Associate Professor in the Horticultural Sciences Department at the University of Florida, where he leads the blueberry breeding and genetics program. His breeding program focuses on development of low-chill requirement southern highbush blueberries that are adapted to subtropical climates. Improving fruit quality characteristics and developing wider adaptation in blueberry cultivars are focus areas in for research and breeding efforts. His research program covers a broad range of topics ranging from understanding consumer preferences to implementing genomic selection in autopolyploid crop species. Dr. Olmstead received his B.S. (1997) and M.S. (1999) degrees in Horticulture from Washington State University where he worked at the Irrigated Agriculture Research and Extension Center in Prosser, WA studying disease resistance in sweet cherry. He received his Ph.D. at Michigan State University (2006) in Plant Breeding and Genetics, where he identified QTL associated with fruit quality traits in sweet and sour cherry. Prior to his position at the University of Florida, he was a county extension agent in Yakima, WA. Since starting at UF in 2009, Dr. Olmstead has released six blueberry cultivars, and has served as a committee member for 26 graduate students including 7 as chair or co-chair. He teaches a graduate level course in Marker-Assisted Plant Breeding and co-teaches Advanced Genetics, and is a member of the UF Genetics Institute and the UF Plant Innovation Center.

KATHLEEN RUSSELL, University of Kentucky

Kathleen Russell is a Ph.D. candidate in Integrated Plant and Soil Sciences with a focus on Plant Breeding and is advised by Dr. David Van Sanford at the University of Kentucky. Her anticipated graduation is May 2016. She received her B.S. in Natural Resource Management (2004) and M.S. in Entomology (2007) from the University of Kentucky and afterwards spent some time doing field research with a private environmental consulting firm. Kathleen's graduate research is focused on understanding the effects of heat stress on nitrogen use efficiency in soft red winter wheat varieties adapted to the Southeastern United States and how to better screen for tolerance in the field for improved breeding strategies.

MARIA SALAS FERNANDEZ, Iowa State University, Ames, IA

Maria Salas Fernandez is an Assistant Professor in the Department of Agronomy at Iowa State University. Previous to her appointment in the academia, she worked in the private sector in Argentina, at the R&D Department of American Cyanamid Company and as a sorghum breeder at Nidera S.A. She received a B.S. in Agricultural Production from the Argentine Catholic University, M.S. in Plant Physiology from Texas A&M University, and Ph.D. in Plant Breeding and Genetics from Cornell University. She initiated and leads a sorghum field breeding program at ISU to develop germplasm for forage and biofuel production adapted to the Midwest. Her research program is also focused on the use of high-throughput genotyping and phenotyping technology to identify genetic mechanisms controlling traits such as plant

architecture, photosynthesis, photoprotection and cold tolerance at germination. In 2012, Dr. Salas Fernandez was granted the prestigious NSF CAREER award for her novel research in photosynthesis and photoprotection. She was also recognized as the 2013 American Society of Agronomy (ASA) Early Career Professional Award and the 2014 NAPB Early Career Award. Her appointment at ISU also includes responsibilities as the instructor of an undergraduate course in Genetics, Agriculture and Biotechnology and as an advisor of 20 undergraduate students in Agronomy

KRISTIN SCHNEIDER, Monsanto
Kristin Schneider, Monsanto's Global Wheat Breeding Lead is responsible for managing the global breeding research program focused on improved wheat variety development. Trained as a plant breeder at Michigan State University, she started at Monsanto in 1999 as a corn breeder responsible for developing enhanced grain quality corn genetics. Navigating Monsanto's broad research and development pipeline, Kristin shepherded projects like INTACTA RR2 PRO™ soybeans, Genuity® Roundup Ready® 2 Xtend soybeans and corn high-yield concepts through early phases of development. Since 2011, Kristin has been leading the wheat breeding organization focused on applying Monsanto's pioneering expertise in advanced breeding and genomics technology to the improvement of wheat varieties for all market classes grown in the US. Kristin shares her time living in St Louis, MO and Twin Falls, ID where she and her team are executing novel wheat breeding strategies at the new Monsanto Wheat Technology Center.

ERIN SILVA, University of Wisconsin-Madison, WI
Erin Silva received her PhD in Horticulture from Washington State University in 2002, working in the area of onion seed production and pollination. Subsequently, she spent time as a postdoctoral researcher with Dr. Philipp Simon with the USDA-ARS carrot breeding program and then as an Assistant Professor at New Mexico State University. She is currently an Assistant Professor and Extension Specialist in Organic and Sustainable Cropping Systems at UW-Madison, working on several national projects to develop and identify vegetable cultivars with traits advantageous for organic production systems, including the Northern Organic Vegetable Improvement Collaborative and Carrot Improvement for Organic Agriculture.

PHILIPP SIMON, USDA-ARS, University of Wisconsin – Madison, WI
Dr. Phil Simon is a USDA, ARS Research Geneticist and Professor of Horticulture at the University of Wisconsin, Madison. His research in vegetable genetics and breeding has focused on carrot improvement, targeting improved flavor and nutritional quality, nematode, disease and abiotic stress resistance. He led the development of widely used carrot germplasm with high carotene content, sweet, mild flavor, purple color, and root-knot nematode resistance. To complement his breeding effort, along with students and collaborators, he has developed breeding tools, including the sequencing of the carrot genome, and he has collected carrot, Allium, and other vegetable germplasm in nine collecting expeditions. He has undertaken related plant breeding research including the first production of true seed in garlic, and the development of cucumber and melon germplasm with orange color and elevated carotene

content. He has supervised the training of 30 graduate students, is a Fellow of the American Society for Horticultural Science, recipient of the ASHS Vegetable Breeding Award, and of an Honorary Doctorate from the Agricultural University of Krakow, Poland. He is a past chair of the Plant Breeding Coordinating Committee.

DAVID SMITH, Oregon State University, Corvallis, OR
David Smith is a Senior Faculty Research Assistant in the Horticulture Department at Oregon State University, where he manages the greenhouse and field operations of the Hazelnut Breeding Program for Dr. Shawn Mehlenbacher. He received his B.S. in Horticulture at Oregon State in 1982 and began working with the breeding program shortly thereafter, where he is in charge of pollinations, propagation by seed and scion, disease screening inoculation, plot establishment, and keeping Shawn's chainsaws sharp. He is a co-developer, along with Shawn and Becky McCluskey, of 10 main crop, 11 pollinizer, and 3 ornamental cultivars of hazelnut, 4 of which are accounting for 3000+ acres of new orchard plantings annually in Oregon's Willamette Valley.

ANN MARIE THRO, USDA, Washington DC
Ann Marie Thro is National Program Leader (NPL) for plant breeding and genetic resources in the Institute for Food Production and Sustainability in USDA's National Institute for Food and Agriculture (NIFA). Through early 2015, she is serving as Sr. Agricultural Advisor for Plant Sciences in the Office of the Chief Scientist, USDA. Dr. Thro provided leadership in the formation of the Plant Breeding Coordinating Committee (PBCC), a multi-state committee within the federal-state land-grant university partnership, and the multi-agency internal USDA Plant Breeding Working Group. During 2011/12, Dr. Thro served as a USDA Sr. Agricultural Representative in Afghanistan (northern region). Previous experience includes service as Commissioner of the USDA Plant Variety Protection Office (PVPO) (1999-2001); Coordinator, Cassava Biotechnology Network, International Center for Tropical Agriculture (CIAT), Cali, Colombia (1992-1998); Technical Advisor, National Grain Legume Program, Gandajika, Zaire (now D.R. Congo) (1991-92), and Associate Professor of Agronomy, Louisiana State University (1982-1992). Dr. Thro's advanced degrees are in Plant Breeding and Genetics from Iowa State University; with undergraduate degrees in Agronomy from Virginia Polytechnic Institute, and History and Languages from Bryn Mawr College.

BILL TRACY, University of Wisconsin-Madison, WI
Bill Tracy is professor and chair of the dept. of agronomy, UW-Madison. He served as interim dean of the College of Agricultural and Life Sciences. As a sweet corn breeder, Bill works closely with commercial sweet corn breeders and has developed sweet corn inbreds grown commercially on every continent (with arable land). He has also developed sweet corn cultivars for organic cropping systems. Bill has had the pleasure of mentoring more than 40 graduate students most of whom work in commercial plant breeding. His research areas include the genetics, genomics, and biochemistry of endosperm carbohydrate synthesis, the relationship between plant development and pest resistance, and the origin and phylogeny of sweet corn. He serves the plant breeding community in a number of roles. He is

the current chair of the Maize Crop Germplasm Committee, the CIMMYT Maize Germplasm Committee, and the International Sweet Corn Development Association, the corn breeding executive committee and the NAPB advocacy committee.

GAYLE M. VOLK, USDA-ARS National Center for Genetic Resources Preservation, Fort Collins, CO

Gayle Volk specializes in the conservation of vegetatively propagated crops and crop wild relatives (primarily fruits and ornamentals) in the U.S. National Plant Germplasm System. She has a B.S. in Biochemistry from Colorado State University, an M.S. in Horticulture from Purdue University, and Ph.D. in Plant Physiology from Cornell University. She is based at the National Center for Genetic Resources Preservation, one of the largest seed banks in the world. Her research focuses on identifying strategies to capture and maintain genetic resources in diverse clonal collections and on providing decision-support tools to evaluate the breadth and depth of genetic diversity in their collections. She also develops widely applicable and cost-effective methods to cryopreserve clonally-derived germplasm and seeks to better understand the physiological processes that occur during the cryopreservation process. She is currently the Chair of the U.S. Apple Crop Germplasm Committee as well as the U.S. Rosaceae Executive Committee, and is coordinating the development of the Global Conservation Strategy for Apple.

JENNIFER YATES, Monsanto

Interested in the field of genetics at an early age, Jennifer Yates pursued that interest to a B.S. degree in genetics at the University of Georgia, and, while there, refined that interest to the field of plant genetics. She attended the University of California-Davis for her M.S., originally intending to continue the crop genetic transformation research she had done at Georgia, but decided to switch to the field of plant breeding after taking a plant breeding course. Jennifer returned to the University of Georgia to obtain her PhD in Agronomy, specifically focusing on soybean breeding. Upon completing her degree, she joined Monsanto in 2006 as a soybean breeder in Galena, MD. She was a soybean breeder during Monsanto's transition from RR1 to RR2Y, and became an inventor and co-inventor on the many varieties that helped enable this full portfolio of RR2Y products. In late 2011, Jennifer accepted the position of Agronomic traits lead and relocated to St. Louis. In this role, Jennifer's team supports soybean breeders in North and South America, providing disease and abiotic stress characterization, as well as such discovery projects as yield loss assessments from disease and enabling rapid pathogen identification methods in the field. Jennifer was a recipient of a National Science Foundation pre-doctoral fellowship and a participant in a 10-week study abroad session in S. Korea funded by NSF. Since joining Monsanto, Jennifer has been inducted in the Monsanto Fellows program, is an inventor on several marker and variety patents, has received a Global Breeding excellence award, and has pursued outreach activities such as volunteering to teach science experiments in classrooms and starting a mentoring program for women in plant breeding.