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- Current Insights into the Genetics, Toxicology, and Plant Pathology of *Fusarium verticillioides* 43
- Functional Genomics Meets Bacterial Diseases 48
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- Challenges at the Urban/Ag Interface 65
- Co-Evolutionary Processes of Introduced Pathogens and Hosts in Natural Ecosystems 55
- Food Safety as Influenced by Phyllosphere Microflora 62
- The Plant Pathologist's Toolkit for Responding to Crop Biosecurity Threats 72
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- Demystifying PCR Technologies for Plant Pathologists . . .70
- Linear Mixed Models for Analyzing Data Obtained in Designed Experiments 39
- Methods in Functional Genomics 38
- The First Steps for a Successful Job Search in Industry: Writing the Resumé, Finding the Opening, and Fine-Tuning Interview Skills 38

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Daily Schedule

Thursday, July 29

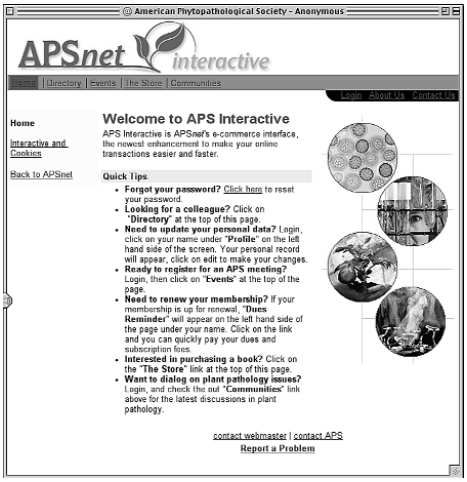
Please Note: ACC refers to the Anaheim Convention Center.

7:30 a.m. Thursday – 3:30 p.m. Saturday – Offsite
Field Trip: Pre- and Postharvest Diseases of Tree Fruit and Other Crops

6:30 – 9:00 p.m. – Hilton, Oceanside
Publications Board

6:30 – 9:00 p.m. – Hilton, San Clemente
Committee on Committees

Are You Interactive?



Register for meetings, renew your membership, shop the APS PRESS store, change your address, dialogue with colleagues and more online at APS Interactive, located at http://interactive.apsnet.org. Need a password and login? Forgot yours? No problem. Visit member services at the APS registration desk and we'll get you connected.

APS
Healthy Plants • Healthy World

Daily Schedule

Friday, July 30

7:30 a.m. Fri. – 5:00 p.m. Sat. – Offsite
Field Trip: Forest Pathology

7:30 – 9:00 a.m. – Hilton, Salinas
Councilors Forum

7:30 – 9:00 a.m. – Hilton, Monterey
Financial Advisory and Executive Committees

8:00 a.m. – 8:00 p.m. – Offsite, U. C. Riverside
Workshop: Turfgrass Disease Diagnostics

9:00 a.m. – 5:00 p.m. – Hilton, Laguna A/B
APS Strategic Planning and Leadership Forum

5:00 – 6:00 p.m. – Hilton, Salinas
Councilors Forum

5:00 – 6:00 p.m. – Hilton, Palos Verdes
Scientific Programs Board

Welcome New Members

"Never doubt that a small group of thoughtful, committed people can change the world. Indeed, it is the only thing that ever has."

– Margaret Mead

APS

APS is changing the face of plant health science one member at a time. Look for the green name badge holders indicating a new member and help welcome them to APS!

SHOP EARLY
FOR THE BEST SELECTION!

Purchase T-shirts at the APS PRESS bookstore located in Exhibit Hall C.

Saturday 7/31/04.....1 p.m. - 6 p.m.
Sunday 8/1/04.....9 a.m. - 6 p.m.
Monday 8/2/04.....9 a.m. - 5 p.m.
Tuesday 8/3/04.....9 a.m. - 4 p.m.
Wednesday 8/4/04.....9 a.m. - 11 a.m.

APS PRESS

#12-04

7:00 a.m. – 12:00 p.m. – Hilton, Ventura
APS Foundation

8:00 a.m. – 12:00 p.m. – Hilton, Laguna A/B
APS Council

8:00 a.m. – 12:00 p.m. – Hilton, Monterey
Workshop: The First Steps for a Successful Job Search in Industry: Writing the Resumé, Finding the Opening, and Fine-Tuning Interview Skills

8:00 a.m. – 5:00 p.m. – Hilton, El Capitan A/B
Workshop: Methods in Functional Genomics

8:00 a.m. – 5:00 p.m. – Offsite
Field Trip: Ornamental Diseases

12:00 – 1:30 p.m. – Hilton, Capistrano A/B
Office of International Programs Board Luncheon,
by invitation only

12:00 – 4:00 p.m. – Hilton, Palisades
Workshop: APS Leadership

12:00 – 4:00 p.m. – Hilton, Malibu
APS PRESS Board

1:00 – 6:00 p.m. – ACC, Hall C
APS-OIP 5K Fun Run/2.5K Walk Pre-Registration and Bib Pick-Up

1:00 – 6:00 p.m. – ACC, Hall C
Registration

1:00 – 6:00 p.m. – ACC, Hall C
APS Central

1:00 – 6:00 p.m. – ACC, Hall C
APS PRESS Bookstore

1:30 – 3:00 p.m. – Hilton, Capistrano A/B
Office of International Programs Standing Committee Meetings

2:00 – 6:00 p.m. – Hilton, San Simeon A/B
Workshop: Linear Mixed Models for Analyzing Data Obtained in Designed Experiments

3:00 – 4:00 p.m. – Hilton, Avila A
Section Chairs Meeting

3:00 – 5:00 p.m. – Hilton, Capistrano A/B
Office of International Programs Open Meeting,
visitors welcome

3:00 – 5:00 p.m. – Hilton, Palos Verdes
Committee Chairs/Vice-Chairs Program Orientation and Reception

4:30 – 5:30 p.m. – Hilton, Huntington A/C
First Timers' Orientation

5:30 – 7:00 p.m. – All Comittee Meetings will be held at the Hilton
APS Committee Meetings
APS PRESS: Fungicide and Nematicide Tests Editorial Board – Oceanside
Awards and Honors – Salinas
Biological Control – Redondo
Chemical Control – Santa Monica
Collections and Germplasm – San Clemente
Diagnostics – Santa Barbara
Diseases of Ornamental Plants – Sunset
Epidemiology – Coronado
Genetics – Lido A/B
Mycotoxicology – Balboa A
Nematology – Balboa B
Postharvest Pathology – Balboa C
Seed Pathology – Lido C
Tropical Plant Pathology – Mezzanine 1
Virology – Mezzanine 2

7:00 – 8:30 p.m.
APS Committee Meetings
APS PRESS: Illustrations of Plant Pathogens and Diseases – Manhattan
APS PRESS: Phytopathological Classics – Santa Monica
APS PRESS: Standardization of Common Names for Plant Diseases – San Clemente
Biotechnology Impact Assessment – Redondo
Extension – Santa Barbara
Graduate Student – Sunset
Industry – Coronado
Joint Committee of Women in Plant Pathology and Cultural Diversity – Lido A/B
Placement – Balboa A
Private Practice – Balboa B
Regulatory Plant Pathology – Balboa C
Teaching – Lido C
Youth Programs – Mezzanine 1

8:30 – 10:00 p.m.
APS Committee Meetings
APS PRESS: Biological and Cultural Tests Editorial Board – Manhattan
Bacteriology – Santa Monica
Biochemistry, Physiology and Molecular Biology – Redondo
Crop Biosecurity – Oceanside
Environmental Quality and Plant Health – Santa Barbara
Forest Pathology – Sunset
Host Resistance – Coronado
Integrated Pest Management – Lido A/B
Mycology – Balboa A
Pathogen Resistance – Balboa B
Phyllosphere Microbiology – Balboa C
Plant Disease Losses – Lido C
Plant Pathogen and Disease Detection – Mezzanine 1
Soil Microbiology and Root Diseases – Mezzanine 2
Turfgrass Pathology – Mezzanine 3

Saturday, July 31

8:00 a.m. – 12:00 p.m. – Hilton, Monterey
Workshop

The First Steps for a Successful Job Search in Industry: Writing the Resumé, Finding the Opening, and Fine-Tuning Interview Skills

Organizer: Chris Becker, Baar Scientific LLC, Romulus, NY
Moderator: Chris Becker, Baar Scientific LLC, Romulus, NY

In this workshop each student will identify three personal strengths and develop a resumé that sells those strengths to a prospective employer. The workshop will provide hands-on training for organizing the job search, networking with other professionals, matching the resumé to the advertised job requirements, and sharpening interview skills. The workshop will focus on identifying accomplishments in your past employment and educational experience that fit the needs of a potential employer. Pre-registration is required.

8:00 a.m. – 5:00 p.m. – Hilton, El Capitan A/B
Workshop

Methods in Functional Genomics

Organizers: Timothy Denny, University of Georgia, Athens, GA, and Susanne von Bodmann, University of Connecticut, Storrs, CT
Sponsoring Committee: Bacteriology
Moderator: Timothy Denny, University of Georgia, Athens, GA
Financial Sponsors: Affymetrix, Inc., and Agilent Technologies

Participants will be introduced to the theory and practice of using DNA microarrays and high throughput protein analyses to investigate expression and function of many genes. The program is designed especially for scientists not involved in a functional genomics project, but who need a thorough introduction to the most common experimental approaches as a foundation for planning a new project or for their general molecular genetics "literacy." Presentations will cover one- and two-color microarrays and relevant experimental design and statistical analysis considerations, two-dimensional protein gels/peptide mass fingerprinting and "shotgun" liquid chromatography mass-spectral approaches, and biolog phenotype microarrays. Pre-registration is required.

8:00 a.m.	Introduction. T. DENNY. University of Georgia, Athens, GA
8:10 a.m.	High density, long oligonucleotide microarrays in plant genetic research. S. COUGHLAN. Agilent Technologies, Inc., Wilmington, DE
9:10 a.m.	Affymetrix GeneChip technology—Past, present and future. L. RAMSUNDAR. Affymetrix, Inc., Santa Clara, CA
10:10 a.m.	Break
10:30 a.m.	Introduction to microarray design and analysis. J. GLASNER. University of Wisconsin, Madison, WI
11:30 a.m.	Questions
12:00 p.m.	Break for lunch
1:00 p.m.	Functional proteomics: A short course. K. SAUER, State University of New York, Binghamton, NY
2:00 p.m.	Mass spectrometry-based strategies for protein identification and proteomics. J.A. LOO. University of California, Los Angeles, CA
3:00 p.m.	Break
3:30 p.m.	Phenotype microarray analysis of pathogenic and non-pathogenic microbial cells. B. BOCHNER. Biolog, Inc., Hayward, CA
4:30 p.m.	Discussion

8:00 a.m. – 5:30 p.m. – Offsite
Field Trip

Ornamental Diseases

Organizers: Jan Hall, Paul Ecke Ranch, Encinitas, CA; Stephen Wegulo, University of California, Riverside, CA; and John Kabashima, University of California, Anaheim, CA
Moderator(s): Jan Hall, Paul Ecke Ranch, Encinitas, CA; Stephen Wegulo, University of California, Riverside, CA; and John Kabashima, University of California, Anaheim, CA

This is a one-day field trip to major ornamental nursery production sites, the Upper Newport Bay, and a home and garden center in Orange County, CA. The first three stops will be at El Modeno Gardens Inc., Bordiers Nursery Inc., and Hines Horticulture, Inc., wholesale nurseries whose products include annuals, perennials, flowering shrubs and vines, holiday crops, and a wide assortment of garden ferns. The next stop will be at the Upper Newport Bay – Peter and Mary Muth Interpretive Center, located in Orange County's premier nature preserve. The center promotes and supports the protection and preservation of California Coastal Wetlands through environmental education. The last stop will be at Roger's Gardens, arboretum-quality gardens set on seven acres overlooking the Pacific Ocean. Roger's Gardens has been called "America's Most Beautiful Home and Garden Center." Pre-registration is required.

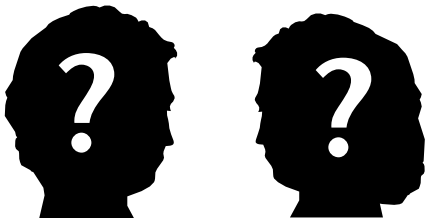
12:00 – 4:00 p.m. – Hilton, Palisades
Workshop

APS Leadership

Organizer: Cleo D'Arcy, University of Illinois, Urbana, IL
Moderators: Cleo D'Arcy, University of Illinois, Urbana, IL, and Darlene Lansing, Lansing Squared Inc., Eagan, MN

Are you an aspiring leader? What is your leadership style? How effective are your meetings? What leadership opportunities does APS offer? Join us for lunch and a workshop that addresses these questions and have your "burning" leadership question(s) answered. Cleo D'Arcy, an APS past president, and Darlene Lansing, an education consultant, will lead the workshop. You will enjoy discussions

Wondering Who Will Be APS' New Leaders?



President Councilor-at-Large

Stop Guessing and Nominate a Fellow Member for an APS Officer Position!

Nominating a fellow member for an APS officer position is easier and more convenient than ever. Simply stop by APS Central and cast your nominations for the member(s) you think would be good nominees for the important positions of APS vice-president and/or councilor-at-large by using your nomination ticket (included with member badges).

To be eligible, a nominee must be a current APS regular member. An ideal nominee would have a sound record of professional accomplishment and service while representing the geographic, professional, and disciplinary diversity of our society. Nominees should express a willingness to serve APS in these leadership positions and also have a vision for the future of APS.

Please exercise your right as an APS member to make officer nominations! Your nominations matter and can shape the future of APS!

APS

with APS colleagues who share your interest in leadership and will take away useful information and tools. Pre-registration is required.

2:00 – 6:00 p.m. – Hilton, San Simeon A/B
Workshop

Linear Mixed Models for Analyzing Data Obtained in Designed Experiments

Organizers: Larry Madden, Ohio State University, Wooster, OH, and Denis Shah, Cornell University, Geneva, NY
Moderators: Larry Madden, Ohio State University, Wooster, OH, and Denis Shah, Cornell University, Geneva, NY

It is traditional to use fixed-effects analysis of variance (ANOVA) to determine if experimental factors (e.g., treatments) significantly affect the results. However, it has become more common to use linear mixed models (LMMs) to analyze data from planned experiments. True LMMs formally handle experiments with both fixed (e.g., fungicide treatment) and random (e.g., block, location) effects. With LMMs, test statistics for the effects of factors and their interactions, as well as the standard errors for means and other contrasts, are calculated correctly. Until recently, most so-called LMM analyses reported in the literature were actually fixed-effects analyses with limited (and inadequate) corrections for random effects. Although computationally intensive, it is now straightforward with (true) LMMs to: directly analyze experiments with two or more source of variation (e.g., split plots), quantify the effects of variable heterogeneity (e.g., variation dependent on factor levels) on responses, properly test for the effects of repeated measures (such as time during the growing season), and account for the correlation of spatially-referenced data. Participants will learn to use PROC MIXED of SAS to properly analyze a range of data sets with linear mixed models. This session will follow the tradition of the Epidemiology Committee's workshops on "bringing statistical analysis to the masses." Pre-registration is required.

Sessions

Sunday, August 1

SUNDAY

6:30 – 8:00 a.m. – Hilton, San Simeon A/B
Vegetable Extension and Research Plant Pathologists Breakfast, *by invitation only*

6:30 – 9:00 a.m. – Hilton, Carmel
Early Career Professionals Ad Hoc Committee Meeting

6:30 a.m. – Front of Marriott Hotel on Convention Way
APS-OIP 5K Fun Run/2.5K Walk Pre-Registration and Bib Pick-Up

7:00 – 8:30 a.m. – Depart from Convention Way on South End of Convention Center
APS-OIP 5K Fun Run/2.5K Walk for International Outreach and Collaboration

7:00 – 9:00 a.m. – ACC, Hall C
Poster Set-Up

7:00 a.m. – 6:00 p.m. – ACC, Hall C
Registration

7:30 – 9:00 a.m. – Hilton, Palos Verdes A/B
Sustaining Associates Breakfast, *by invitation only*

7:30 – 9:30 a.m. – Hilton, El Capitan A/B
Department Heads' Breakfast

7:30 – 9:30 a.m. – Hilton, Avila A/B
Small Fruit Diseases Working Group

8:00 – 9:00 a.m. – Hilton, Laguna A/B
***Phytopathology* Senior Editors,** *by invitation only*

8:00 – 9:00 a.m. – Hilton, Capistrano A/B
***Plant Disease* Senior Editors,** *by invitation only*

8:00 – 11:30 a.m. – Hilton, Monterey
APS*net* Education Center Senior Editors, *by invitation only*

8:30 – 9:00 a.m. – ACC, 204A
Oral and Special Session Moderators' Orientation

9:00 – 9:30 a.m. – Hilton, Laguna A/B
***Phytopathology* Editorial Board,** *by invitation only*

9:00 – 9:30 a.m. – Hilton, Capistrana A/B
***Plant Disease* Editorial Board,** *by invitation only*

9:00 a.m. – 6:00 p.m. – ACC, Hall C
Posters Available for Viewing

9:00 a.m. – 6:00 p.m. – ACC, Hall C
APS Central

9:00 a.m. – 6:00 p.m. – ACC, Hall C
APS PRESS Bookstore

9:30 – 11:30 a.m. – ACC, Ballroom A/D
Welcome and Plenary—"Networks for Plant Health"

10:00 a.m. – 12:00 p.m. – Hilton, Laguna A/B
***Plant Health Progress* Editorial Board**

11:00 a.m. – 2:00 p.m. – ACC, Hall C
Exhibit Set-Up

11:30 a.m. – 1:00 p.m. – Hilton, Capistrano A/B
Division Officers Luncheon, *by invitation only*

12:00 – 1:00 p.m. – Hilton, Avila, A/B
APS Foundation Luncheon, *by invitation only*

12:00 – 1:00 p.m. – Hilton, El Capitan A/B
APS Journals Senior Editors Luncheon, *by invitation only*

12:30 – 5:00 p.m. – Hilton, Laguna A/B
Office of Electronic Communications

1:00 – 5:00 p.m. – ACC
Oral Presentations
Diseases of Fruits and Nuts I – 204A
Fungi—Systematics, Evolution and Ecology – 204B
Nematodes—Genetics, Molecular Biology, Cell Biology – 204C

1:00 – 5:00 p.m. – ACC
Special Sessions
Closteroviruses – Citrus Tristeza Virus Complex and Tristeza Diseases – 204D
Current Insights into the Genetics, Toxicology, and Plant Pathology of Fusarium Verticillioides – 205A
Hot Topic: Microbial Forensics: Plant Pathogen Models – 206A/B
Reality CV: Recent Successful Job Applicants and Field Leaders Tell it Like it is About the Present and Future of Plant Pathology Careers – 205B
Species Concept in Host Pathogen Interactions: What is its Effect on Breeding for Resistance – 207A

3:00 – 6:00 p.m. – ACC, Hall C
Plant Disease Diagnosis Contest

3:00 – 6:00 p.m. – ACC, Hall C
Exhibits

6:30 – 7:30 p.m. – Hilton, California Pavilion A/B
Awards and Honors Ceremony

6:30 – 10:00 p.m. – Hilton, California Promenade
Art in APS

7:30 – 10:00 p.m. – Hilton, California Pavilion C/D
Welcome Reception and University Socials
Cornell University
Oregon State University
Penn State University
Texas A&M
The Ohio State University
University of Georgia
University of Kentucky
University of Missouri
Washington State University

9:30 – 11:30 a.m. – ACC, Ballroom A/D
Welcome and Plenary

Networks for Plant Health

The 2004 plenary will emphasize positive roles for APS and other scientific societies in building and maintaining effective networks for science, education, and implementation of plant health strategies. Speakers will illustrate several areas of innovative collaboration of scientific societies with other organizations and entities. APS is engaging such networks in order to achieve its vision of healthier plants for a healthier world.

9:30 a.m. Networking roles for a scientific society in the twenty-first century. G.C. BERGSTROM (APS President). Cornell University, Ithaca, NY

9:55 a.m. New partnerships between libraries and scientific society publishers. K. FRAZIER. Director, University of Wisconsin Library System, Madison.

10:15 a.m. Integrating plant biosecurity into the U.S. biodefense network. G.W. KORCH. Chief, Medical, Chemical and Biological Defense Research Program, Defense Threat Reduction Agency, Department of Defense, Fort Detrick, MD

10:35 a.m. Building genetic resource networks for plant protection in developing countries. R.S. ZEIGLER. Director, Generation Challenge Program, CIMMYT, Mexico

10:55 a.m. Networks of plant health societies; Regional (Australasian) and global perspectives. R.E. FALLOON (ISPP President), New Zealand Institute for Crop & Food Research, Christchurch

11:15 a.m. Questions for panelists. G.C. Bergstrom, moderator.

1:00 – 2:30 p.m. – ACC, 204C
Molecular/Cellular Plant-Microbe Interactions

Oral Presentations: Nematodes—Genetics, Molecular Biology, Cell Biology

Moderators: Scott Monfort, University of Arkansas, Fayetteville, AR, and Qingli Liu, University of California, Davis, CA

1:00 p.m. A novel secretory ubiquitin extension protein from the soybean cyst nematode. B. GAO (1), R. Allen (1), E. Davis (2), T. Baum (3), and R. Hussey (1). (1) University of Georgia, Athens, GA; (2) North Carolina State University, Raleigh, NC; (3) Iowa State University, Ames, IA

1:15 p.m. Analysis of molecular responses in feeding cells of soybean cyst nematode. X. HU, T. Bourett, R. Howard, R. Ruff and G. Lu. Pioneer Hi-Bred International, Inc., Johnston, IA

1:30 p.m. Genetics of virulence in the root-knot nematode, *Meloidogyne hapla*. Q. LIU and V.M. Williamson. University of California, Davis, CA

1:45 p.m. Root cell proliferation induced by a secretory root-knot nematode signaling peptide. G. HUANG (1), R. Dong (1), R. Allen (1), E. Davis (2), T. Baum (3), and R. Hussey (1). (1) University of Georgia, Athens, GA; (2) North Carolina State University, Raleigh, NC; (3) Iowa State University, Ames, IA

2:00 p.m. Effects of nocturnal soil temperatures and *Meloidogyne incognita* densities on cotton seedling growth and the interaction with *Thielaviopsis basicola*. W.S. MONFORT (1), T.L. Kirkpatrick (2), and C.S. Rothrock (1). (1) University of Arkansas, Fayetteville, AR; (2) University of Arkansas, Hope, AR

2:15 p.m. Occurrence and distribution of complex diseases between root-knot nematode (*Meloidogyne incognita*) and fungal/bacterial wilt on Vietnamese tomato production. X.T. NGO (1) and S.D. Van Gundy (2). (1) Hanoi Agricultural University, Hanoi, Vietnam; (2) University of California, Riverside, CA

1:00 – 3:05 p.m. – ACC, 207A
Diseases of Plants

Species Concept in Host Pathogen Interactions: What is Its Effect on Breeding for Resistance

Organizer: Monte Miles, USDA-ARS, Urbana, IL
Sponsoring Committee: Host Resistance
Moderator: James Kolmer, University of Minnesota, St. Paul, MN, and Monte Miles, USDA-ARS, Urbana, IL

The concept of what is a species, along with changes in nomenclature as pathogen species are reclassified, has an impact on evaluation of host resistance. What is this impact and how have the changes influenced research in some programs?

1:00 p.m. Introduction: Species concept in a commercial breeding program? M.R. MILES. USDA-ARS, Urbana, IL

1:05 p.m. Host gene-pool specialization and species concepts in *Uromyces appendiculatus* and other pathogens of common bean. M.A. PASTOR-CORRALES (1), J.R. Steadman (2), and M.C. Aime (1). (1) USDA-ARS, Beltsville, MD; (2) University of Nebraska, Lincoln, NE

1:35 p.m. From one species to many or many species to one? The case of begomoviruses. J.K. BROWN. University of Arizona, Tucson, AZ

2:05 p.m. *Puccinia recondita* leaf rust of cereal and grasses: Who's who? L.J. SZABO (1), Y. Anikster (2), and J. Markova (3). (1) USDA-ARS, University of

Minnesota, St. Paul, MN; (2) Tel Aviv University, Ramat Aviv, Israel; (3) Charles University, Prague, Czech Republic

2:35 p.m. Does the species concept matter in breeding for resistance? The maize gray leaf spot experience. M. CARSON. USDA-ARS, University of Minnesota, St. Paul, MN

1:00 – 3:15 p.m. – ACC, 204A

Diseases of Plants

Oral Presentations: Diseases of Fruits and Nuts I

Moderators: Guido Schnabel, Clemson University, Clemson, SC, and Vincent Philion, IRDA, St.-Hyacithe, QC, Canada

1:00 p.m. Blueberry anthracnose: From bud infection to fruit rot. A. DeMARSAY and P.V. Oudemans. Rutgers University, Chatsworth, NJ

1:15 p.m. Influence of strawberry fruit age on susceptibility to *Colletotrichum acutatum*. J.C. MERTELY, T.E. Seijo, and N.A. Peres. University of Florida, Dover, FL

1:30 p.m. Identification and characterization of *Armillaria* species from South Carolina. G. SCHNABEL, J.S. Ash, C.R. Simpson, and K.K. Bryson. Clemson University, Clemson, SC

1:45 p.m. Occurrence of *Sphaeropsis pyriputrescens* in apple in Washington state. Y.K. KIM (1), C.L. Xiao (1), and J.D. Rogers (2). (1) Washington State University, Wenatchee, WA; (2) Washington State University, Pullman, WA

2:00 p.m. Resistance of B.9 apple rootstock to fire blight (*Erwinia amylovora*). N. LOGIUDICE (1), T.L. Robinson (1), G. Fazio (2), and H.S. Aldwinckle (1). (1) Cornell University, Geneva, NY; (2) USDA-ARS, Geneva, NY

2:15 p.m. Controlling fire blight in young apple trees with prohexadione-calcium. J.L. NORELLI and S.L. Miller. USDA-ARS, Kearneysville, WV

2:30 p.m. A new technique for monitoring apple scab fungicide resistance in individual orchards. V. PHILION. IRDA, St-Hyacinthe, QC, Canada

2:45 p.m. Methyl bromide alternatives for control of black root rot of strawberry in Georgia. P.M. BRANNEN (1), L.M. Ferguson (2), and F.J. Louws (2). (1) University of Georgia, Athens, GA; (2) North Carolina State University, Raleigh, NC

3:00 p.m. Alternatives to methyl bromide for management of Verticillium wilt in strawberry. J.J. HAO, J.M. Duniway, and D.M. Dopkins. University of California, Davis, CA

1:00 – 3:15 p.m. – ACC, 204B

Biology of Plant Pathogens

Oral Presentations: Fungi—Systematics, Evolution, Ecology

Moderators: Jean Rowntree, University of Minnesota, St. Paul, MN, and Ray Schneider, Louisiana State University, Baton Rouge, LA

1:00 p.m. Population structure of *Cercospora kikuchii* from soybean. G. Cai and R.W. SCHNEIDER. Louisiana State University, Baton Rouge, LA

1:15 p.m. Genetic structure of benzimidazol-resistant population of the soybean purple stain fungus *Cercospora kikuchii* in Japan. I. INOUE (1), K. Ishikawa (2), N. Yasuda (1), A. Miyasaka (1), and S. Koizumi (1). (1) National Agricultural Research Center, Tsukuba, Japan; (2) Niigata Crop Research Center, Nagaoka, Japan

1:30 p.m. A new model of gene interaction between diploid host and haploid pathogen. R.-C. YANG (1), T.Z. Ye (2), and F.C. Yeh (1). (1) University of Alberta, Edmonton, AB, Canada; (2) Oregon State University, Corvallis, OR

1:45 p.m. Evolution of fungicide resistance in experimental populations of fungi. M.D.L.A. JAIME, J.B. Anderson, and L.M. Kohn. University of Toronto, Mississauga, ON, Canada

2:00 p.m. Use of alt a 1 gene sequences in phylogenetic study of *Alternaria* and related genera. S.G. HONG (1), R.A. Cramer (2), C.B. Lawrence (2), and B.M. Pryor (1). (1) University of Arizona, Tucson, AZ; (2) Colorado State University, Ft. Collins, CO

2:15 p.m. Genetic variation in *Fusarium oxysporum* f. sp. *lactucae* causing wilt in lettuce. G.Y. MBOFUNG and B.M. Pryor. University of Arizona, Tucson, AZ

2:30 p.m. A molecular fingerprint for identification of multiple *Pythium* species. P. KONG (1), P.A. Richardson (1), G.W. Moorman (2), and C.X Hong (1). (1) Virginia Tech, Virginia Beach, VA; (2) Pennsylvania State University, University Park, PA

2:45 p.m. Autonomous lateral movement and root infection by sporangial and cyst derived zoospores of *Phytophthora* spp. in water. O.D. OTAYE and S.L. von Broembsen.. Oklahoma State University, Stillwater, OK

3:00 p.m. Survival of *Aphanomyces cochlioides* oospores in soil following preconditioning at different relative humidities. J.M. ROWNTREE and C.E. Windels. University of Minnesota, Crookston, MN

1:00 – 4:20 p.m. – ACC, 205A
Biology of Plant Pathogens

Current Insights into the Genetics, Toxicology, and Plant Pathology of *Fusarium verticillioides*

Organizer: Charles Woloshuk, Purdue University, West Lafayette, IN
Sponsoring Committee: Mycotoxicology
Moderator: Won-Bo Shim, Texas A&M University, College Station, TX
Financial Sponsor: Pioneer Hi-Bred International, Inc.

One hundred years ago, John Lewis Sheldon first described the association between the toxicosis in farm animals and corn infected with Fusarium moniliforme*, now designated* F. verticillioides *(Sacc.) Nirenberg (teleomorph:* Gibberella moniliformis *Wineland). This plant pathogen causes seedling blight, root rot, stem rot, and kernel/ear rot of corn and produces biologically active metabolites, including a group of mycotoxins called fumonisins. When consumed by animals, fumonisins cause diseases such as leukoencephalomalacia in equids and pulmonary edema in pigs. Fumonisin B1 causes liver and kidney cancer in rodents and has been classified as possibly carcinogenic to humans. The toxin causes neural tube defects in mice and has been suggested to be a risk factor for neural tube defects in humans. Due to the potential health risks, guidelines for fumonisin levels in food have been established by the U.S. Food and Drug Administration and by other government agencies worldwide. This symposium will begin with an overview of the pathology, taxonomy, and worldwide importance of* F. verticillioides*. A series of lectures will follow on topics that include host resistance and disease management, genomics research, functional analysis of the genes involved in fumonisin biosynthesis, factors affecting fumonisin biosynthesis in colonized kernels, and risk assessment of fumonisins in food.*

1:00 p.m. Introduction. W.B. SHIM. Texas A&M University, College Station, TX
1:05 p.m. Perspectives on the history and taxonomy of *Fusarium verticillioides* (teleomorph: *Gibberella moniliformis*). A.E. DESJARDINS. USDA-ARS, Peoria, IL
1:35 p.m. The fumonisin risk assessment and emerging issues. R.T. RILEY and K.A. Voss. USDA-ARS, Athens, GA
2:05 p.m. Elucidation of the biosynthetic pathway by deletion analysis. R.A.E. BUTCHKO, R.H. Proctor, and R.D. Plattner. USDA-ARS, Peoria, IL
2:35 p.m. Break
2:50 p.m. Genomics approach for solving a mycotoxin problem in maize. R.H. PROCTOR (1), D.W. Brown (1), R.A.E. Butchko (1), R.D. Plattner (1), and D. Kendra (2). (1) USDA-ARS, Peoria, IL; (2) TIGR, Rockville, MD
3:20 p.m. Effect of microenvironment on fumonisin biosynthesis. C.P. WOLOSHUK. Purdue University, West Lafayette, IN
3:50 p.m. Identification and potential use of genetic resistance to control fumonisin accumulation in corn grain. D.G. WHITE (1), C.E. Kleinschmidt (1), M.J. Clements (2), and J.K. Pataky (1). (1) University of Illinois, Urbana, IL; (2) USDA-ARS, Mississippi State, MS

1:00 – 4:40 p.m. – ACC, 206A/B
Diseases of Plants

Hot Topic: Microbial Forensics: Plant Pathogen Models

Organizers: Jacqueline Fletcher, Oklahoma State University, Stillwater, OK, and Randall Murch, Institute for Defense Analysis, Alexandria, VA
Sponsoring Committee: Diseases of Plants
Moderators: Jacqueline Fletcher, Oklahoma State University, Stillwater, OK, and Randall Murch, Institute for Defense Analysis, Alexandria, VA

The potential that microbes can be used with an intent to harm people, societies, or the environment has generated renewed interest in the application of principles of forensic science to assist in precise identification of a microbe and its origin. The usual goal of an applied plant pathologist, which is to effectively manage a disease outbreak, requires pathogen identification that is accurate to species or strain and an understanding of the pathogen and its disease epidemiology. Forensic applications, however, require a higher level of detail and discrimination. With the goal of attribution of the crime to a specific perpetrator(s), data must be sufficiently specific, standardized, able to be valided, and robust to stand up in a court of law. New research is needed to expand knowledge on the genetics, evolution, biology and host reactions of key microbes. Guidelines for sample collection, chain of custody, and attention to non-pathogen contaminants, such as spores, growth medium, or water in the samples, are necessary. Such guidelines and policies, if formulated thoughtfully, should also allow the legitimate investigator to pursue research without unnecessary intrusion. This symposium will explore the principles of microbial forensics as they may apply to specific models of plant pathogens and plant diseases.

1:00 p.m. Microbial forensics: Plant pathogen models. J. FLETCHER and R. MURCH. (1) Oklahoma State University, Stillwater, OK; (2) Institute for Defense Analysis, Alexandria, VA
1:10 p.m. Forensics: Issues and needs. B. BUDOWLE. Federal Bureau of Investigation, Arlington, VA
1:40 p.m. Plant pathogen forensics. W.T. COBB. Cobb Consulting Services, Kennewick, WA
2:10 p.m. The forensics toolbox: Molecular clues, evolution and phylogeny. U. MELCHER. Oklahoma State University, Stillwater, OK
2:40 p.m. The epidemiology toolbox for microbial forensics. R.C. SEEM (1) and H. Scherm (2). (1) Cornell University, Geneva, NY; (2) University of Georgia, Athens, GA

3:10 p.m. *Pseudomonas syringae*: A model for forensic studies. C.L. BENDER. Oklahoma State University, Stillwater, OK
3:40 p.m. The Pathogen Portal Project—Interoperability across data and tools for infectious disease research and development. B. SOBRAL. Virginia Bioinformatics Institute, Blacksburg, VA
4:10 p.m. Discussion

1:00 – 4:45 p.m. – ACC, 204D
Molecular/Cellular Plant-Microbe Interactions

Closteroviruses—*Citrus Tristeza Virus* Complex and Tristeza Diseases

Organizers: Alexander Karasev, Thomas Jefferson University, Doylestown, PA, and Mark Hilf, USDA-ARS, Fort Pierce, FL
Sponsoring Committee: Virology
Moderators: Alexander Karasev, Thomas Jefferson University, Doylestown, PA, and Mark Hilf, USDA-ARS, Fort Pierce, FL

The family Closteroviridae comprises more than 30 plant viruses with flexuous, filamentous virions and includes representatives with either mono- or bipartite positive strand ssRNA genomes. Closteroviruses are transmitted semi-persistently by insects from three families of Homoptera and have apparently co-evolved with their insect vectors, resulting in three major lineages, i.e., aphid-, mealybug-, and whitefly-transmitted viruses. Closteroviruses pose serious threats to agriculture and need serious attention. This symposium seeks to demonstrate a comprehensive research effort necessary to control and manage a representative aphid-transmitted closterovirus, Citrus tristeza virus (CTV)*, causing a complex of tristeza syndromes in citrus. Economically, CTV is one of the most damaging plant pathogens in the world. To manage the tristeza problem, a sophisticated research effort is needed. This research effort ranges from epidemiology and plant pathology to molecular virology and cell biology.*

1:00 p.m. Introduction. A.V. KARASEV. Thomas Jefferson University, Doylestown, PA
1:05 p.m. Citrus tristeza diseases—A worldwide perspective. S.M. GARNSEY (1) and P. MORENO (2). (1) University of Florida, Lake Alfred, FL; (2) IVIA, Moncada, Valencia, Spain
1:50 p.m. *Citrus tristeza virus* as a model and a tool—Replication, assembly, interactions with the host, and transmission. W. DAWSON, S. Gowda, T. Satyanarayana, A. Folimonov, S. Folimonova, M. Albiach, M. Ayllon, and C. Robertson. University of Florida, Lake Alfred, FL
2:35 p.m. Break
2:45 p.m. Variation in composition and biology of *Citrus tristeza virus* defective RNAs. O. Batuman, X. Che, Y. Moskowits, O. Cohen, M. Mawassi, and M. BAR-JOSEPH. Volcani Center, Bet Dagan, Israel
3:15 p.m. An overview of the epidemiology of *Citrus tristeza virus*. T.R. GOTTWALD. USDA-ARS, Ft. Pierce, FL
3:30 p.m. Transmissibility and genotype analysis of central California isolates of *Citrus tristeza closterovirus*. R.K. YOKOMI. USDA-ARS, Parlier, CA
3:45 p.m. *Citrus tristeza virus*: Evolution in a host-limited pathosystem. M.E. HILF. USDA-ARS, Fort Pierce, FL
4:00 p.m. *Citrus tristeza virus* genome encodes three distinct suppressors of RNA silencing. R. Lu (1), A. Folimonov (2), W.-X. Li (1), M. Shintaku (1), B.W. Falk (3), W.O. Dawson (2), and S.W. DING (1). (1) University of California, Riverside, CA; (2) University of Florida, Lake Alfred, FL; (3) University of California, Davis, CA
4:15 p.m. Positional cloning of the *Citrus tristeza virus* resistance gene. T.E. MIRKOV (1), Z.N. Yang (1), M. Rai (1), J. Molina (1), X.R. Ye (2), and M.L. Roose (2). (1) Texas A&M University, Weslaco, TX; (2) University of California, Riverside, CA

1:00 – 5:00 p.m. – ACC, 205B
Professionalism/Service/Outreach

Reality CV: Recent Successful Job Applicants and Field Leaders Tell it Like it is About the Present and Future of Plant Pathology Careers

Organizer: Alyssa Collins, University of Delaware, Newark, DE
Sponsoring Committees: Placement, Industry, Graduate Student
Moderator: Alyssa Collins, University of Delaware, Newark, DE, and Cristi Palmer, FMC Corporation, Philadelphia, PA

Speakers will include young professionals paired with seasoned authorities from the arenas of government, academia and industry. Recent candidates will relate their job-hunting success stories, how they achieved their goals, and what they wish they had known at the start, while field leaders describe the current climate and direction of careers in their respective areas. Special emphasis will be given to debunking the myths concerning careers in industry and addressing the needs of international students.

1:00 p.m. Introduction. A. COLLINS. University of Delaware, Newark, DE
1:05 p.m. Science into practice. K. STEOMER. Agricultural Center, Limbergerhof, Germany
1:25 p.m. From an applied research position in a chemical company into private practice. C.M. BECKER. BAAR Scientific LLC, Romulus, NY
1:45 p.m. Plant pathology in a multinational fruit company and for a mid-sized agricultural chemical company. M.D. GROVE. ISK Biosciences Corporation, Houston, TX

2:05 p.m. A non-traditional role: Sales and distributor account management. R. SOUFI. The Scotts Company, Marysville, OH
2:25 p.m. From basic research in a chemical company to being a professor. K.W. SEEBOLD. University of Georgia, Tifton, GA
2:45 p.m. Discussion
3:00 p.m. Break
3:05 p.m. Career opportunities in plant pathology extension. L.P. TREDWAY. North Carolina State University, Raleigh, NC
3:25 p.m. Life, liberty, and the pursuit of gainful employment: A perspective on career opportunities for the budding plant pathologist. R.M. BOSTOCK. University of California, Davis, CA
3:45 p.m. How I got my job and why I love it. J.D. DOMINIAK. Maryland Department of Agriculture, Annapolis, MD
4:05 p.m. Skills for a USDA career in research and regulatory plant pathology. D.G. LUSTER. USDA-ARS, Ft. Detrick, MD
4:25 p.m. Job-hunting after graduation: Beating the odds as an international student. W.G. DILANTHA FERNANDO. University of Manitoba, Winnipeg, MB, Canada
4:45 p.m. Discussion

7:30 – 10:00 p.m. – Hilton, California Promenade
Professionalism/Service/Outreach

Art in APS

Organizer: Paul Esker, Iowa State University, Ames, IA
Sponsoring Committee: Graduate Student

Art in phytopathology is a graduate student-run art exhibit. The goal of the exhibit is to highlight the beauty that is phytopathology. Presentations are of a wide variety, ranging from field and microscopy photos to LCD simulations and demonstrations. This is a continuing event with a goal of presenting awards for the best exhibits at this year's meeting.

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Wednesday 8/4/04.....9 a.m. - 11 a.m.

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Daily Schedule

Monday, August 2

MONDAY

6:30 – 8:00 a.m. – Hilton, Huntington A/C
Extension Plant Pathologists Breakfast

7:00 – 8:00 a.m. – Hilton, California Pavilion A
Graduate Student Breakfast, *student registrants only*

7:00 – 10:00 a.m. – Hilton, Laguna Pavilion A
Public Policy Board

7:00 a.m. – 5:00 p.m. – ACC, Hall C
Registration

8:00 a.m. – 12:00 p.m. – ACC
Oral Presentations
Detection and Diagnosis of Diseases – 204A
Diseases of Cereal, Field, and Fiber Crops – 204B
Host-Parasite Relations: Biochemistry, Molecular Biology, Cell Biology – 204C
Viruses—Systematics, Evolution, Ecology and Vector Interactions – 204D

8:00 a.m. – 12:00 p.m. – ACC
Special Sessions
Co-Evolution of Fungi and Plants – 205A
Functional Genomics Meets Bacterial Diseases – 205B
Fungicide Development: From Discovery to Market Launch – 206A
Host-Microbe Interactions in Woody Plants – 206B
Plant Pathology in Historical Perspective – 207A
Soil Health and Nematodes – 207B

8:00 a.m. – 5:00 p.m. – ACC, Hall C
Posters Available for Viewing

9:00 a.m. – 5:00 p.m. – ACC, Hall C
APS Central

9:00 a.m. – 5:00 p.m. – ACC, Hall C
APS PRESS Bookstore

10:00 a.m. – 5:00 p.m. – ACC, Hall C
Exhibits

10:00 a.m. – 5:00 p.m. – ACC, Hall C
Plant Disease Diagnosis Contest

12:00 – 1:30 p.m. – Hilton, San Clemente
Past Presidents' Luncheon, *by invitation only*

1:30 – 3:00 p.m. – ACC, 208A
Affiliates Meeting

1:00 – 5:00 p.m. – ACC
Oral Presentations
Biological Control and Rhizosphere Microbiology – 204A
Chemical Control I – 204B
Epidemiology I – 204C
Viruses—Genetics, Molecular Biology, Cell Biology I – 204D

1:00 – 5:00 p.m. – ACC
Special Sessions
Adapting Teaching Styles and Techniques for a Changing Student Population – 205A
Co-Evolutionary Processes of Introduced Pathogens and Hosts in Natural Ecosystems – 205B
Life Styles and Genomics of Fastidious and Gram-Positive Bacteria – 207A
Hot Topic: Meeting New Federal Requirements for Planning and Accountability—APS and CSREES Working Together – 206A/B
Suppression of Host Defense Responses by Pathogens – 207B

2:00 – 5:00 p.m. – ACC, 207D
Office of Industry Relations

3:00 – 5:00 p.m. – ACC, 207C
Turfgrass Pathology Working Group

3:30 – 5:30 p.m. – ACC, Hall C
Poster Authors Present, Session A / Beer and Bull Session

5:00 – 6:30 p.m. – Hilton, Oceanside
ARS Social, *by invitation only*

6:00 – 8:30 p.m. – Hilton, California Pavilion C
11th Annual deBary Bowl

6:00 – 8:30 p.m. – Hilton, California Pavilion C
Graduate Student Social, *student registrants only*

6:30 – 8:30 p.m. – Hilton, El Capitan A
Joint Committees of Women in Plant Pathology and Cultural Diversity Social

6:30 – 8:30 p.m. – Hilton
University Alumni Socials
- Cornbelt States (Iowa State University, Ohio State University, Purdue University, University of Illinois) – Huntington A/C
- Louisiana State University – San Simeon A/B
- Michigan State University – Palos Verdes A/B
- North Carolina State University – Avila A/B
- Old West Trails (Colorado State University, Kansas State University, Montana State University, North Dakota State University, Oklahoma State University, South Dakota State University, University of Nebraska, University of Wyoming) – California Pavilion B
- University of California, Davis – Laguna A/B
- University of California, Riverside – Laguna A/B
- University of Florida – Manhattan
- University of Georgia – Malibu
- University of Minnesota – Capistrano A/B
- University of Wisconsin Madison – Capistrano A/B

8:00 – 9:30 a.m. – ACC, 204A
Diseases of Plants

Oral Presentations: Disease Detection and Diagnosis

Moderators: Ronald Sayler, University of Arkansas, Fayetteville, AR, and Wendy Kaneshiro, University of Hawaii, Honolulu, HI

8:00 a.m. A rapid and reliable PCR method for detecting *Burkholderia glumae*, the causal agent of panicle blight on rice. R.J. SAYLER (1), R.D. Cartwright (2), and Y. Yang (1). (1) University of Arkansas, Fayetteville, AR; (2) University of Arkansas, Little Rock, AR

8:15 a.m. Developing a risk analysis strategy for *Clavibacter michiganensis* subsp. *michiganensis* infestation of tomato seed. W.S. KANESHIRO and A.M. Alvarez. University of Hawaii, Honolulu, HI

8:30 a.m. Progress in developing real-time PCR capabilities at the University of Kentucky Plant Disease Diagnostic Laboratory. P. VINCELLI and B. Amsden. University of Kentucky, Lexington, KY

8:45 a.m. Identification of *Pythium* species present in ornamental nursery irrigation systems. P. Kong, P.A. Richardson, and C.X. HONG. Virginia Tech, Virginia Beach, VA

9:00 a.m. Quantification of *Phytophthora ramorum in planta* using real-time PCR. K.J. HAYDEN and M. Garbelotto. University of California, Berkeley, CA

9:15 a.m. Molecular identification of *Guignardia citricarpa*, the causal agent of citrus black spot, and the development of a new protocol for detection in fruit tissue. N.A.R. PERES (1), R. Harakava (2), G. Carroll (3), L. Korsten (4), J.E. Adaskaveg (5), and L.W. Timmer (6). (1) University of Florida, Dover, FL; (2) Inst. Biologico, Sao Paulo, Brazil; (3) University of Oregon, Eugene, OR; (4) University of Pretoria, Pretoria, South Africa; (5) University of California, Riverside, CA; (6) University of Florida, Lake Alfred, FL

8:00 – 10:00 a.m. – ACC, 204D
Biology of Plant Pathogens

Oral Presentations: Viruses—Systematics, Evolution, Ecology, and Vector Interactions

Moderators: William Wintermantel, USDA-ARS, Salinas, CA, and El-Desouky Ammar, Ohio State University, Wooster, OH

8:00 a.m. The genetics of Luteovirus transmission in the aphid vector, *Schizaphis graminum*. M. BURROWS, D. Smith, E. Benson, and S. Gray. USDA-ARS, Cornell University, Ithaca, NY

8:15 a.m. Immunofluorescence localization by confocal microscopy of *Maize mosaic virus* (*Rhabdoviridae*) in organs and tissues of its planthopper vector *Peregrinus maidis*. E.-D. AMMAR and S.A. Hogenhout. Ohio State University, Wooster, OH

8:30 a.m. Application of PCR-based detection methods for monitoring curly top viruses in beet leafhoppers and tomato plants in California. L. Chen (1), M.J. Soto-Aguilar (2), and R.L. Gilbertson (1). (1) University of California, Davis, CA; (2) Donald Danforth Plant Science Center, St. Louis, MO

8:45 a.m. Sequence variability and host specificity among curtoviruses infecting weed and crop hosts in California. W.M. WINTERMANTEL. USDA-ARS, Salinas, CA

9:00 a.m. Molecular variation in *Pennisetum mosaic virus*. Z.F. FAN, C.L. Deng, H.Y. Chen, S.S. Cai, W.J. Wang, X.M. Liang, X. Jiang and H.F. Li. China Agricultural University, Beijing, People's Republic of China

9:15 a.m. Reciprocal monophyly of Potyvirus and Rymovirus genera, family Potyviridae, is supported by genome sequences of *Agropyron mosaic virus* and *Hordeum mosaic virus*. R. FRENCH and D.C. Stenger. USDA-ARS, University of Nebraska, Lincoln, NE

9:30 a.m. Identification, detection and phylogenetic analysis of new viruses infecting mint. I.E. TZANETAKIS (1), J.D. Postman (2), and R.R. Martin (1,2). (1) Oregon State University, Corvallis, OR; (2) USDA-ARS, Corvallis, OR

9:45 a.m. Characterization of a new tobamovirus species from hibiscus. S. ADKINS (1), I. Kamenova (1), and D.J. Lewandowski (2). (1) USDA-ARS, Ft. Pierce, FL; (2) University of Florida, Lake Alfred, FL

8:00 – 10:55 a.m. – ACC, 207A
Professionalism/Service/Outreach

Plant Pathology in Historical Perspective

Organizer: Christina Matta, University of Wisconsin, Madison, WI
Sponsors: Scientific Programs Board, Bacteriology Committee
Moderators: Christina Matta, University of Wisconsin, Madison, WI, and Paul Peterson, Clemson University, Florence, SC

The history of plant pathology and allied disciplines is almost completely uncharted, yet crucial for understanding the shape of the field today and its relationship to other biological disciplines. This session examines key episodes in plant pathology, agricultural bacteriology and soil science in their formative decades around the turn of the 20th century, focusing primarily on the creation of plant pathology as a scientific specialty in the United States (with some attention to international contexts as well). The presenters, all his-

torians of science, hope to establish a precedent for professional cross-communication between scientists and scholars interested in the history of science.

8:00 a.m. Introduction. P. PETERSON. Clemson University, Florence, SC
8:10 a.m. Bacteriology and plant pathology in late 19th century America: A short-lived (and forgotten) marriage. E. KUPFERBERG. Harvard Medical School, Cambridge, MA
8:30 a.m. William Farlow Laboratory and the beginning of the U.S. institutional plant pathology cryptogamy. G. DENIS. CNRS, Villeneuve d'Ascq, France
8:50 a.m. The living soil: Soil bacteria, ecology, and social cooperation. M. FINLAY. Armstrong Atlantic State University, Savannah, GA
9:10 a.m. Break
9:30 a.m. The great dying on the vine: Scientific responses to the phylloxera grapevine disaster, France 1867–1900. G. GALE. University of Missouri, Kansas City, MO
9:50 a.m. Reconsidering controversy: The Fischer-Smith debate and the development of biological disciplines. C. MATTA. University of Wisconsin, Madison, WI
10:10 a.m. Discussion

8:00 – 11:15 a.m. – ACC, 204B
Diseases of Plants

Oral Presentations: Diseases of Cereal, Field, and Fiber Crops

Moderators: Jeff Miller, University of Idaho, Aberdeen, ID, and Melinda Sullivan, North Carolina State University, Raleigh, NC

8:00 a.m. Fitness of races 0 and 1 of the tobacco black shank pathogen. M.J. SULLIVAN, T.A. Melton, and H.D. Shew. North Carolina State University, Raleigh, NC
8:15 a.m. Association of *Pantoea agglomerans* with seed rot of South Carolina cotton. E.G. MEDRANO (1), M.A. Jones (2), and A. Bell (1). (1) USDA-ARS, College Station, TX; (2) Pee Dee Research and Education Center, Florence, SC
8:30 a.m. Occurrence and fitness of mefenoxam resistant isolates of *Phytophthora erythroseptica* in Idaho. L.D. PORTER (1), J.S. Miller (1), and P. Nolte (2). (1) University of Idaho, Aberdeen, ID; (2) University of Idaho, Idaho Falls, ID
8:45 a.m. Managing silver scurf on potatoes in storage with post-harvest fungicides and disinfestants. J.S. MILLER (1), P.B. Hamm (2), N. Olsen (3), B.D. Geary (4), and D.A. Johnson (5). (1) University of Idaho, Aberdeen, ID; (2) Oregon State University, Hermiston, OR; (3) University of Idaho, Twin Falls, ID; (4) University of Idaho, Parma, ID; (5) Washington State University, Pullman, WA
9:00 a.m. Efficacy of two strobilurin fungicides in controlling frogeye leaf spot of soybean. M.A. NEWMAN. University of Tennessee, Jackson, TN
9:15 a.m. An anatomical and physiological basis for flood-mediated rice blast field resistance. M.P. SINGH, P.A. Counce, and F.N. Lee. University of Arkansas, Stuttgart, AR
9:30 a.m. Relative role of minor and major resistance genes in flood mediated blast field resistance. F.N. LEE, M.P. Singh, and P.A. Counce. University of Arkansas, Stuttgart, AR
9:45 a.m. Population structure of seedborne *Stagonospora nodorum* on New York wheat. R.S. BENNETT, M.G. Milgroom, and G.C. Bergstrom. Cornell University, Ithaca, NY
10:00 a.m. Break
10:15 a.m. The quantification of *Tilletia indica* teliospores from regulated fields in Texas. J.M. STEIN, H.W. Maples, and C.M. Rush. Texas Agricultural Experiment Station, Bushland, TX
10:30 a.m. Distribution of tan spot and race structure of *Pyrenophora tritici-repentis* in Ohio. J.S. ENGLE (1), P.E. Lipps (1), and T.L. Friesen (2). (1) Ohio State University, Wooster, OH; (2) USDA-ARS, Fargo, ND
10:45 a.m. Incidence of crown rot disease on wheat by new species, *Fusarium*. H. SAREMI and F. Farrokhi. Zanjan University, Zanjan, Iran
11:00 a.m. Etiology of Phaeosphaeria leaf spot of maize in Brazil. F.K. DAL SOGLIO, A.L. do Amaral, M.L. De Carli, and J.F. Barbosa Neto. Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil

8:00 – 11:30 a.m. – ACC, 205B
Biology of Plant Pathogens

Functional Genomics Meets Bacterial Diseases

Organizers: Sheng Yang He, Michigan State University, East Lansing, MI, and Gwyn Beattie, Iowa State University, Ames, IA
Sponsoring Committees: Bacteriology, Genetics
Moderators: Sheng Yang He, Michigan State University, East Lansing, MI, and Gwyn Beattie, Iowa State University, Ames, IA

With increasing numbers of bacterial pathogen genomes completely sequenced and functional genomic resources available for these pathogens, researchers now have excellent opportunities to address unresolved long-standing questions about the ecology, epidemiology,

pathology, and control of bacterial diseases. This symposium seeks to integrate knowledge of genomics with knowledge of the biology of Pseudomonas syringae *and* Ralstonia solanacearum. *The goal of the session is to explore how genomics has furthered and will continue to further our understanding of the ecology, epidemiology, pathology, and control of these organisms. This session is envisioned as the first of a series, with other plant pathogenic bacteria to be scheduled in subsequent years.*

8:00 a.m. Introduction. S.H. YE. Michigan State University, East Lansing, MI

8:10 a.m. *Pseudomonas syringae*: A cosmopolitan pathogen with varied interactions with plants? S. LINDOW. University of California, Berkeley, CA

8:40 a.m. *Pseudomonas syringae* pathogenicity explored from the perspective of type III secretion systems and comparative genomics. A. COLLMER (1), J.R. Alfano (2), C.R. Buell (3), S. Cartinhour (4), A.K. Chatterjee (5), G.B. Martin (6), D.J. Schneider (4), and X. Tang (7). (1) Cornell University, Ithaca, NY; (2) Institute for Genomic Research, Rockville, MD; (3) University of Nebraska, Lincoln, NE; (4) USDA-ARS, Ithaca, NY; (5) University of Missouri, Columbia, MO; (6) Boyce Thompson Institute for Plant Research, Ithaca, NY; (7) Kansas State University, Manhattan, KS

9:10 a.m. *Pseudomonas syringae* DC3000: Old pathogen, new name? C. BENDER. Oklahoma State University, Stillwater, OK

9:40 a.m. Break

10:00 a.m. The *Ralstonia solanacearum* species complex: Genetic diversity and physiology of the pathogen and ecology of bacterial wilt. A.C. HAYWARD (1) and M. Fegan (1,2). (1) University of Queensland, Indooroopilly, QLD, Australia; (2) Cooperative Research Centre for Tropical Plant Protection, Brisbane, QLD, Australia

10:30 a.m. Pathogenicity determinants and genomics of *Ralstonia solanacearum*. S. GENIN, A. Angot, S. Cunnac, A. Occhialini, N. Peeters, and C. Boucher. INRA-CNRS, Castanet-Tolosan, France

11:00 a.m. Extracellular space: The final frontier for *Ralstonia solanacearum* proteins required for colonization. T.P. DENNY, H. Liu, J.J. Wolff, I.J. Amster, and M.A. Schell. University of Georgia, Athens, GA

8:00 – 11:30 a.m. – ACC, 207B

Epidemiology/Ecology/Environmental Plant Pathology

Soil Health and Nematodes

Organizers: Senyu Chen, University of Minnesota, Waseca, MN; Koon-Hui Wang, University of Florida, Gainesville, FL; and Terrence Kirkpatrick, University of Arkansas, Hope, AR

Sponsoring Committee: Nematology

Moderators: Senyu Chen, University of Minnesota, Waseca, MN; Koon-Hui Wang, University of Florida, Gainesville, FL; and Terrence Kirkpatrick, University of Arkansas, Hope, AR

Maintaining soil heath is critical for sustainable agriculture. Soil ecosystems support diverse groups of organisms including fungi, bacteria, algae, protozoa, arthropods, annelids, and nematodes. A healthy agricultural soil ecosystem should provide optimum nutrients for plant growth while it maintains low disease, pest, and weed pressures. The soil ecological health and conditions can be analyzed by studying soil microflora and fauna. Nematodes are a useful group of organisms as soil bioindicators. Nematodes play a significant role in soil nutrient cycling, especially in organic matter decomposition and nitrogen mineralization. Nematodes represent various trophic levels in the food web including primary (plant and algae feeders), secondary (bacterial and fungal feeders), and tertiary (predators) consumers. A healthy soil may contain more free-living nematodes and fewer plant-parasitic nematodes. In this session, the speakers will discuss various aspects of nematode ecology associated with soil heath and ecological-based nematode management.

8:00 a.m. Introduction. S. CHEN. University of Minnesota, Waseca, MN

8:05 p.m. Nematode diversity in soil ecosystems. G.W. YEATES. Landcare Research, Palmerston North, New Zealand.

8:40 p.m. Role of nematodes in soil nutrient cycling. G. BIRD (1), R. Harwood (1), J. Sanchez (2), M. Berney (1), J. Smeenk (3), and J. Smith (1). (1) Michigan State University, East Lansing, MI; (2) Oklahoma State University, Goodwell, OK; (3) University of Alaska, Fairbanks, AK

9:15 a.m. Decoding the nature of a nematode suppressive soil. J.O. BECKER and J. Borneman. University of California, Riverside, CA

9:50 a.m. Break

10:05 a.m. Soil microbial and nematode communities in organic and conventional farming systems. J.B. RISTAINO. North Carolina State University, Raleigh, NC

10:40 a.m. Effects of soil ecosystem management on nematode pests, nutrient cycling, and plant health. K.-H. WANG and R. McSorley. University of Florida, Gainesville, FL

11:15 a.m. Discussion

8:00 – 11:45 a.m. – ACC, 204C
Molecular/Cellular Plant-Microbe Interactions

Oral Presentations: Host-Parasite Relations: Biochemistry, Molecular Biology, Cell Biology

Moderators: Christine Smart, Cornell University, Geneva, NY, and Henrik Stotz, Oregon State University, Corvallis, OR

8:00 a.m. Plant cell response to thaxtomin A and amelioration of toxic effect by auxin. R.S. TEGG, S.N. Shabala, L. Melian, A. Eyles, and C.R. Wilson. Tasmanian Institute of Agricultural Research, New Town, TAS, Australia

8:15 a.m. Weapons of mass destruction—Genetic warfare between *Theobroma* and *Crinipellis*. A. KILARU (1), B. Bailey (2), and K.H. Hasenstein (1). (1) University of Louisiana, Lafayette, LA; (2) USDA, Beltsville, MD

8:30 a.m. Molecular characterization of *Magnaporthe grisea* avirulence *AVR-Pita*. E.M. WINSTON (1), P. Singh (2), Y. Jia (1), and J. Correll (3). (1) USDA-ARS, Stuttgart, AR; (2) University of Arkansas, Stuttgart, AR; (3) University of Arkansas, Fayetteville, AR

8:45 a.m. Development and characterization of rice mutant populations for functional genomics of host-parasite interactions. Y. JIA (1), J.N. Rutger (1), Z. Wang (2), P. Singh (3), R. Martin (3), and S.R.M. Pinson (4). (1) USDA-ARS, Stuttgart, AR; (2) Zhejiang Wanli University, People's Republic of China; (3) Oak Ridge National Laboratory, Oak Ridge, TN; (4) USDA-ARS, Beaumont, TX

9:00 a.m. Tissue-specific expression of a late blight R gene in wild and cultivated potato species. B.P. MILLETT and J.M. Bradeen. University of Minnesota, St. Paul, MN

9:15 a.m. Understanding the potato – *Phytophthora infestans* compatible interaction. S. Restrepo (1), W.E. Fry (2), and C.D. SMART (1). (1) Cornell University, Geneva, NY; (2) Cornell University, Ithaca, NY

9:30 a.m. In situ spatial distribution of chitinase IIB transcripts in attacked barley leaves differs between Mla1 and mlo5 powdery mildew R gene resistances. R.J. ZEYEN, T.A. Clark, and W.M. Kruger. University of Minnesota, St. Paul, MN

9:45 a.m. Genetic and physiological basis of partial resistance to *Sclerotinia sclerotiorum* in *Phaseolus coccineus*. T.J. Chipps, B. Gilmore, J.R. Myers, and H.U. STOTZ. Oregon State University, Corvallis, OR

10:00 a.m. Break

10:15 a.m. Seedling resistance to *Rhizoctonia solani* in sugar beet. S. NAGENDRAN (1) and J.M. McGrath (2). (1) Michigan State University, East Lansing, MI; (2) USDA-ARS, East Lansing, MI

10:30 a.m. Genomic analysis of the maize 12-oxo-phytodienoic acid reductases and their involvement in plant-pathogen interactions. J. ZHANG (1), C. Simmons (2), R. Meeley (2), N. Yalpani (2) and M. Kolomiets (1). (1) Texas A&M University, College Station, TX; (2) Pioneer Hi-Bred Intl. Inc., Johnston, IA

10:45 a.m. Development of molecular strategies to control rice sheath blight disease. P. SINGH (1), Y. Wamishe (1), G.C. Eizenga (2), F.N. Lee (1), and Y. Jia (2). (1) University of Arkansas, Stuttgart, AR; (2) USDA-ARS, Stuttgart, AR

11:00 a.m. Suppression by abscisic acid of lignin production and monolignol pathway gene expression in interactions of Arabidopsis with oomycete and bacterial pathogens. P.G. Mohr and D.M. CAHILL. Deakin University, Geelong, VIC, Australia

11:15 a.m. Role of maize lipoxygenase genes in defenses against phytopathogenic fungi: A genomics approach. A.M. NEMCHENKO (1), C. Simmons (2), N. Yalpani (2), R. Meeley (2), and M. Kolomiets (1). (1) Texas A&M University, College Station, TX; (2) Pioneer Hi-Bred Intl. Inc., Johnston, IA

11:30 a.m. Inducible overexpression of a rice allene oxide synthase gene increases the endogenous jasmonic acid level, *PR* gene expression and host resistance to fungal infection. C. MEI, M. Qi, S. Zhang, G. Sheng, and Y. Yang. University of Arkansas, Fayetteville, AR

8:00 – 11:55 a.m. – ACC, 205A
Biology of Plant Pathogens

Co-Evolution of Fungi and Plants

Organizers: Dean Glawe, Washington State University, Puyallup, WA, and Karel Jacobs, Morton Arboretum, Lisle, IL
Sponsoring Committees: Mycology, Genetics
Moderators: Dean Glawe, Washington State University, Puyallup, WA, and Karel Jacobs, Morton Arboretum, Lisle, IL

This is an exploration of current thinking on the interactions of fungi and plants as expressed through common evolutionary histories. Topics range from current thinking on the origin and diversification of plants and theoretical foundations of fungi-plant coevolution to focused talks on the evolution of mycorrhizal symbioses, endophytism, and pathogenesis among different plant-fungi interactions.

8:00 a.m. Introduction. K. JACOBS (1) and D. GLAWE (2). (1) Morton Arboretum, Lisle, IL; (2) Washington State University, Puyallup, WA

8:05 a.m. Fungal/plant interactions during the early terrestrialization of the land. T.N. TAYLOR. University of Kansas, Lawrence, KS
8:40 a.m. Evolutionary dynamics of the interactions between plants and arbuscular mycorrhizal fungi. J. BEVER. Indiana University, Bloomington, IN
9:15 a.m. Host specialization of endophytes and coevolution. C. SCHARDL. University of Kentucky, Lexington, KY
9:50 a.m. Break
10:10 a.m. The human impact on plant disease; it's not all bad. G. MAY. University of Minnesota, St. Paul, MN
10:45 a.m. Phylogeographic studies on tree pathogens reveal differing patterns of speciation and host-pathogen co-evolution. B.D. WINGFIELD, M.P.A. Coetzee, and M.J. Wingfield. University of Pretoria, Pretoria, South Africa
11:20 a.m. Geological time, evolutionary rates, and the history of fungi. J.W. TAYLOR. University of California, Berkeley, CA

8:00 a.m. – 12:15 p.m. – ACC, 206B
Molecular/Cellular Plant-Microbe Interactions

Host-Microbe Interactions in Woody Plants

Organizer: Pierluigi Bonello, Ohio State University, Columbus, OH
Sponsoring Committees: Forest Pathology; Biochemistry, Physiology, and Molecular Biology
Moderators: Pierluigi Bonello, Ohio State University, Columbus, OH, and Paul Zambino, U.S. Forest Service, Moscow, ID

In the past 20 years significant advances have been made in our understanding of host-microbe interactions, particularly through the manipulation of selected herbaceous model plant systems such as Arabidopsis and tobacco. While there are obstacles in manipulating trees, there are also tremendous opportunities to expand our knowledge of host-microbe interactions to a group of organisms that are a dominant feature in many terrestrial ecosystems and are of critical economic importance. Certain unique features of trees cannot be easily modeled using herbaceous systems, including the predominance of secondary tissues in trees; the existence of woody plant-specific defense mechanisms, such as the resin system in conifers and compartmentalization processes; and the large temporal and spatial scales at which defenses must presumably act given the longevity and size of trees. Furthermore, fundamental information is being generated in the field of plant-mycorrhizal fungus interactions, an area that is arguably better characterized in woody than in herbaceous plants. This symposium will focus on the latest discoveries in the areas of genomics, genetics, biochemistry, and cell and tissue biology of host-microbe interactions in woody plants, including pathogenic and mycorrhizal associations, and will provide a forum for the identification of future research directions.

8:00 a.m. Introduction. P. BONELLO. Ohio State University, Columbus, OH
8:05 a.m. Genomic approaches to understanding quantitative inheritance of disease resistance in forest trees. D.B. NEALE (1,2), E.S. Ersoz (1), G.R. Brown (1), A. Morse (3), and J.M. Davis (3). (1) University of California, Davis, CA; (2) USDA Forest Service, Davis, CA; (3) University of Florida, Gainesville, FL
8:35 a.m. Genetic architecture of loblolly pine interactions with contrasting pathogens. J.M. DAVIS (1), A.M. Morse (1), D.A. Huber (1), C.D. Nelson (2), and S.F. Covert (3). (1) University of Florida, Gainesville, FL; (2) USDA Forest Service, Saucier, MS; (3) University of Georgia, Athens, GA
9:05 a.m. Anatomy, histochemistry, and cytochemistry of host-pathogen interactions in conifers. V.R. FRANCESCHI. Washington State University, Pullman, WA
9:35 a.m. Break
9:55 a.m. Fine anatomy and chemical characterization of compartmentalization processes in response to Dutch elm disease and Scleroderris canker. D. RIOUX. Canadian Forest Service, Sainte-Foy, QC, Canada
10:25 a.m. Biochemistry of localized and systemic induced defense responses in pine. P. BONELLO. Ohio State University, Columbus, OH
10:55 a.m. Exploring the transcriptome of the ectomycorrhizal symbiosis. A. KOHLER, M. Peter, A. Jambois, P.E. Courty, S. Duplessis, F. Lapeyrie, and F. Martin. INRA, Champenoux, France
11:05 a.m. Relevance of herbaceous plant models to understanding and manipulating disease resistance in woody plants. A.F. BENT. University of Wisconsin, Madison, WI
11:35 a.m. Discussion

8:00 a.m. – 12:20 p.m. – ACC, 206A
Plant Disease Management

Fungicide Development: From Discovery to Market Launch

Organizers: Rami Soufi, The Scotts Company, Marysville, OH, and David Wedge, USDA, University, MS
Sponsoring Committees: Chemical Control, Industry
Moderator: Rami Soufi, The Scotts Company, Marysville, OH

The objective of this symposium is to highlight the processes, decision points, and business groups involved in developing a fungicide. Presentations will describe development activities, starting with the discovery of an active ingredient (AI) to the commercialization of different fungicidal products based on that AI.

8:00 a.m. Introduction. R. SOUFI. The Scotts Company, Marysville, OH

8:05 a.m. Global fungicide markets and the forces driving fungicide discovery. D. OUIMETTE, R.J. Her, and Greg Hanger. Dow AgroSciences LLC, Indianapolis, IN

8:35 a.m. Fungicide screening and discovery: Finding one good compound hidden with one million losers. R. KAISER. Bayer CropScience, Research Triangle Park, NC

9:05 a.m. Market and financial models used to make development decisions. M.B. KOPCINSKI. DuPont Crop Protection, Wilmington, DE

9:35 a.m. The myriad of options in the development decision: Matrix management. J. FRANK. Syngenta Crop Protection, Greensboro, NC

10:05 a.m. Break

10:20 a.m. Fungicide resistance profiling and management. A. TALLY. Syngenta Crop Protection, Greensboro, NC

10:50 a.m. The role of IR-4 in fungicide development. D. THOMPSON. Rutgers University, North Brunswick, NJ

11:20 a.m. Developing active ingredients as seed treatments. J.L. RIGGS. Gustafson LLC, McKinney, TX

11:50 a.m. Developing fungicides for the specialities markets. K. KALMOWITZ. BASF, Research Triangle Park, NC

1:00 – 3:00 p.m. – ACC, 204C

Epidemiology/Ecology/Environmental Plant Pathology

Oral Presentations: Epidemiology I

Moderators: Forrest Nutter and Paul Esker, Iowa State University, Ames, IA

1:00 p.m. Developing forensic protocols for the post-introduction attribution of threatening plant pathogens. F.W. NUTTER JR. Iowa State University, Ames, IA

1:15 p.m. Influence of nutrient and environmental factors on conidial germination of *Potebniamyces pyri*. Q. LIU and C.L. Xiao. Washington State University, Wenatchee, WA

1:30 p.m. Relationship between the environment and the amount of *Gibberella zeae* inoculum recovered from wheat heads in Ohio. P.A. PAUL, P.E. Lipps, and L.V. Madden. Ohio State University, Wooster, OH

1:45 p.m. Factors affecting bitter rot (*Greeneria uvicola*) fungus infection of winegrape (*Vitis vinifera*). J.G. MIRANDA and T.B. Sutton. North Carolina State University, Raleigh, NC

2:00 p.m. Survival analysis of phytoplasma-infected papaya causing yellow crinkle disease in Australia. P.D. ESKER, P.M. Dixon, and F.W. Nutter Jr., Jr. Iowa State University, Ames, IA

2:15 p.m. Survival analysis of time to defoliation of blueberry leaves affected by Septoria leaf spot. P.S. OJIAMBO and H. Scherm. University of Georgia, Athens, GA

2:30 p.m. Survival of grape downy mildew (*Plasmopara viticola*) sporangia and lesions under field conditions. M.M. KENNELLY (1), R.C. Seem (1), D.M. Gadoury (1), W.F. Wilcox (1), and P.A. Magarey (2). (1) Cornell University, Geneva, NY; (2) South Australian Research and Development Institute, Loxton, SA, Australia

2:45 p.m. Distributional dynamics of *Verticillium dahliae* in potato plant tissue through the growing season. K.E. FROST, D.I. Rouse, and S.H. Jansky. University of Wisconsin, Madison, WI

1:00 – 3:30 p.m. – ACC, 204B

Plant Disease Management

Oral Presentations: Chemical Control I

Moderators: Loren Giesler and Amy Ziems, University of Nebraska, Lincoln, NE

1:00 p.m. Effect of foliar insecticide timing on the incidence of *Bean pod mottle virus* in soybean. A.D. ZIEMS, L.J. Giesler, and T.E. Hunt. University of Nebraska, Lincoln, NE

1:15 p.m. Use of boron for the control of eutypa dieback of grapevines. P.E. ROLSHAUSEN and W.D. Gubler. University of California, Davis, CA

1:30 p.m. A new air-sampling method for monitoring fungicide sensitivity and visualizing known types of resistance in *Penicillium digitatum* populations in citrus packinghouses. A. SOTO-ESTRADA, L. Kanetis, H. Förster, and J.E. Adaskaveg. University of California, Riverside, CA

1:45 p.m. Baseline sensitivities of *Penicillium digitatum* populations to azoxystrobin, fludioxonil, and pyrimethanil. L. KANETIS, A. Soto-Estrada, and J.E. Adaskaveg. University of California, Riverside, CA

2:00 p.m. Physiological effects of the new fungicide boscalid on crop quality. T. JABS (1), C. Gunkel (1), J. Pfirrmann (1), M. Scherer (1), and H.L. Ypema (2). (1) BASF AG, Limburgerhof, Germany; (2) BASF Corp., Research Triangle Park, NC

2:15 p.m. Managing Rhizoctonia of sugarbeet with azoxystrobin, based on soil temperature. M.F.R. KHAN (1,2), J. Khan (2), C.A. Bradley (2), and R. Nelson (2). (1) University of Minnesota, St. Paul, MN; (2) North Dakota State University, Fargo, ND

2:30 p.m. Foliar fungicides for control of Sclerotinia stem rot of canola. C.A. BRADLEY (1), G. Endres (1), M. Halvorson (1), B. Hanson (1), B. Henson (1),

K. McKay (1), P. Porter (2), and D. LeGare (2). (1) North Dakota State University, Fargo, ND; (2) University of Minnesota, St. Paul, MN

2:45 p.m. Evolution of QoI resistance in populations of *Mycosphaerella graminicola*. B.A. FRAAIJE and J.A. Lucas. Rothamsted Research, Harpenden, UK

3:00 p.m. Physiological effects of the strobilurin fungicide pyraclostrobin on plants. T. JABS (1), H.L. Ypema (2), and H. Köhle (1). (1) BASF AG, Limburgerhof, Germany; (2) BASF Corp., Research Triangle Park, NC

3:15 p.m. Seasonal dynamics of resistance to QoI fungicides in Podosphaera xanthii and impact on control of cucurbit powdery mildew. M.T. MCGRATH. Cornell University, Riverhead, NY

1:00 – 3:30 p.m. – ACC, 204A

Plant Disease Management

Oral Presentations: Biological Control and Rhizosphere Microbiology

Moderators: Min Rayamajhi, USDA-ARS, Ft. Lauderdale, FL, and Sebastian Kiewnick, University of Bonn, Bonn, Germany

1:00 p.m. Interactions between *Puccinia psidii* and *Oxyops vitiosa*: The biological control agents of *Melaleuca quinquenervia* in Florida. M.B. RAYAMAJHI, T.K. Van, P.D. Pratt, and T.D. Center. USDA-ARS, Ft. Lauderdale, FL

1:15 p.m. Control of soilborne pathogens using allelopathic plants to lower redox potential of soil. T. TAKEHARA (1), S. Hanzawa (2), M. Funabara (3), K. Nakaho (1), and A. Nakagawa (1). (1) National Agricultural Research Center, Tsukuba, Japan; (2) Miyagi Prefectural Agriculture and Horticulture Research Center, Japan; (3) Tottori Horticultural Experiment Station, Japan

1:30 p.m. Theoretical modelling of biological control of foliar plant diseases. X.-M. XU (1), M. Jeger (2), and P. Jeffries (3). (1) East Malling Research, West Malling, UK; (2) Imperial College, Wye, UK; (3) University of Kent, Canterbury, UK

1:45 p.m. Optimizing the biological control of plant parasitic nematodes with *Paecilomyces lilacinus* strain 251. S. KIEWNICK and R.A. Sikora. University of Bonn, Bonn, Germany

2:00 p.m. An approach for identifying microorganisms involved in soil suppressiveness: Utilization for identifying microorganisms that suppress the plant-parasitic nematode, *Heterodera schachtii*. R.O. OLATINWO, B. Yin, J.O. Becker and J. Borneman. University of California, Riverside, CA

2:15 p.m. Microbial suppression of *Phytophthora cinnamomi* in avocado soils. V.T. MCDONALD, J.A. Menge, E. Pond, M. Crowley and B. McKee. University of California, Riverside, CA

2:30 p.m. Induction of soil suppressiveness against *Rhizoctonia solani* by incorporation of specific dried plant residues into soil. M. Kasuya, A.R. Olivier, Y. Wada, H. Honjo and R. FUKUI. Utsunomiya University, Tochigi, Japan

2:45 p.m. Combination of mechanisms in *Pseudomonas chlororaphis* strain PA-23 results in control of multiple pathogens. Y. ZHANG (1), W.G.D. Fernando (1), K. Kavitha (2), and S. Nakkeeran (2), and R. Ramarathnam (1). (1) University of Manitoba, Winnipeg, MB, Canada; (2) Tamil Nadu Agricultural University, Coimbatore, India

3:00 p.m. Wave-like development of bacterial communities and a biocontrol agent introduced in the wheat rhisosphere. A.M. SEMENOV (1), A.H.C. van Bruggen (2), A.D. van Diepeningen (2), R.J. Sayler (3), V.V. Zelenev (1), and O. De Vos (2). (1) Moscow State University, Russia; (2) Wageningen University, Netherlands; (3) University of Arkansas, Fayetteville, AR

3:15 p.m. Suppression of take-all disease in soils from organic versus conventional farms in relation to native and introduced *Pseudomonas fluorescens*. A.H.C. VAN BRUGGEN (1), G.A. Hiddink (1), A.V. Semenov (2), and A.M. Semenov (2). (1) Wageningen University, Wageningen, Netherlands; (2) Moscow State University, Russia

1:00 – 3:30 p.m. – ACC, 204D

Molecular/Cellular Plant-Microbe Interactions

Oral Presentations: Viruses—Genetics, Molecular Biology, Cell Biology I

Moderators: Alexander Karasev, Thomas Jefferson University, Philadelphia, PA, and Manjanuth Keremane, University of Florida, Gainesville, FL

1:00 p.m. The use of quantitative real-time PCR in *Benyvirus* research. K.L. MAXSON-STEIN, M.E. Villanueva, J.M. Stein, and C.M. Rush. Texas Agricultural Experiment Station, Amarillo, TX

1:15 p.m. Changes in the population dynamics of a Florida *Citrus tristeza virus* isolate upon aphid transmission. A. ROY (1), K.L Manjunath (2), and R.H. Brlansky (1). (1) University of Florida, Lake Alfred, FL; (2) University of Florida, Gainesville, FL

1:30 p.m. Ultrastructural and molecular characterization of *Citrus leprosis virus* indicates possible association of two distinct viruses. A.S. GUERRA-MORENO, K.L. Manjunath (1), R.H. Brlansky (2), D. Howd (2), and R.F. Lee (3). (1) University of Florida, Gainesville, FL; (2) University of Florida, Lake Alfred, FL; (3) USDA-ARS, Riverside, CA

1:45 p.m. Genetic analysis of *Citrus tristeza virus*: Effects of deletion of p33, p18 and p13 genes on host range. T. SATYANARAYANA, C.J. Robertson, S.M. Garnsey, and W.O. Dawson. University of Florida, Lake Alfred, FL

2:00 p.m. GFP-tagging of *Citrus tristeza virus* in citrus trees. A.S. FOLIMONOV, S.Y. Folimonova, and W.O. Dawson. University of Florida, Lake Alfred, FL

2:15 p.m. Single aphids transmit multiple genotypes of *Citrus tristeza virus*, but often with changed population dynamics. K.K. Biswas (1), K.L. MANJUNATH (1), L.J. Marais (1), and R.F. Lee (2). (1) University of Florida, Gainesville, FL; (2) USDA-ARS, Riverside, CA

2:30 p.m. Quantitative and molecular features determining whitefly transmission of an engineered *Lettuce infectious yellows virus* defective RNA and LIYV mutants. J. NG, T. Tian, and B. Falk. University of California, Davis, CA

2:45 p.m. Sequencing and functional analysis of the maize fine streak virus genome. C.W. TSAI (1), M.G. Redinbaugh (1,2), K. Willie (2), S. Reed (1), M. Goodin (3), and S.A. Hogenhout (1). (1) Ohio State University, Wooster, OH; (2) USDA-ARS, Wooster, OH; (3) University of Kentucky, Lexington, KY

3:00 p.m. Elicitor function of *Soybean mosaic virus*-G7 provoking Rsv1-mediated lethal systemic hypersensitive response maps to P3. M.R. HAJIMORAD, A.L. Eggenberger, and J.H. Hill. Iowa State University, Ames, IA

3:15 p.m. *Tobacco mosaic virus* —A versatile tool for production of biomedicals in plants. A.V. KARASEV and H. Koprowski. Thomas Jefferson University, Philadelphia, PA

1:00 – 3:55 p.m. – ACC, 206A/B
Professionalism/Service/Outreach

Hot Topic: Meeting New Federal Requirements for Planning and Accountability — APS and CSREES Working Together

Organizers: John Sherwood, University of Georgia, Athens, GA, and Ann Lichens-Park, USDA-CSREES, Washington, DC

The field of plant pathology has had a tremendous impact on agriculture and society. The goal of the workshop is to identify some of the best examples of past accomplishments in plant pathology, to review CSREES's current portfolio of competitive funding opportunities in plant health, and to describe a portfolio of plant pathology-related activities that can best meet future needs of agriculture and society. The outcome of this workshop will potentially benefit the funding available for future activities centered on plant health.

1:00 p.m. Introduction to federal accountability of the Competitive Grants Programs in plant health. A. LICHENS-PARK. USDA-CSREES, Washington, C

1:10 p.m. Role of the APS Public Policy Board in formulating a response to accountability requirements. J. SHERWOOD. University of Georgia, Athens, GA

1:20 p.m. New federal requirements for planning and accountability. C. OROS. USDA-CSREES, Washington, DC

1:40 p.m. Discussion: Competitive Grants Program Priorites I

2:40 p.m. Break

2:55 p.m. Discussion: Competitive Grants Program Priorites II

1:00 – 4:30 p.m. – ACC, 205A
Professionalism/Service/Outreach

Adapting Teaching Styles and Techniques for a Changing Student Population

Organizers: Edward Braun, Iowa State University, Ames, IA, and Melissa Riley, Clemson University, Clemson, SC
Sponsoring Committee: Teaching
Moderators: Edward Braun, Iowa State University, Ames, IA, and Melissa Riley, Clemson University, Clemson, SC

The student population is changing (demographics, interests and aspirations, learning styles, etc.). How can we change our courses and pedagogy to be more successful with university students of the present and future?

1:00 p.m. Welcome and introductions. E. BRAUN. Iowa State University, Ames, IA

1:05 p.m. How students learn science: What research and experience tell us. R. WRIGHT DUNBAR. Stanford University, Stanford, CA

1:45 p.m. Increasing student diversity: Challenges and opportunities. C. D'ARCY. University of Illinois, Urbana, IL

2:15 p.m. Break

2:30 p.m. Utilization of case studies in teaching plant pathology. M. RILEY. Clemson University, Clemson, SC

3:00 p.m. Better or just different: New technologies and teaching. E. EASTBURN. University of Illinois, Urbana, IL

3:30 p.m. Discussion

1:00 – 4:45 p.m. – ACC, 205B
Epidemiology/Ecology/Environmental Plant Pathology

Co-Evolutionary Processes of Introduced Pathogens and Hosts in Natural Ecosystems

Organizers: Bryce Richardson, Mee-Sook Kim, and Ned Klopfenstein, USDA Forest Service, Moscow, ID
Sponsoring Committees: Forest Pathology, Graduate Student
Moderators: Bryce Richardson and Mee-Sook Kim, USDA Forest Service, Moscow, ID

Introduced pathogens have produced many classic examples of ecosystem devastation. However, for many pathosystems, co-evolutionary processes should cause decreases in pathogen aggressiveness and increases in host resistance. Understanding naturalization processes of introduced pathogens is critical to fostering recovery of natural ecosystems. This symposium offers valuable insights into the growing fields of evolutionary epidemiology and population genetics.

1:00 p.m. Implications of molecular evidence on the evolution of *Melampsora* and other rust fungi. M.H. PEI, C. Bayon, and C. Ruiz. University of Bristol, Bristol, UK
1:05 p.m. A phylogeographical history of *Mycosphaerella graminicola* on wheat. B.A. MCDONALD and S. Banke. Swiss Federal Institute of Technology, Zurich, Switzerland
2:10 p.m. Epidemiology meets genetics: The evolution of virulence in a natural plant-pathogen association. P.H. THRALL and J.J. Burdon. CSIRO, Canberra, ACT, Australia
2:45 p.m. Break
3:00 p.m. Inferring patterns of migration and gene flow in introduced populations of plant pathogens using the chickpea pathogen *Ascochyta rabiei* as a model. T.L. PEEVER. Washington State University, Pullman, WA
3:35 p.m. Exotic and native rust pathosystems: A population genomics approach. R.C. HAMELIN. Natural Resources Canada, Sainte-Foy, QC, Quebec
3:50 p.m. Implications from deep phylogeographical histories on pathosystem endemism. G.I. MCDONALD. USDA Forest Service, Moscow, ID

1:00 – 4:45 p.m. – ACC, 207B
Molecular/Cellular Plant-Microbe Interactions

Suppression of Host Defense Responses by Pathogens

Organizers: Sophien Kamoun, Ohio State University, Wooster, OH, and John M. McDowell, Virginia Tech, Blacksburg, VA
Sponsoring Committees: Genetics; Biochemistry, Physiology, and Molecular Biology
Moderators: Sophien Kamoun, Ohio State University, Wooster, OH, and John M. McDowell, Virginia Tech, Blacksburg, VA

Suppression of host defense responses by plant pathogens forms a key mechanism of pathogenicity. The objective of this symposium is to provide an update on recent advances in this area and to illustrate the diversity of molecular strategies used by bacterial, fungal, and oomycete pathogens to suppress host defenses. Some of the themes that will be presented include the role of effector molecules in disabling cellular defenses and the hypersensitive responses, and the production of inhibitory molecules that target plant enzymes.

1:00 p.m. Introduction. S. KAMOUN. Ohio State University, Wooster, OH
1:10 p.m. Molecular basis of bacterial disease resistance in *Arabidopsis thaliana*. B.J. STASKAWICZ, D. Dalhbeck, P. Coppinger, B. Day, S. Chisholm, G. Coaker, and M. Briggs. University of California, Berkeley, CA
1:50 p.m. *Pseudomonas syringae* type III effectors—Suppressors of plant innate immunity. J.R. ALFANO. University of Nebraska, Lincoln, NE
2:30 p.m. Fungal effector gene function in pathogenicity and host specificity. B. VALENT, P. Kankanala, M. Dalby, R. Berruyer, S. Poussier, G. Valdovinos-Ponce, and G. Mosquera. Kansas State University, Manhattan, KS
3:10 p.m. Break
3:25 p.m. Identification and characterization of glucanase inhibitor proteins: Uncovering the molecular arms race in the plant cell wall. J.K.C. ROSE. Cornell University, Ithaca, NY
4:05 p.m. Extracellular protease inhibitors of *Phytophthora infestans* determine a novel counterdefense mechanism. M. TIAN, N. Champouret, and S. Kamoun. Ohio State University, Wooster, OH

1:00 – 5:00 p.m. – ACC, 207A
Biology of Plant Pathogens

Life Styles and Genomics of Fastidious and Gram-Positive Bacteria

Organizers: Saskia Hogenhout, Ohio State University, Wooster, OH, and Carol Ishimaru, Colorado State University, Ft. Collins, CO
Sponsoring Committee: Bacteriology
Moderators: Saskia Hogenhout, Ohio State University, Wooster, OH, and Carol Ishimaru, Colorado State University, Ft. Collins, CO

The genomes of an increasing number of Gram-positive plant-pathogenic bacteria and organisms closely related to Gram-positive bacteria, such as the fastidious spiroplasmas and phytoplasmas (class Mollicutes), are being sequenced. So far, most bacterial genomics symposia at APS annual meetings have focused on Gram-negative bacterial plant pathogens. The goal of this symposium is to provide an update on genomics of Gram-positive and fastidious bacterial plant pathogens and help integrate genomic information on these

organisms. The symposium will include seminars on comparative and functional genomics, and proteomics of Clavibacter, Streptomyces, spiroplasmas and phytoplasmas.

1:00 p.m. Introduction. S. HOGENHOUT. Ohio State University, Wooster, OH

1:05 p.m. A functional equivalent of a Type III secretion in Gram-positive bacteria. M. CAPARON. Washington University, St. Louis, MO

1:35 p.m. Evolution of plant pathogenicity in the genus *Streptomyces*. R. LORIA, J.A. Kers, M.V. Joshi, and E.G. Johnson. Cornell University, Ithaca, NY

2:05 p.m. The *Spiroplasma kunkelii* genome: Insights to a parasitic lifestyle in insects and plants. R.E. DAVIS (1), Y. Zhao (1), E.L. Dally (1), R. Jomantiene (1), S. Lin (2), B. Roe (2), and J. Shao (1). (1) USDA-ARS, Beltsville, MD; (2) University of Oklahoma, Norman, OK

2:35 p.m. Phytoplasmas: From structural to functional genomics. X. Bai (1), V. Correa (1), J. Zhang (1), M. Goodin (2), S. Kamoun (1), and S.A. HOGENHOUT (1). (1) Ohio State University, Wooster, OH, (2) University of Kentucky, Lexington, KY

3:05 p.m. Break

3:15 p.m. The genome of the phytopathogenic bacterium *Clavibacter michiganensis* subsp. *michiganensis*. R. EICHENLAUB , K.-H. Gartemann, and A. Burger. University of Bielefeld, Bielefeld, Germany

3:45 p.m. Genome sequencing of *Clavibacter michiganensis* subsp. *sepedonicus*. C.A. ISHIMARU (1), D.L. Knudson (1), S.E. Brown (1), D.M. Francis (2), and J. Parkhill (3). (1) Colorado State University, Fort Collins, CO; (2) Ohio State University, Wooster, OH; (3) Sanger Institute, Hinxton, UK

4:15 p.m. The interaction proteome of tomato and *Clavibacter michiganensis*. G. Coaker (1), W. Yang (1), B. Willard (2), M. Kinter (2), E. Stockinger (1), and D. FRANCIS (1). (1) Ohio State University, Wooster, OH; (2) Cleveland Clinic Foundation, Cleveland, OH

4:45 p.m. Discussion

APS Central

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APS
Healthy Plants • Healthy World

7:00 – 9:00 a.m. – ACC, Ballroom A/B
APS Business Meeting and Breakfast

7:00 a.m. – 4:00 p.m. – ACC, Hall C
Registration

9:00 a.m. – 12:00 p.m. – ACC
Oral Presentations
Bacteria—Genetics, Molecular Biology, Cell Biology, Systematics, Evolution and Ecology – 205A
Diseases of Turfgrasses – 205B
Forest Pathology – 206A

9:00 a.m. – 12:00 p.m. – ACC
Special Sessions
Food Safety as Influenced by Phyllosphere Microflora – 206B
Fungal Melanins: Biology and Pathogenesis – 207A
Hot Topic: Information Security vs. Freedom of Information in Agriculture – 208 A/B
The Nature and Application of Biocontrol Microbes II: *Trichoderma* spp. – 207B
New Products and Services – 207C
Pepino Mosaic Virus in Tomato – 207D
Risk and Risk Management Associated with the International Movement of Plants for Planting – 209A

9:00 a.m. – 4:00 p.m. – ACC, Hall C
APS Central

9:00 a.m. – 4:00 p.m. – ACC, Hall C
APS PRESS Bookstore

9:00 a.m. – 6:00 p.m. – ACC, Hall C
Posters Available for Viewing

10:00 a.m. – 12:00 p.m. – Hilton, Palos Verdes
Scientific Programs Board

10:00 a.m. – 12:00 p.m. – ACC, Hall C
Plant Disease Diagnosis Contest, answers displayed

10:00 a.m. – 4:00 p.m. – ACC, Hall C
Exhibits

12:00 – 1:00 p.m. – Hilton, Capistrano A/B
Prevalent Bacteria Committee

12:00 – 1:30 p.m. – Hilton, Redondo
***Phytopathology News* Advisory Board**

1:00 – 5:00 p.m. – ACC, 209A
Diagnostics Working Group

1:30 – 3:30 p.m. – ACC, 209B
Office of Public Affairs and Education Meeting

1:00 – 5:00 p.m. – ACC
Oral Presentations
Diseases of Vegetables – 205A
Host Resistance – 205B
Viruses—Genetics, Molecular Biology, Cell Biology II – 206A

1:00 – 5:00 p.m. – ACC
Special Sessions
Active Management of Soil Microorganisms for Plant Root Disease Control – 206B
APS Public Policy Board: Activities, Strategies and Perspectives – 207A
Challenges at the Urban/Ag Interface – 207B
Organic Foods—From Production to Market – 207C
Sampling for Pathogen Detection to Meet Quarantine and Certification Requirements – 207D

1:00 – 5:00 p.m. – ACC, Hall C
Poster Authors Present, Session B / Beer and Bull Session

3:30 – 5:30 p.m. – ACC, 208A
2005 Annual Meeting Program Planning Committee

4:00 – 9:00 p.m. – ACC, Hall C
Exhibit Take Down

5:30 – 8:00 p.m. – Disneyland, Frontierland, Big Thunder Ranch
Industry Extension Social

6:00 – 8:00 p.m. – Hilton, Palos Verdes
APS 101: Early Career Professionals Social

Tuesday, August 3

8:45 a.m. – 12:00 p.m. – ACC, 207A
Molecular/Cellular Plant-Microbe Interactions

Fungal Melanins: Biology and Pathogenesis

Organizers: Weidong Chen, USDA-ARS, Pullman, WA, and Carol Stiles, University of Florida, Gainesville, FL
Sponsoring Committee: Mycology
Moderators: Weidong Chen, USDA-ARS, Pullman, WA, and Carol Stiles, University of Florida, Gainesville, FL

Fungal melanins are polymeric compounds generally considered non-essential for growth. These metabolites, however, have been shown to be essential for fungal infection and pathogenesis in plants and animals. These pigments fall into different chemical groups, depending on their phenolic precursors, and they differ in color (green, brown or black). Fungal melanins have been studied for over three decades. This will be the first APS special session to focus on them. This session will bring together experts in fungal melanin research to present historical and contemporary perspectives and the progress made in understanding the biosynthesis and functions of these polymers. The role of the melanins as virulence factors in certain diseases will be emphasized.

8:45 a.m. Introduction. W. CHEN (1) and C. STILES (2). (1) USDA-ARS, Pullman, WA; (2) University of Florida, Gainesville, FL
8:50 a.m. Biochemistry and genetics of fungal melanin biosynthesis. M.H. WHEELER (1) and H.-F. Tsai (2). (1) USDA-ARS, College Station, TX; (2) NIH-NIAID, Bethesda, MD
9:20 a.m. The mechanical value of fungal melanin. N.P. MONEY. Miami University, Oxford, OH
9:50 a.m. Contribution of melanin to pathogenesis of the human pathogen *Cryptococcus neoformans*. A. CASADEVALL, H. Eisenman, J. Garcia-Rivera, A. Mednick, and J. Nosanchuk. Albert Einstein College of Medicine, Bronx, NY
10:20 a.m. Break
10:30 a.m. The role of melanin production in Ascochyta blight of chickpea. W. CHEN (1), K.D. Sharma (1), M.H. Wheeler (2), and F.J. Muehlbauer (1). (1) USDA-ARS, Washington State University, Pullman, WA; (2) USDA-ARS, College Station, TX
11:00 a.m. Morphological dynamics of *Gaeumannomyces* during pathogenesis of roots (take-all). H.T. WILKINSON, H.M. Fouly, and S.W. Henning. University of Illinois, Urbana, IL
11:30 a.m. Fungal melanin as a critical component for appressorial penetration by the rice blast fungus. B. VALENT and G. Valdovinos-Ponce. Kansas State University, Manhattan, KS

8:45 a.m. – 12:30 p.m. – ACC, 209A
Plant Disease Management

Risk and Risk Management Associated with the International Movement of Plants for Planting

Organizers: Arnold Tschanz, USDA-APHIS, Riverdale, MD, and Kathy Kosta, California Department of Food and Agriculture, Sacramento, CA
Sponsoring Committees: Regulatory Plant Pathology, Collections and Germplasm
Moderators: Arnold Tschanz, USDA-APHIS, Riverdale, MD, and Kathy Kosta, California Department of Food and Agriculture, Sacramento, CA

A significant increase in the worldwide movement of plants and plant parts for planting and propagation is underway. This increase includes countries that have not been traditional trading partners in these plant materials. Movement of such materials can serve as a pathway for the introduction of quarantine-significant plant pathogens, pests, and invasive species into and within the United States. National and state efforts to quantify the risk and to coordinate policy and strategies for such plant materials have been limited. Some countries, including the United States, have begun or are considering reviewing and modifying their regulatory frameworks for trade in these plants for planting. The purpose of this discussion session is to define the risks associated with the movement of this plant material and to identify potential measures for mitigating pest risk while accommodating the movement of plants for planting in international trade.

8:45 a.m. Introduction. A.T. TSCHANZ. USDA-APHIS, Riverdale, MD
8:55 a.m. International perspective. R.L. GRIFFIN (1) and D.D. Zadig (2). (1) USDA-APHIS, Raleigh, NC; (2) California Department of Food and Agriculture, Sacramento, CA
9:15 a.m. National perspective. W.E. THOMAS. USDA-APHIS, Riverdale, MD
9:35 a.m. State perspective. A. POSADAS. California Department of Food and Agriculture, Sacramento, CA
9:55 a.m. Impact on the environment. F.T. CAMPBELL. The Nature Conservancy, Arlington, VA
10:15 a.m. Impact on forestry. B.M. TKACZ. USDA Forest Service, Arlington, VA
10:35 a.m. Break
10:50 a.m. Seed industry perspective. G.P. MUNKVOLD. Pioneer Hi-Bred Intl. Inc., Johnston, IA
11:10 a.m. Horticulture industry perspective. C. REGEL-BRUGGE. American Nursery and Landscape Association, Washington, DC
11:30 a.m. Panel discussion

9:00 – 11:00 a.m. – ACC, 206A
Diseases of Plants

Oral Presentations: Forest Pathology

Moderators: Tamsyn Crowley, Deakin University, Geelong, VIC, Australia, and Nina Shishkoff, USDA-ARS, Ft. Detrick, MD

9:00 a.m. Application of molecular techniques to characterise *Cyclaneusma minus*. T.M. CROWLEY (1), M.S. Muralitharan (1), and T.W. Stevenson (2). (1) Deakin University, Geelong, VIC, Australia; (2) RMIT University, Bundoora, VIC, Australia

9:15 a.m. The occurrence of the wilt pathogen, *Ceratocystis albofundus*, on native South African trees. J. ROUX (1), L. Labuschagne (2), R.N. Heath (1), G. Kamgan Nkuekam (1), and M.J. Wingfield (1). (1) University of Pretoria, Pretoria, South Africa; (2) Gauteng Directorate of Nature Conservation, Lynn East, South Africa

9:30 a.m. Population biology of *Heterobasidion annosum* infecting Christmas trees in the Pacific Northwest. N.L. DART, G.A. Chastagner, and T.L. Peever. Washington State University, Pullman, WA

9:45 a.m. Cryphonectria canker in South and Eastern Africa. G. NAKABONGE, R.N Heath, M. Gryzenhout, M.J. Wingfield, and J. Roux. University of Pretoria, Pretoria, South Africa

10:00 a.m. Oxalate regulation by two brown-rot fungi decaying oxalate-amended and non-amended wood. J.S. SCHILLING and J. Jellison. University of Maine, Orono, ME

10:15 a.m. Persistence of *Phytophthora ramorum* in nursery plants and soil. N. SHISHKOFF and P. Tooley. USDA-ARS, Ft. Detrick, MD

10:30 a.m. Necrosis of resin ducts in roots of loblolly pines in decline. C.H. WALKINSHAW (1), N.J. Hess (1), and W.J. Otrosina (2). (1) U.S. Forest Service, Pineville, LA; (2) U.S. Forest Service, Athens, GA

10:45 a.m. Development of a method using allometric ratios for diagnosing tree decline syndromes. R.J. HOOPER and K. Sivasithamparam. University of Western Australia, Crawley, WA, Australia

9:00 – 11:15 a.m. – ACC, 205B
Disease of Plants

Oral Presentations: Diseases of Turfgrasses

Moderators: Lane Tredway, North Carolina State University, Raleigh, NC, and Nanda Chakraborty, University of Wisconsin, Madison, WI

9:00 a.m. Summer patch of creeping bentgrass caused by *Magnaporthe poae* in North Carolina. L.P. TREDWAY. North Carolina State University, Raleigh, NC

9:15 a.m. Pathogenicity of *Microdochium nivale* isolates collected in Wisconsin and evaluation of virulence to bentgrass cultivars. T.H. CHANG, S.W. Chang, and G. Jung. University of Wisconsin, Madison, WI

9:30 a.m. Identification and pathogenicity of *Pythium* spp. associated with roots of hybrid bermudagrass in overseeded golf course putting greens. S.R. PARKER, S.B. Martin, S.N. Jeffers, and J.J. Camberato. Clemson University, Clemson, SC

9:45 a.m. Structure and dynamics of *Rhizoctonia* populations in creeping bentgrass in response to fungicide programs. D.J. LEE, L.P. Tredway, C.H. Peacock, and H.D. Shew. North Carolina State University, Raleigh, NC

10:00 a.m. Variability of Kentucky bluegrass cultivars' field reactions to necrotic ring spot in Wisconsin. S. Abler, J. Gregos, and G. JUNG. University of Wisconsin, Madison, WI

10:15 a.m. Distribution of *Typhula* species in Wisconsin, Michigan, Minnesota and Utah using species-specific PCR primers. S.W. CHANG (1), E. Scheef (1), S. Thomson (2), P.G. Johnson (2), and G. Jung (1). (1) University of Wisconsin, Madison, WI; (2) Utah State University, Logan, UT

10:30 a.m. Determining the turfgrass host range of *Labyrinthula* sp., the causal agent of rapid blight. P.D. PETERSON, S.B. Martin, and J.J. Camberato. Clemson University, Florence, SC

10:45 a.m. QTL mapping of resistance to a ryegrass isolate and a rice-infecting lab strain in ryegrass, and comparison with blast resistance genes in rice. J. CURLEY (1), S.C. Sim (1), S. Warnke (2), R. Barker (3), S. Leong (1), and G. Jung (1). (1) University of Wisconsin, Madison, WI; (2) U.S. National Arboretum, Washington, DC; (3) USDA-ARS, Oregon State University, Corvallis, OR

11:00 a.m. Construction of linkage map in creeping bentgrass and QTL mapping for dollar spot resistance in greenhouse and field inoculations. N. CHAKRABORTY (1), J.J. Bae (1), J. Curley (1), S. Warnke (2), and G. Jung (1). (1) University of Wisconsin, Madison, WI; (2) U.S. National Arboretum, Washington DC

Tuesday, August 3

9:00 – 11:25 a.m. – ACC 207D
Diseases of Plants

***Pepino Mosaic Virus* in Tomato**

Organizers: Harrie Koenraadt, Naktuinbouw, Roelofarendsveen, Netherlands, and Phyllis Himmel, Seminis Vegetable Seeds, Woodland, CA
Sponsoring Committees: Seed Pathology, Diagnostics
Moderators: Harrie Koenraadt, NAKT, Netherlands, and Phyllis Himmel, Seminis Vegetable Seeds, Woodland, CA

Pepino mosaic virus *(PepMV), a potexvirus, was first described in pepino (Solanum muricatum) growing along the coastal regions of Peru in 1980. In 1999 it was identified as the causal agent of a new tomato disease in commercial greenhouses in the Netherlands. Today, PepMV is an emerging problem in greenhouse tomatoes throughout Europe, Canada, and the United States. The origin and rapid spread of PepMV, detection programs, management strategies, and the impact of this disease on tomato production in the U.S., Canada and Europe will be discussed.*

9:00 a.m. Origin and spread of *Pepino mosaic virus* in tomato. P. HIMMEL. Seminis Vegetable Seeds, Woodland, CA
9:10 a.m. The emergence of PepMV in the Netherlands and the responses of the seed industry to investigate the disease and risks posed by seed transmission. B. WOUDT. Syngenta, Enkhuizen, Netherlands
9:50 a.m. Inspection services and regulatory history in Europe. H. KOENRAADT. Naktuinbouw, Roelofarendsveen, Netherlands
10:20 a.m. Break
10:35 a.m. Management and control of PepMV in commercial tomato production in North America—A greenhouse manager perspective. A. TURNBULL. Syngenta, Boise, ID
11:05 a.m. PepMV detection strategies. W. BLISS. Agdia, Inc., Elkhart, IN

9:00 – 11:45 a.m. – ACC, 207B
Plant Disease Management

The Nature and Application of Biocontrol Microbes II: *Trichoderma* spp.

Organizer: Barry Jacobsen, Montana State University, Bozeman, MT
Sponsoring Committees: Biological Control, Soil Microbiology and Root Diseases
Moderators: Brian McSpadden Gardener, Ohio State University, Wooster, OH

While diverse microbes may contribute to the biological control of plant pathogens, most research and development efforts have focused on isolates of three genera, Bacillus, Trichoderma*, and* Pseudomonas. *The 2003 symposium on the nature and application of biocontrol microbes covered the genus* Bacillus. *This symposium will cover the taxonomy, genomics, mechanisms of action, and practical use of* Trichoderma *spp. in biocontrol of plant disease, plant growth, yield enhancement and related topics. This symposium should advance our understanding of the nature of biological control by members of the genus* Trichoderma *and improve our ability to successfully integrate* Trichoderma *mediated biological control into agricultural management and similar systems. A third symposium covering the genus* Pseudomonas *is planned for 2005.*

9:00 a.m. Introduction. B. MCSPADDEN GARDENER. Ohio State University, Wooster, OH
9:05 a.m. Overview of new insights into mechanisms and uses of *Trichoderma*-based products. G.E. HARMAN. Cornell University, Cornell University, Ithaca, NY
9:35 a.m. Changes in taxonomy and occurrence of the sexual stage and ecology of *Trichoderma* spp. G.J. SAMUELS. USDA-ARS, Beltsville, MD
10:05 a.m. Systemic resistance induced by *Trichoderma hamatum* 382; interactions between the host, the biocontrol agent, and soil organic matter quality. H.A.J. HOITINK and L.V. Madden. Ohio State University, Wooster, OH
10:35 a.m. Break
10:50 a.m. Understanding the mechanisms employed by *Trichoderma virens* to effect biological control. C.R. HOWELL. USDA-ARS, College Station, TX
11:20 a.m. The molecular biology of the interaction between *Trichoderma*, phytopathogenic fungi, and plants. M. LORITO and S.L. Woo. University of Naples, Portici, Italy
11:35 a.m. Discussion

9:00 a.m. – 12:00 p.m. – ACC, 205A
Molecular/Cellular Plant-Microbe Interactions

Oral Presentations: Bacteria—Genetics, Molecular Biology, Cell Biology, Systematics, Evolution and Ecology

Moderators: Nicole Perna, University of Wisconsin, Madison, WI, and Johan Kers, Cornell University, Ithaca, NY

9:00 p.m. The development of new gene ontology terms for annotation of genes of bacterial pathogens implicated in plant pathogenesis. C.W. COLLMER (1,4), N.T. Perna (2), M.D. D'Ascenzo (3), and A. Collmer (4). (1) Wells College, Aurora, NY; (2) University of Wisconsin, Madison, WI; (3) Boyce Thompson Institute, Ithaca, NY; (4) Cornell University, Ithaca, NY
9:15 a.m. Phylogenetic and genomic perspectives on plant-associated enterobacteria. N.T. PERNA and J.D. Glasner. University of Wisconsin, Madison, WI

9:30 a.m. Mobilization of a pathogenicity island from a pathogen to a nonpathogen results in new pathogenic *Streptomyces* species. J.A. KERS, J.E. Morello, and R. Loria. Cornell University, Ithaca, NY

9:45 a.m. Characterization of a new esterase in *Streptomyces scabiei*, the causal agent of common scab. I. DIONNE and C. Beaulieu. Sherbrooke University, Sherbrooke, QC, Canada

10:00 a.m. Identification and characterization of a *fas* operon on the *Streptomyces turgidiscabies* pathogenicity island. M.V. JOSHI, K.D. Cameron, J.A. Kers, and R. Loria. Cornell University, Ithaca, NY

10:15 a.m. Nitric oxide's role in common scab of potato: Phytotoxin biosynthesis and what else? M. Wach (1), E.G. JOHNSON (2), D. Gibson (3), and R. Loria (2). (1) USDA APHIS, Riverdale, MD; (2) Cornell University, Ithaca, NY; (3) USDA-ARS, Ithaca, NY

10:30 a.m. Analysis of the *Erwinia chrysanthemi* Hrp regulon. M.-N. Yap and A.O. CHARKOWSKI. University of Wisconsin, Madison, WI

10:45 a.m. Secretome analysis of *Pantoea stewartii* subsp. *stewartii*. D.S. TSALTAS and S.V. Bodman. University of Connecticut, Storrs, CT

11:00 a.m. *AvhR* in *Agrobactrium vitis* is associated with induction of a tobacco hypersensitive response and grape necrosis. G. HAO, H. Zhang and T.J. Burr. Cornell University, Geneva, NY

11:15 a.m. Role of type I secretion in Pierce's disease. J.D. REDDY (1), D.L. Hopkins (2), and D.W. Gabriel (1). (1) University of Florida, Gainesville, FL; (2) University of Florida, Apopka, FL

11:30 a.m. Effect of wound position, auxin concentration and *Agrobacterium vitis* strain F2/5 on wound healing in woody grapvine tissue. J.E. CREASAP, C.L. Reid, M.C. Goffinet, and T.J. Burr. Cornell University, Geneva, NY

11:45 a.m. Small metabolites control antibiotic production in *Pseudomonas syringae* pv. tomato DC3000. H. HASEGAWA (1), A. Chatterjee (1), D. Tian (1), A. Collmer (2), and A.K. Chatterjee (1). (1) University of Missouri, Columbia, MO; (2) Cornell University, Ithaca, NY

9:00 a.m. – 12:00 p.m. – ACC, 208 A/B
Professionalism/Service/Outreach

Hot Topic: Information Security vs. Freedom of Information in Agriculture

Organizers: Jim Stack, Kansas State University, Manhattan, KS, and Doug Luster, USDA-ARS, Ft. Detrick, MD
Moderator: Jim Stack, Kansas State University, Manhattan, KS

The need for agricultural biosecurity is clear; how to achieve that security is not. One of the most important features of a secure system is information access and security. This can result in a conflict between the need to control the flow of information and the freedom to access information. Current and pending agricultural biosecurity restrictions and regulations point to the urgent need for professionals in agricultural science to discuss this issue and propose a process/policy for making decisions affecting open communication, one of the foundations of science in the United States. What types of information should be released into the public domain, when that information should be released, and what information should be kept secure (before someone else makes the decision for us) are issues in need of resolution. Descriptors for information censorship, such as "sensitive" or "sensitive but not classified," are often applied without application of a rigorous decision-making process. Decisions on information security made in the absence of a deliberate and defendable process that includes stakeholder input lack credibility and have the potential to foster discontent. The fundamental issues are not new. These issues will be explored in a series of four in-depth talks, followed by a response to ensure fair treatment of both sides of each issue.

9:00 a.m. Information security vs. freedom of information: The transparancy paradox. J. STACK. Kansas State University, Manhattan, KS

9:05 a.m. The potential impact of uncontrolled information flow on crisis management and consequence management. T. BUNTING. State of Kansas, KS

9:30 a.m. The need for a rational decision making process for release of information. Speaker to be announced

9:40 a.m. The dangers of information disclosure: Intelligence community and government perspective. Speaker to be announced

10:05 a.m. The dangers of secrecy. Speaker to be announced

10:15 a.m. Restrictions needed for release of pathogen genomics information. J. HAMMOND. USDA-ARS, Beltsville, MD

10:40 a.m. Need for full access to genomics information by the scientific community. S. GOLD. North Carolina State University, Raleigh, NC

10:50 a.m. The need to restrict public access to local and state phytosanitary reports. J. DODD. Professional Seed Research Inc., Sugar Grove, IL

11:15 a.m. The need for access to local and state phytosanitary reports to develop regional response and training plan; an extension specialist's perspective. S. CAIN. Purdue University, West Lafayette, IN

11:25 a.m. Panel discussion with audience interaction

Tuesday, August 3

9:00 a.m. – 12:00 p.m. – ACC, 207C

Plant Disease Management

New Products and Services

Organizer: Jim Frank, Syngenta Crop Protection, Greensboro, NC
Sponsoring Committee: Industry
Moderator: Paul Kuhn, Syngenta Crop Protection, Vero Beach, FL

This session provides a forum highlighting new products or services that are in the pipeline or are now offered to growers and researchers to aid them in managing or understanding plant diseases.

9:00 a.m. Radio modem for HOBO weather stations. E. SANDHERR. Onset Computer Corporation, Bourne, MA
9:10 a.m. Quinoxyfen fungicide: 2004 U.S. launch. J. MUELLER. Dow Agrosciences, Brentwood, CA
9:20 a.m. Headline update and utility on corn and soybeans. G. FELLOWS. BASF, Research Triangle Park, NC
9:30 a.m. Conviron research greenhouse. D. ADAIR. Controlled Environments, Inc., Pembina, ND
9:40 a.m. Scholar: A new postharvest fungicide for citrus and pome fruit. A. COCHRAN. Syngenta Crop Protection, Visalia, CA
9:50 a.m. Scala brand fungicide from Bayer CropScience. L. FOUGHT. Bayer CropScience, Research Triangle Park, NC
10:00 a.m. Pristine: Registration update and product performance in the southeastern U.S.. S. NEWELL. BASF, Statesboro, GA
10:10 a.m. Break
10:30 a.m. Pentra-Bark: Bark penetrating surfactant technology. B. STRINGFELLOW. Agrichem-Fluence LLC, Medina, OH
10:40 a.m. Uniform: A new cotton fungicide for control of soilborne diseases. S. RIDEOUT. Syngenta Crop Protection, Leland, MS
10:50 a.m. Recent enhancements and options of ARM Trial Research Management software. S. GYLLING. Gylling Data Management, Inc., Brookings, SD
11:00 a.m. Amistar and Quadris opti: Two new fungicide products from Syngenta Crop Protection. P. KUHN. Syngenta Crop Protection, Vero Beach, FL
11:10 a.m. Plant genetics and molecular service lab. D. LAWN. Ag-Biotech, Inc., Gilroy, CA
11:20 a.m. Fast, automatic and non destructive quality- and phenotype-assessment of complete higher plants and agricultural products with the LemnaTec scanalyzer. J. VANDENHIRTZ. LemnaTec, Wuerselen, Germany
11:30 a.m. Pristine fungicide update for tree fruit, nuts and vines. J. HELM. BASF, Sanger, CA
11:40 a.m. Discussion

9:00 a.m. – 1:00 p.m. – ACC, 206B

Epidemiology/Ecology/Environmental Plant Pathology

Food Safety as Influenced by Phyllosphere Microflora

Organizer: Walter Mahaffee, USDA-ARS, Corvallis, OR
Sponsoring Committee: Phyllosphere Microbiology
Moderator: Walter Mahaffee, USDA-ARS, Corvallis, OR

This symposium will focus on the role of preharvest microflora on the establishment of human pathogens and subsequent food safety risks. Individual speakers will address factors that influence establishment and persistence of human pathogens on fruit and edible foliage from preharest through processing and storage.

9:00 a.m. Introduction. W. MAHAFFEE. USDA-ARS, Corvallis, OR
9:05 a.m. Putting science to work: Separating the possible from the plausible. T. SUSLOW. University of California, Davis, CA
9:45 a.m. Going from compost to compost tea: Weighing plant health benefits against human pathogen uncertainties. S. SCHEUERELL. Oregon State University, Corvallis, OR
10:15 a.m. Use of non-composted bovine manure as fertilizer: An evaluation of vegetable contamination risk. S. INGHAM. University of Wisconsin, Madison, WI
10:45 a.m. Break
11:00 a.m. Biofilms and other strategies exploited by Salmonella and friends on plants. J. BARAK. USDA-ARS, Albany, CA
11:30 a.m. Fitness of *Salmonella enterica* in the phyllosphere. M. BRANDL. USDA-ARS, Albany, CA
12:00 p.m. Influence of indigenous bacteria on survival of human pathogens on plants. C. POZA-CARRIÓN and S.E. Lindow. University of California, Berkeley, CA
12:30 p.m. Infective dose of enteric pathogens: Influence of postharvest processing and storage practices. A. BHAGWAT. USDA-ARS, Beltsville, MD

1:00 – 2:45 p.m. – ACC, 205A

Diseases of Plants

Oral Presentations: Diseases of Vegetables

Moderators: Frank Louws, North Carolina State University, Raleigh, NC, and Lindsey du Toit, Washington State University, Mount Vernon, WA

1:00 p.m. Bacterial blight of carrot seed crops in the Pacific Northwest. L.J. DU TOIT (1), F.J. Crowe (2), M.L. Derie (1), R.B. Simmons (2), and G.Q. Pelter (3). (1) Washington State University, Mount Vernon, WA; (2) Oregon State University, Madras, OR; (3) Washington State University, Ephrata, WA

1:15 p.m. Russet on snap beans, a new disease caused by *Plectosporium tabacinum* in New York and Maryland. H.R. DILLARD and A.C. Cobb. Cornell University, Geneva, NY

1:30 p.m. Inoculum sources of *Xanthomonas axonopodis* pv. *allii* in Colorado. D.H. GENT, H.F. Schwartz, and C.A. Ishimaru. Colorado State University, Ft. Collins, CO

1:45 p.m. Acibenzolar-S-methyl enhanced host resistance in tomato against *Ralstonia solanacearum*. P. JI (1), M.T. Momol (1), P.M. Pradhanang (1), S.M. Olson (1), J.L. Mayfield (1), and J.B. Jones (2). (1) University of Florida, Quincy, FL; (2) University of Florida, Gainesville, FL

2:00 p.m. Methyl bromide alternatives in tomato production systems. F.J. LOUWS, L.M. Ferguson, N.P. Lynch, and P.B. Shoemaker. North Carolina State University, Raleigh, NC

2:15 p.m. Fungicides for control of Phytophthora blight (*Phytophthora capsici*) of vegetables. M. BABADOOST and S.Z. Islam. University of Illinois, Urbana, IL

2:30 p.m. Comparison of weather-based fungicide programs on two carrot cultivars differing in susceptibility to *Alternaria dauci* and *Cercospora carotae*. P.M. ROGERS and W.R. Stevenson. University of Wisconsin, Madison, WI

1:00 – 2:55 p.m. – ACC, 207A
Professionalism/Service/Outreach

APS Public Policy Board: Activities, Strategies and Perspectives

Organizer: John Sherwood, University of Georgia, Athens, GA
Moderator: John Sherwood, University of Georgia, Athens, GA

The APS Public Policy Board is actively involved in issues related to plant pathology with current emphasis on agrosecurity, genomics, permitting and sustainable agriculture. We hope you will attend this session to learn more about the activities of the PPB and to discuss priorities and strategies for success in addressing issues in public policy that impact plant pathology.

1:00 p.m. Introduction. Sustainable agriculture initiative. J. SHERWOOD. University of Georgia, Athens, GA

1:15 p.m. Washington activities of the APS Public Policy Board. K. EVERSOLE. Eversole Associates, Bethesda, MD

1:35 p.m. Progress on plant-associated microbial genomics and the APS microbial genomic sequencing list update. S. GOLD. University of Georgia, Athens, GA

1:55 p.m. Proposal for establishment of a center for plant biosecurity. J. FLETCHER. Oklahoma State University, Stillwater, OK

2:15 p.m. Status of review of issues surrounding movement of plant pathogens. S. TOLIN. Virginia Polytechnic Institute and State University, Blacksburg, VA

2:35 p.m. Permitting for international and interstate movement of pathogens and infected plant materials. M. FIRKO. USDA-APHIS, Riverdale, MD

1:00 – 3:15 p.m. – ACC, 206A
Molecular/Cellular Plant-Microbe Interactions

Oral Presentations: Viruses—Genetics, Molecular Biology, Cell Biology II

Moderators: Mysore Sudarshana, University of California, Davis, and Jim Haudenshield, USDA-ARS, Urbana, IL

1:00 p.m. Experimental host range and evidence for molecular recombination for infectious clones of *Squash leaf curl* and *Squash mild leaf curl* viruses. J.K. BROWN, K. Baumann, and A.M. Idris. University of Arizona, Tucson, AZ

1:15 p.m. Chemically-regulated *Cucumber mosaic virus* amplicon for the expression of foreign genes. M.R. SUDARSHANA, S. Uratsu, A.M. Dandekar, D.M. Tricoli, A. Jackman, K. McDonald, and B.W. Falk. University of California, Davis, CA

1:30 p.m. Jasmonic acid and ethylene are involved in the development of disease symptoms and defense responses in tomato plants infected with *Cucumber mosaic virus* D satellite RNA. P. XU, S. Rogers and M.J. Roossnick. Samuel Roberts Noble Foundation, Ardmore, OK

1:45 p.m. Cellular distribution of RNA of seed-transmitted viruses in soybean embryos. J.S. HAUDENSHIELD and L.L. Domier. USDA-ARS, Urbana, IL

2:00 p.m. Investigation of the role of the *Bean dwarf mosaic virus* BV1 gene in pathogenicity and host resistance using recombinant viruses and viral proteins. Y.C. ZHOU, M.R. Sudarshana, W.J. Lucas, and R.L. Gilbertson. University of California, Davis, CA

2:15 p.m. Systematic replacement of *Wheat streak mosaic virus* HC-Pro. D.C. STENGER and R. French. USDA-ARS, Lincoln, NE

2:30 p.m. Development of *Bean pod mottle virus* as vector for stable foreign gene expression in soybean. C. ZHANG and S.A. Ghabrial. University of Kentucky, Lexington, KY

2:45 p.m. Characterization of infectious clones for *Melon chlorotic leaf curl virus*, and evidence of molecular recombination with other new world begomoviral species. A.M. IDRIS, K. Mills, and J.K. Brown. University of Arizona, Tucson, AZ

3:00 p.m. *Cucurbit leaf crumple virus* in Imperial Valley of California: A newly emergent cucurbit infecting geminivirus. C. HAGEN (1), E. Natwick (2), T. Turini (2), and R.L. Gilbertson (1). (1) University of California, Davis, CA; (2) University of California Cooperative Extension, Holtville, CA

1:00 – 3:30 p.m. – ACC, 205B

Plant Disease Management

Oral Presentations: Host Resistance

Moderators: Judy Thies, USDA ARS, Charleston, SC, and Dhirendra Kumar, Boyce Thompson Institute for Plant Research, Ithaca, NY

1:00 p.m. Host resistance and metam sodium for managing root-knot nematodes in a pepper-cucumber rotation. J.A. THIES (1), R.F. Davis (2), J.D. Mueller (3), R.L. Fery (1), D.B. Langston (4), and G. Miller (3). (1) USDA-ARS, Charleston, SC; (2) USDA-ARS, Tifton, GA; (3) Clemson University, Blackville, SC; (4) University of Georgia, Tifton, GA

1:15 p.m. Chickpea rootstocks have no effect on chickpea scions in reaction to *Ascochyta rabiei*. W. CHEN, K.E. McPhee, and F.J. Muehlbauer. USDA-ARS, Washington State University, Pullman, WA

1:30 p.m. Evaluation of cowpea germplasm for seedling resistance to *Rhizoctonia solani*. P.A. BERLAND, J.A. Thies, and R.L. Fery. USDA-ARS, Charleston, SC

1:45 p.m. A major R-gene from *Solanum berthaultii* confers qualitative and quantitative resistance to late blight in potato tubers. H. MAYTON (1), I. Simko (2), G. Rauscher (1), B. Esposito (1), and W.E. Fry (1). (1) Cornell University, Ithaca, NY; (2) USDA-ARS, Beltsville, MD

2:00 p.m. Underlying pathways in the *Mi-1*-mediated resistance to nematode and aphid. Q.-G. Xie, Q. Li, D. Sergeant, J. Smith-Becker, and I. KALOSHIAN. University of California, Riverside, CA

2:15 p.m. Identification of a SA receptor required for plant innate immunity. D. KUMAR, A.C. Vlot, H.G. Kang, F. Zhou and D.F. Klessig. Boyce Thompson Institute for Plant Research, Ithaca, NY

2:30 p.m. In vitro induction of resistance to common scab disease of potato in commercial cultivars. C.R. WILSON, A. Eyles, and A.J. Wilson. University of Tasmania, New Town, TAS, Australia

2:45 p.m. Genetic analysis of the Arabidopsis *avrRps4*-triggered disease resistance signaling pathway. S.I. KWON, J.M. Koczan, and W. Gassmann. University of Missouri, Columbia, MO

3:00 p.m. Allelic mining for late blight resistance in wild *Solanum* species. M.J. SANCHEZ and J.M. Bradeen. University of Minnesota, St. Paul, MN

3:15 p.m. Functional characterization of the Arabidopsis RPS4 gene. X.-C. ZHANG and W. Gassmann. University of Missouri, Columbia, MO

1:00 – 4:15 p.m. – ACC, 206B

Epidemiology/Ecology/Environmental Plant Pathology

Active Management of Soil Microorganisms for Plant Root Disease Control

Organizer: Brantlee Richter, BBC Laboratories, Inc., Tempe, AZ
Sponsoring Committees: Soil Microbiology and Root Disease, Biological Control
Moderator: Brantlee Richter, BBC Laboratories, Inc., Tempe, AZ

Research over the past several decades has yielded new insights into soil microbial community structures and the interactions between plant pathogens and other microorganisms in the environment. As this body of knowledge grows, there have been increased attempts in the field to manage soil microorganisms in order to decrease disease pressure through use of single-species biocontrol products, multi-species biological inoculants, and cultural techniques designed to maintain or increase certain components of soil microbial communities. This session will explore the impact of cultural techniques and biological amendments on soil microbial communities and, in turn, the impact of the managed soil communities on plant root disease occurrence.

1:00 p.m. Introduction. B. RICHTER. BBC Laboratories, Inc., Tempe, AZ

1:05 p.m. Disease suppressive soils: Mechanisms and indicators based on microbial responses and soil chemical/physical properties. R.P. DICK (1), M.C. Cespedes Leon (2), N. Ochiai (3), A. Stone (3), M. Powelson (3), and F. Crowe (4). (1) Ohio State University, Columbus, OH; (2) National Institute of Agricultural Research, Quilamapu, Chile; (3) Oregon State University, Corvallis, OR; (4) Oregon State University, Madras, OR

1:30 p.m. Crop rotation and amendment effects on soil microbial communities and soilborne diseases. R.P. LARKIN. USDA-ARS, Orono, ME

1:55 p.m. Significance of host genotype in exploitation of resident disease suppressive soil microbial communities. M. MAZZOLA (1), Y.-H. Gu (1), D.L. Funnell (2), M.F. Cohen (1), and J.M. Raaijmakers (3). (1) USDA-ARS, Wenatchee, WA; (2) USDA-ARS, Lincoln, NE; (3) Wageningen University, Netherlands

2:20 p.m. Management of soil microorganisms for the control of *Phytophthora* root rot of citrus and avocado. J.A. MENGE and V. McDonald. University of California, Riverside, CA

2:45 p.m. Break

3:00 p.m. Effect of cover crop decomposition on soil microbial and plant pathogen dynamics. N.J. GRUNWALD. USDA-ARS, Prosser, WA
3:25 p.m. Role and use of arbuscular mycorrhizae in root disease management. R.G. LINDERMAN. USDA-ARS, Corvallis, OR
3:50 p.m. Pavich Family Farms: Trials and tribulations of an organic table grape grower. S. PAVICH. Pavich Agricultural Consulting, Dateland, AZ

1:00 – 4:30 p.m. – ACC, 207B
Epidemiology/Ecology/Environmental Plant Pathology

Challenges at the Urban/Ag Interface

Organizer: George Leavitt, University of California, Madera, CA
Sponsoring Committees: Extension, Integrated Pest Management; Regulatory Plant Pathology
Moderators: George Leavitt and Stephen Vasquez, University of California, Madera, CA

This symposium will highlight the problems associated with a large urban population encroaching upon production agriculture. California, with its large population centers (Los Angeles and San Francisco Bay area) and highly productive agriculture industry, experiences many of these challenges faced at the urban/ag interface. In southern California alone there are three international airports and two major harbors where foreign and domestic passengers enter the United States from hundreds of foreign countries, increasing the potential for unwanted pests and diseases. Border inspection stations are manned on all major highways coming into California to prevent the entry of unwanted pests that may be found on imported on plant material or alternative avenues. Mexican fruit fly, glassy winged sharpshooter, Mediterranean fruit fly and Newcastle disease are only recent examples of infestations into California that have occurred in the past few years. In short, this symposium will address enormous job of protecting the environment, the people and the 30 billion-dollar agricultural industry of California.

1:00 p.m. Welcome and introduction. G. LEAVITT. University of California, Madera, CA
1:05 p.m. Social and financial impacts of inadvertent introduction of exotic pests on California agriculture. M. ABDELSHIFE. USDA APHIS, Hawthorne, CA
1:40 p.m. Pest exclusion: Preventing, controlling and eradication of invasive pests. D. KELLUM. San Diego County, San Diego, CA
2:15 p.m. Problems between homeowners and growers at the urban/ag interface: Perspective of an agricultural commissioner. K. THUNER. San Diego County, San Diego, CA
2:45 p.m. Break
3:00 p.m. Managing neighbor and community relations—The California winegrape experience. J. BROWDE. California Sustainable Winegrowing Alliance, Petaluma, CA
3:30 p.m. Being a good neighbor: Challenges of small acreage farming in urban areas. V. MELLANO. University of California, San Diego, CA
4:00 p.m. Panel discussion with growers who farm at the ag/urban interface

1:00 – 4:30 p.m. – ACC, 207C
Plant Disease Management

Organic Foods—From Production to Market

Organizer: Monica Elliott, University of Florida, Fort Lauderdale, FL
Sponsor: Scientific Program Board
Moderator: Monica Elliott, University of Florida, Fort Lauderdale, FL, and Carolee Bull, USDA-ARS, Salinas, CA

Organic farming is one of the fastest-growing segments of U.S. agriculture, with organic food sales reaching $9.3 billion in 2002. Standards for organic food established by the USDA were fully implemented in October 2002 and include the creation of National Organic Program Standards. The latter requires producers to use a planned systems approach to crop protection. This session will examine organic agriculture from a plant pathology perspective. Questions to be addressed include: Why is farming systems research important for organic agriculture? Are plant diseases a problem? If they are, what are the major pathogens and what are the controls? What is the function of the National Organic Standards Board? What are the funding sources for organic agricultural research?

1:00 p.m. Introduction. M.L. ELLIOTT. University of Florida, Fort Lauderdale, FL
1:10 p.m. Organic farming and plant disease research by the University of California, 1987–2004. J.C. BROOME. University of California, Davis, CA
1:40 p.m. Best management practices on organic farms provide opportunity and challenge for applied research plant pathology. D. O'BRIEN. O'Brien Agricultural Consulting, Santa Cruz, CA
2:10 p.m. Farming systems research and extension in organic agriculture: A plant pathology perspective. F.J. LOUWS. North Carolina State University, Raleigh, NC
2:40 p.m. Break
2:55 p.m. Compost teas: A tool for rhizosphere + phyllosphere agriculture. S. DIVER. ATTRA - National Sustainable Agriculture Information Service, Fayetteville, AR
3:25 p.m. Inclusion of crop protection materials on the National Organic Program's national list of allowed substances. R.L. KOENIG. Rosie's Organic Farm, University of Florida, Gainesville, FL

Tuesday, August 3

3:55 p.m. Funding opportunities for integrated projects specific to organic agriculture. T.A. BEWICK. USDA-CSREES, Washington, DC

4:15 p.m. Discussion

1:00 – 4:45 p.m. – ACC, 207D

Plant Disease Management

Sampling for Pathogen Detection to Meet Quarantine and Certification Requirements

Organizers: Jean Williams-Woodward, University of Georgia, Athens, GA, and Peter Ellis, Phyto Diagnostics, North Saanich, BC, Canada

Sponsoring Committees: Plant Pathogen and Disease Detection, Diseases of Ornamental Plants

Moderators: Peter Ellis, Phyto Diagnostics, North Saanich, BC, Canada, and Jean Williams-Woodward, University of Georgia, Athens, GA

The potential for introducing a new or severely damaging disease on fruit, vegetable, and ornamental seed or plant propagation material is a very real concern within today's global marketplace. Recent outbreaks and introductions of Ralstonia solanacearum *race 3 biovar 2 in geranium cuttings,* Phytophthora ramorum *(cause of "sudden oak death") in ornamental nurseries in California and the Pacific Northwest, and* Plum pox virus *in stone fruits in Pennsylvania and Canada are just a few examples. This session will discuss design considerations for sampling and tracking the movement of plant pathogens with particular reference to quarantine and certification requirements. In addition, the concerns within existing programs covering several commodities, including tree fruit, small fruit, potatoes, and ornamental plants, will be addressed.*

1:00 p.m. Introduction. J. WILLIAMS-WOODWARD. University of Georgia, Athens, GA

1:05 p.m. Strategies of sampling for detection. G. HUGHES (1), L.V. Madden (2), and T.R. Gottwald (3). (1) University of Edinburgh, Edinburgh, UK; (2) Ohio State University, Wooster, OH; (3) USDA-ARS, Fort Pierce, FL

1:30 p.m. Looking for viruses in all the right places: New vectors and viruses in small fruit crops. R.R. MARTIN. USDA-ARS, Corvallis, OR

1:55 p.m. Innovations in detection technology to limit the dissemination of phytopathogens in seed. R.R. WALCOTT. University of Georgia, Athens, GA

2:20 p.m. Clean stock programs and virus detection in vegetatively propagated ornamental plants. J.A. DODDS. University of California, Riverside, CA

2:45 p.m. Break

3:05 p.m. Sampling and detection of *Phytophthora ramorum* in ornamental nursery stock. C. BLOMQUIST. California Department of Food and Agriculture, Sacramento, CA

3:30 p.m. Ralstonia in geraniums: A case study. M.J. KLOPMEYER. Ball FloraPlant, West Chicago, IL

3:55 p.m. Idealism versus reality: When laboratory throughput affects the sampling scheme. L. LEVY (1), D. Kaplan (2), P. Berger (2), and L. Brown (2). (1) USDA-APHIS, Beltsville, MD; (2) USDA-APHIS, Raleigh, NC

4:20 p.m. Discussion

Thank you Racers and Sponsors!

The APS Office of International Programs (OIP) would like to thank all of the racers and sponsors of the 1st annual 5K Fun Run/2.5K Walk for International Outreach and Collaboration. Proceeds from this event will help enhance the various APS international activities, including improved networking among scientists and organizations. The event was a lot of fun and we thank everyone for your involvement. You've made a positive difference in the world!

We're All Ears!

Author Open House

10 a.m. – 12 Noon
Tuesday, August 3, 2004
APS PRESS Bookstore (located in Exhibit Hall C.)

Discuss your book and electronic product ideas with **APS PRESS Editor-in-Chief Rose Gergerich** and **Editorial Director Karen Cummings.**

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#4-04

Daily Schedule

Wednesday, August 4

7:30 – 10:30 a.m. – Hilton, Capistrano A/B
Office of International Programs Board Breakfast

8:00 – 10:00 a.m. – ACC, Hall C
Posters Available for Viewing

8:00 a.m. – 12:00 p.m. – ACC
Oral Presentations
Chemical Control II – 205A
Diseases of Fruits and Nuts II – 205B
Epidemiology II – 206A
Fungi—Genetics, Molecular Biology, Cell Biology – 206B

8:00 a.m. – 12:00 p.m. – ACC, Hall C
Registration

8:00 a.m. – 12:00 p.m. – ACC
Special Sessions
Workshop: Demystifying PCR Technologies for Plant Pathologists – 207A
Workshop: Analysis of Microbial Population Genetic Data – 207B
Genome-Based Studies of Fungal-Plant Pathosystems – 207C
Interactions Between Plant Pathogens and Their Vectors – 207D
The Plant Pathologist's Toolkit for Responding to Crop Biosecurity Threats – 208A
Rice: A Model Crop That Has Pushed the Frontiers of Plant Pathology and Our Understanding of Host/Pathogen Interactions – 208B

8:00 a.m. – 1:00 p.m. – Hilton, Palos Verdes
APS Council

9:00 – 11:00 a.m. – ACC, Hall C
APS Central

9:00 – 11:00 a.m. – ACC, Hall C
APS PRESS Bookstore

10:00 – 11:00 a.m. – ACC, Hall C
Authors Take Down Posters

1:00 – 2:00 p.m. – Hilton, Palos Verdes
New Council Orientation

1:00 – 2:00 p.m. – ACC, 205A
Pacific Division Business Meeting

1:00 – 3:00 p.m. – ACC, 209A
Special Session
Permit Regulations and Process Affecting Research and Diagnostics on Plant Pathogens Endemic in the U.S.

1:00 – 5:00 p.m. – Hilton, La Jolla
NC-125 Committee

8:00 – 9:30 a.m. – ACC, 205B
Diseases of Plants

Oral Presentations: Diseases of Fruits and Nuts II

Moderators: Kendra Baumgartner, USDA-ARS, Davis, CA, and Wayne Wilcox, Cornell University, Geneva, NY

8:00 a.m. Study on cane dieback of olive trees and shoot in Taroom (Zanjan province) and other parts (Gorgan, Mashhad) of Iran. H. Saremi and F. FARROKHI. Zanjan University, Zanjan, Iran

8:15 a.m. Spore release of *Phaeomoniella chlamydospora* associated with grapevine cordons in California. A. ESKALEN, S.R. Latham and W.D. Gubler. University of California, Davis, CA

8:30 a.m. Ascospore discharge and occurrence of *Togninia minima* (anamorph = *Phaeoacremonium aleophilum*) in California vineyards. S.R. LATHAM, A. Eskalen and W.D. Gubler. University of California, Davis, CA

8:45 a.m. Cultural control of Armillaria root disease of grape. K. BAUMGARTNER. USDA-ARS, Davis, CA

9:00 a.m. Physical modes of action of phosphites in control of grapevine downy mildew. W.F. WILCOX and J.A. Burr. Cornell University, Geneva, NY

9:15 a.m. Biocontrol of silver leaf disease of almond in California. H. FÖRSTER (1), R.A. Duncan (2), D.F. Thompson (1), and J.E. Adaskaveg (1). (1) University of California, Riverside, CA; (2) University of California Cooperative Extension, Modesto, CA

8:00 – 10:00 a.m. – ACC, 206A
Epidemiology/Ecology/Environmental Plant Pathology

Oral Presentations: Epidemiology II

Moderators: Roger Magarey, USDA APHIS, Raleigh, NC, and John Lundquist, USDA Forest Service, Ft. Collins, CO

8:00 a.m. An aerobiological and epidemiological risk assessment for the aerial incursion of soybean rust into the United States. S.A. Isard (1), R.D. MAGAREY (2), and J.M. Russo (3). (1) University of Illinois, Urbana, IL; (2) USDA APHIS, Raleigh, NC; (3) ZedX Inc., Bellefonte, PA

8:15 a.m. Modeling plant disease epidemics in a spatial hierarchy. L. WILLOCQUET (1) and S. Savary (2). (1) INRA-ENSAR, Le Rheu, France; (2) INRA-ENSAR, Rennes, France

8:30 a.m. Spatial patterns of *Aspergillus flavus* strain S in soils of south Texas. R. JAIME-GARCIA and P.J. Cotty. USDA-ARS, University of Arizona, Tucson, AZ

8:45 a.m. Use of population genetics for evaluation of inoculum sources of carrot leaf blights caused by *Alternaria dauci* and *Xanthomonas campestris* pv. *carotae*. X. MENG, J. Nunez, R.M. Davis, and R.L. Gilbertson. University of California, Davis, CA

9:00 a.m. Forecasting late blight in potato crops of southern Idaho using logistic regression analysis. D. HENDERSON (1), C. Williams (1), and J.S. Miller (2). (1) University of Idaho, Moscow, ID; (2) University of Idaho, Aberdeen, ID

9:15 a.m. Spread of Sharka disease (PPV-M strain) in peach orchards submitted to roguing in southern France. S. DALLOT (1,2), T. Gottwald (1), G. Labonne (2), and J.B. Quiot (2). (1) USDA-ARS, Ft. Pierce, FL; (2) UMR BGPI-INRA, Montpellier, France

9:30 a.m. The effect of wind speed on dispersal of bacteria from canker-infected citrus trees. C.H. BOCK (1), P.E. Parker (2), and T.R. Gottwald (1). (1) USDA-ARS, Ft. Pierce, FL; (2) USDA APHIS, Edinburg, TX

9:45 a.m. Effects of simulated rainfall events on spore dispersal and spore stocks in three tropical pathosystems. S. SAVARY (1), J.L. Janeau (2), D. Allorent (3), M. Escalante (3), J. Avelino (4), and L. Willocquet (1). (1) ENSAR-INRA, Le Rheu, France; (2) IWMI, Bangkok, Thailand; (3) CATIE, Turrialba, Costa Rica; (4) IICA, San José, Costa Rica

8:00 – 10:15 a.m. – ACC, 205A
Plant Disease Management

Oral Presentations: Chemical Control II

Moderators: Stephen Wegulo, University of California, Riverside, CA, and Carla Garzon, Pennsylvania State University, University Park, PA

8:00 a.m. Responses of *Botrytis cinerea* from lisianthus to fungicides in in vitro assays. S.N. WEGULO, N. Hyder, and M. Vilchez. University of California, Riverside, CA

8:15 a.m. Effects of sub-lethal fungicide doses on the incidence of post-emergence damping-off of seedlings caused by *Pythium* . C.D. GARZON, J.E. Molineros, and G.W. Moorman. Pennsylvania State University, University Park, PA

8:30 a.m. IR-4 fungicide registration update. D.C. THOMPSON, H. Chen, V.R. Starner, W.P. Barney and D.L. Kunkel. Rutgers University, North Brunswick, NJ

8:45 a.m. Managing resistance risks with more complementary chemistry for plant disease control. R. GED-

DENS, C. Shepherd, and S. Soehner. DuPont Ag and Nutrition, Newark, DE

9:00 a.m. Withdrawn

9:15 a.m. Evaluation of chemical and biological tools for management of Sclerotinia drop of lettuce. M.E. MATHERON and M. Porchas. University of Arizona, Yuma, AZ

9:30 a.m. Controlling tomato diseases with a new fungicide containing famoxadone and cymoxanil. R. WILLIAMS, C. Shepherd, R. Geddens, and S. Soehner. DuPont Crop Protection, Newark DE

9:45 a.m. Effect of inoculum source and azoxystrobin on potato black dot. N. NITZAN, T. Cummings, and D.A. Johnson. Washington State University, Pullman, WA

10:00 a.m. Quinoxyfen performance on powdery mildew in low desert melons, 1999–2003. J.M. RICHARDSON (1), M.E. Matheron (2), T.A. Turini (3), and J.P. Mueller (4). (1) Dow AgroSciences LLC, Hesperia, CA; (2) University of Arizona, Yuma, AZ; (3) University of California Cooperative Extension, Holtville, CA; (4) Dow AgroSciences LLC, Brentwood, CA

8:00 – 11:00 a.m. – ACC, 206B

Molecular/Cellular Plant-Microbe Interactions

Oral Presentations: Fungi—Genetics, Molecular Biology, Cell Biology

Moderators: Kelly Craven, North Carolina State University, Raleigh, NC, and Tom Hsiang, University of Guelph, Guelph, ON, Canada

8:00 a.m. Genetic variation in field populations of the crown rot fungus *Fusarium pseudograminearum*. A.R. BENTLEY (1), L.W. Burgess (1), B.A. Summerell (2), and J.L. Smith-White (1). (1) University of Sydney, Sydney, NSW, Australia; (2) Royal Botanic Gardens and Domain Trust, Sydney, NSW, Australia

8:15 a.m. Comparative genomics and core fungal genes. T. HSIANG. University of Guelph, Guelph, ON, Canada

8:30 a.m. A functional genomics approach to investigate the Alternaria-Brassicaceae pathosystem as a model for necrotrophic fungal-plant interactions. K.D. CRAVEN (1), R. Cramer (2), C.B. Lawrence (3), and T.K. Mitchell (1). (1) North Carolina State University, Raleigh, NC; (2) Colorado State University, Ft. Collins, CO; (3) Virginia Bioinformatics Institute, Blacksburg, VA

8:45 a.m. Genomic analysis of host-pathogen interactions between *Fusarium graminearum* and its gramineous hosts. R.S. GOSWAMI (1), J.R. Xu (2), and H.C. Kistler (1,3). (1) University of Minnesota, St. Paul, MN; (2) Purdue University, West Lafayette, IN; (3) USDA-ARS, St. Paul, MN

9:00 a.m. Identification of secreted proteins from the rice blast fungus. J.S. JEONG and R.A. Dean. North Carolina State University, Raleigh, NC

9:15 a.m. Global gene expression changes in *Magnaporthe grisea* under nitrogen-starved and appressoria-inductive conditions. N.M. DONOFRIO, H. Pan, J.S. Jeung, Y. Oh, T.K. Mitchell and R.A. Dean. North Carolina State University, Raleigh, NC

9:30 a.m. Gene expression and signal transduction during spore development in *Phytophthora infestans*. H.S. JUDELSON, A.A. Fong, F. Blanco, K.S. Kim, and S. Tani. University of California, Riverside, CA

10:00 a.m. Comparison of transformation methods and development of gene replacement in *Monilinia fructicola*. M.H. LEE and R.M. Bostock. University of California, Davis, CA

10:15 a.m. Characterization of *Rhizoctonia solani* isolates from rice in Arkansas. Y.A. WAMISHE (1), Y. Jia (2), P. Singh (1), and R.D. Cartwright (3). (1) University of Arkansas, Stuttgart, AR; (2) USDA-ARS, Stuttgart, AR; (3) University of Arkansas, Little Rock, AR

10:30 a.m. Temperature-wetness relationships for *Colletotrichum acutatum* infections on almond blossoms and leaves. J. DIEGUEZ-URIBEONDO, H. Förster and J.E. Adaskaveg. University of California, Riverside, CA

10:45 a.m. A comparision of volatile metabolites produced by aflatoxin-tolerant and aflatoxin-susceptible peanut plants. Z. JURJEVIC (1), M. Tertuliano (1), G.C. Rains (1), D.M. Wilson (1), C.C. Holbrook (2), and W.J. Lewis (2). (1) University of Georgia, Tifton, GA; (2) USDA-ARS, Tifton, GA

8:00 – 11:15 a.m. – ACC, 207C

Biology of Plant Pathogens

Genome-Based Studies of Fungal-Plant Pathosystems

Organizers: Thomas Mitchell, North Carolina State University, Raleigh, NC, and Michael Thon, Texas A&M University, College Station, TX

Sponsoring Committee: Biochemistry, Physiology, and Molecular Biology

Moderators: Mike Price and Thomas Mitchell, North Carolina State University, Raleigh, NC

Genome sequences are becoming available for an increasing number of fungal plant pathogens and their respective hosts. The current challenge is to employ gene annotation tools, gene expression studies, and other information to assign gene functions within the context

of the organism's biology. While computational and experimental tools for genome-wide studies are being developed and implemented, our overall understanding of genome structure, content, and gene function is modest. This symposium will explore advances, discoveries, and related technologies from genome-based studies of select fungal-plant pathosystems.

8:00 a.m. Introduction. M. THON. Texas A&M University, College Station, TX
8:05 a.m. Functional genome analysis of *Magnaporthe grisea*. R.A. DEAN, T. Mitchell, D. Brown, N. Donofrio, and Y. Oh. North Carolina State University, Raleigh, NC
8:35 a.m. Genomics of the wheat and barley pathogen *Fusarium graminearum*. H.C. Kistler (1), F. Trail (2), B. Birren (3), L. Ma (3), J. Galagan (3), L.R. Gale (1), K. O'Donnell (4), K. Seong (5), and J.R. XU (5). (1) USDA-ARS, St. Paul, MN; (2) Michigan State Universty, East Lansing, MI; (3) MIT, Cambridge, MA; (4) USDA-ARS, Peoria, IL; (5) Purdue University, West Lafayette, IN
9:05 a.m. Genome sequencing and gene expression in *Aspergillus flavus*. G.A. PAYNE and M.S. Price. North Carolina State University, Raleigh, NC
9:35 a.m. Break
9:45 a.m. The use of microarrays for the identification of virulence genes in *Ustilago maydis*. R. KAHMANN, H. Eichhorn, F. Lessing, and P. Mueller. Max Planck Institute for Terrestrial Microbiology, Marburg, Germany
10:15 a.m. Proteomic identification and functional analyses of the *Magnaporthe grisea* secretome. S.-C. WU, V.S.K. Kolli, P. Albersheim, A.G. Darvill, and R. Orlando. University of Georgia, Athens, GA
10:45 a.m. Comparison of arabidopsis responses to *Alternaria brassicicola* and *Pseudomonas syringae* by expression profiling. S. van Wees (1), S. Goregaoker (1), and J. GLAZEBROOK (1,2). (1) Torrey Mesa Research Institute, San Diego, CA (closed); (2) University of Minnesota, St. Paul, MN

8:00 – 11:30 a.m. – ACC, 207A
Workshop

Demystifying PCR Technologies for Plant Pathologists

Organizer: Suha Jabaji, McGill University, Ste-Anne-de-Bellevue, QC, Canada
Sponsor: Biocontrol Network, Canada
Moderator: Suha Jabaji, McGill University, Ste-Anne-de-Bellevue, QC, Canada

The objective of this two-part PowerPoint workshop is to demystify PCR assays for plant pathologists. Part one is an animated PowerPoint presentation that will walk the audience through basic PCR procedures step-by-step, to discuss helpful cautionary notes on optimizing procedures and how to avoid pitfalls, as well as covering certain applications of PCR in plant pathology. The second part of the workshop will address specific applications of PCR to plant pathologists, such as diagnostic tests for microorganisms in environmental samples (e.g., soil, plants, and seeds) detection and quantification of target genes in plant-microbe and microbe-microbe interactions. This workshop is aimed to simplify PCR methodologies to novice researchers who are attempting to initiate PCR experiments in the future. Pre-registration is required.

8:00 a.m. PCR in plant pathology. S. JABAJI-HARE, McGill University, Ste-Anne-de-Bellevue, QC, Canada
8:15 a.m. PCR 101. A. DAUCH, McGill University, Ste-Anne-de-Bellevue, QC, Canada
8:50 a.m. The simplicity in using real-time PCR assays for detecting plant pathogenic bacteria. N. SCHAAD, USDA, Fort Detrick, MD
9:15 a.m. Playing Shelock Holmes with plant pathogens. R. HAMELIN, NRC Canada Forest Service, Ste-Foy, QC, Canada
9:40 a.m. Discussion
9:55 a.m. Break
10:10 a.m. Deciphering the language of genes using RT-PCR. D. MORISSETTE. McGill University, Ste-Anne-de-Bellevue, QC, Canada
10:30 a.m. Judging the tango between plants and pathogens using relative RT-PCR. P. GOODWIN, University of Guelph, Guelph, ON, Canada
10:55 a.m. Discussion

8:00 – 11:30 a.m. – ACC, 208B
Molecular/Cellular Plant-Microbe Interactions

Rice: A Model Crop that Has Pushed the Frontiers of Plant Pathology and Our Understanding of Host/Pathogen Interactions

Organizer: Lee Calvert, CIAT, Cali, Colombia
Sponsoring Committee: Tropical Plant Pathology
Moderator: Fernando Correa, CIAT, Cali, Colombia

The United Nations has proclaimed 2004 as the International Year of Rice. This is the first time that a year is dedicated to a crop and it reflects the importance of rice as a staple food throughout the world. Rice has one of the smallest genomes and it is the only major crop in which the complete sequence is available. The sequences for viral, bacterial and one major fungal disease (rice blast) are also sequenced. It is timely that we review the progress that has been made using rice and its pathogens as models for studying host/pathogen interactions. In this seminar, there will be presentations on the host/plant interactions of Magnaporthe grisea *and* Xanthomonas oryzae*, as well as other pathogens. The role of rice genomics in studying host/pathogen interactions will be discussed. Our knowledge about host/pathogens interactions is progressing rapidly because of the studies on rice and it is contributing to the*

sustainable production that is needed for the billions of people who depend on rice for their livelihoods.

8:00 a.m. Rice: A model crop that feeds the world. F. CORREA. CIAT, Cali, Colombia

8:10 a.m. *Xanthomonas oryzae* pv. *oryzae* rax genes required for AvrXa21 activity. S.W. Lee, F. Goes da Silva, Y. Shen, C. Dardick, S. Burdman, R. Yadav, P. Sharma, and P.C. RONALD. University of California, Davis, CA

8:45 a.m. A genomics approach to pathogenicity: Saturation insertional mutagenesis in *Magnaporthe grisea*. S.L.Tucker (1), M. Figueroa (1), N. Galadima (1), C. Soderlund (1), Y. Meng (2), M.L. Farman (2), L. Li (3), J.-R. Xu (3), N. Donofrio (4), T.K. Mitchell (4), R.A. Dean (4), and M.J. ORBACH (1). (1) University of Arizona, Tucson, AZ; (2) University of Kentucky, Lexington, KY; (3) Purdue University, West Lafayette, IN; (4) North Carolina State University, Raleigh, NC

9:20 am. Function, evolution and defense signaling pathway of the Pi2/Pi9 blast resistance gene cluster in rice. B. Zhou (1), S.-H. Qu (1), G.-F. Liu (1), M. Dolan (2), H. Sakaii (2), M. Bellizzi (1), B. Han (3), and G.-L. WANG (1). (1) Ohio State University, Columbus, OH; (2) DuPont Crop Genetics, Newark, DE; (3) Chinese Academy of Sciences, Shanghai, China

9:55 a.m. Approaches to achieve durable disease resistance in rice. J.E. LEACH (1), B. Liu (2), P. Manosalva (1), S. Lee (1), J. Wu (2), C. Vera Cruz (2), and H. Leung (2). (1) Kansas State University, Manhattan, KS; (2) IRRI, Manila, Philippines

10:30 a.m. Comparing transgenic and conventional resistance to rice hoja blanca virus. L.A. CALVERT, I. Lozano, Z. Lentini, A. Garavito, N. Villareal, L. Fory, R. Meneses, and M. Triana. CIAT, Cali, Colombia

11:05 a.m. Discussion: How rice as a model crop advances our knowledge in plant pathology and improves the livelihoods of rice farmers. F. CORREA. CIAT, Cali, Colombia

8:00 a.m. – 12:00 p.m. – ACC, 207B
Workshop

Analysis of Microbial Population Genetic Data

Organizers: Niklaus Grunwald, USDA-ARS, Prosser, WA; Ignazio Carbone, North Carolina State University, Raleigh, NC; and Tobin Peever, Washington State University, Pullman, WA
Moderator: Niklaus Grunwald, USDA-ARS, Prosser, WA

Analysis of population genetic data remains challenging. This workshop will focus on the kinds of analyses typically done by plant pathologists and microbiologists. It will cover analyses of data from haploid and diploid populations with dominant or codominant marker systems applicable to a range of molecular genotyping techniques (including isozymes, AFLP, RFLP, RAPD, microsatellites and SNPs). The workshop will include estimation of allele frequencies, inferences about Hardy-Weinberg and linkage disequilibrium, characterization of population structure, and estimation of population parameters, such as mutation, recombination, and gene flow. More recent techniques in population genetic data analysis and parameter estimation, including coalescence, gene genealogies, and Bayesian analysis, will be introduced. Participants will gain hands-on experience with various software packages for population genetic data using datasets provided by the instructors. Pre-registration is required.

8:00 a.m. – 12:00 p.m. – ACC, 207D
Molecular/Cellular Plant-Microbe Interactions

Interactions Between Plant Pathogens and Their Vectors

Organizer: Judith Brown, University of Arizona, Tucson, AZ
Sponsoring Committee: Virology
Moderator: Judith Brown, University of Arizona, Tucson, AZ

Plant pathogens are transmitted by a variety of organisms upon which they rely for dispersal between susceptible hosts, although the majority have arthropod vectors. Important advances have been made toward elucidating the molecular and cellular mechanisms that govern interactions between plant pathogens and their biotic vectors, and the underlying basis for co-evolved pathogen-vector specificity. In this symposium vector-associated anatomical, cellular, molecular, and genetic factors, together with pathogen-associated determinants that confer pathogen-plant host specificity, will be explored for several model pathogen-vector-host plant systems. Plant pathogens represented include a mollicute, a replicative, circulative plant virus, several non-replicative, circulative plant viruses of either monocot or dicot hosts, and a plant-infecting trypanosomatid of subtropical, woody monocots. These plant pathogens are transmitted in a highly specific manner by their respective arthropod vector, which include true bugs, thrips, and four different homopterans (Hemiptera), collectively representing feeding specializations in plant meristems, plant leaves and stems, or cells and tissues of the plant vasculature..

8:00 a.m. Introduction. J. BROWN, University of Arizona, Tucson, AZ

8:05 a.m. Interface between the anatomy of the whitefly *Bemisia tabaci* vector and begomoviral capsid determinants involved in transmission. J.M. CICERO and J.K. Brown. University of Arizona, Tucson, AZ

8:40 a.m. Molecular characterization of plant-parasitizing trypanosomes killing coconut and oil palm in Latin America. M. DOLLET. CIRAD, Montpellier, France

9:15 a.m. Mapping of domains of the *Beet curly top virus* capsid protein involved in viral movement, virion formation, and leafhopper transmission. R.L. GILBERTSON, L.-F. Chen, and M.J. Soto. University of California, Davis, CA

9:50 a.m. Cellular and molecular regulation of luteovirus transmission by aphid vectors. F.E. GILDOW (1), D. Cox-Foster (1), and S.M. Gray (2). (1) Pennsylvania State University, State College, PA; (2) USDA-ARS, Cornell University, Ithaca, NY

10:25 a.m. Rhabdovirus host range: A bug's view. S.A. Hogenhout, M.G. REDINBAUGH, and E.D. Ammar. Ohio State University, Wooster, OH

11:20 a.m. Tospovirus-vector relations that drives the spread of disease. A. KRITZMAN (1), B. Raccah (1), D. Peters (2), and A. Gera (1). (1) Volcani Center, Bet Dagan, Israel; (2) University of Wageningen, Wageningen, Netherlands

11:35 a.m. Discussion

8:00 a.m. – 12:30 p.m. – ACC, 208A

Epidemiology/Ecology/Environmental Plant Pathology

The Plant Pathologist's Toolkit for Responding to Crop Biosecurity Threats

Organizers: Forrest Nutter, Iowa State University, Ames, IA, and Denis Shah, New York State Agricultural Experiment Station, Geneva, NY

Sponsoring Committees: Plant Disease Losses, Epidemiology

Moderator: Forrest Nutter, Iowa State University, Ames, IA

This symposium will address our ability to respond to post-introduction plant biosecurity threat agents. The intentional bioterrorism attacks directed at U.S. agriculture is now recognized as a serious threat to U.S. agriculture and its economy. Efforts to prevent the introduction of new and emerging agricultural pathogens and pests have significantly increased since September 11. Coordination within and among key federal, state, land-grant institutions, and private industry to detect, respond to, and recover from potential for confirmed agricultural threats have also significantly improved. Individual speakers will address the tools needed by plant pathologists to answer post-introduction questions such as: 1) what is it, 2) where is it now? 3) where will it likely spread? 4) will it become established? and 5) what plant disease mitigation/management practices are available?

8:00 a.m. Introduction. F. NUTTER. Iowa State University, Ames, IA

8:10 a.m. The role of CSREES in responding to new and emerging agricultural pathogens. K. CARDWELL. USDA-CSREES, Washington, DC

8:30 a.m. The role of NPDN in responding to new and emerging agricultural pathogens. J.P. STACK. Kansas State University, Manhattan, KS

8:50 a.m. What is on the horizon concerning new tools for detection of plant pathogens? R.R. MARTIN. USDA-ARS, Corvallis, OR

9:25 a.m. Post-introduction mapping of new and emerging agricultural pathogens in real-time using GPS and GIS technologies. F.W. NUTTER JR. Iowa State University, Ames, IA

10:00 a.m. Break

10:15 a.m. Use of aerobiological information and meteorological trajectory analysis to predict and monitor spread of plant disease epidemics. C.E. MAIN, T. Keever, and G.J. Holmes. North Carolina State University, Raleigh, NC

10:50 a.m. Weather-based simulations of invasive plant pathogens. J.M. RUSSO (1), S. Isard (2), and R. Magarey (3). (1) ZedX, Inc., Bellefonte, PA; (2) University of Illinois, Champaign, IL; (3) North Carolina State University, Raleigh, NC

11:25 a.m. Mitigating the post-introduction impacts of new and emerging agricultural pathogens. T.R. GOTTWALD (1) and D.T. Kaplan (2). (1) USDA-ARS, Ft. Pierce, FL; (2) USDA-APHIS, Raleigh, NC

12:00 p.m. Discussion

1:00 – 3:00 p.m. – ACC, 209A

Plant Disease Management

Permit Regulations and Process Affecting Research and Diagnostics on Plant Pathogens Endemic in the U.S.

Organizers: James R. Steadman, University of Nebraska, Lincoln, NE, and Sue Tolin, Virginia Polytechnic Institute and State University, Blacksburg, VA

Moderators: James R. Steadman, University of Nebraska, Lincoln, NE, and Karel Jacobs, Morton Arboretum, Lisle, IL

As a response to 9/11 and the perceived need for increased national security, Congress passed the Plant Protection Act. As a consequence of the implementation of the act by APHIS-Plant Protection and Quarantine, it has been increasingly difficult for plant pathologists to obtain a permit to move live pests and pathogens, to conduct research on imported pathogens, and to import or move pathogen cultures for research and diagnostic purposes. This discussion session provides an opportunity for presentation of effects of APHIS-PPQ permitting regulations on the science and practice of plant pathology. Perspectives of scientists from USDA-ARS, industry, and public institutions on the regulation will be presented, as well as the current viewpoint of APHIS-PPQ. The concept of an ideal permitting system will also be presented. This session will be an opportunity for a dialogue between APHIS-PPQ and the plant pathology stakeholder community of APS members.

1:00 p.m. Introduction and opening comments. J.R. STEADMAN. University of Nebraska, Lincoln, NE

1:05 p.m. The APHIS-PPQ permitting system for widely prevalent plant pathogens. M.J. FIRKO. USDA APHIS, Riverdale, MD
1:30 p.m. Impacts of permitting on disease diagnosis and pathogen surveillance. R. LORIA. Cornell University, Ithaca, NY
1:45 p.m. Effects of permitting on plant pathology research with the ARS. R. BENNETT. USDA-ARS, Beltsville, MD
2:00 p.m. Industry experiences with permitting for movement of pathogens and plants. P. HIMMEL.. Seminis Vegetable Seeds, Woodland, CA
2:15 p.m. Re-inventing the permitting system from a scientific basis. A. VIDAVER. University of Nebraska, Lincoln, NE
2:30 p.m. Discussion

Support the APS Foundation with $100 gift for the 100th Anniversary

Join in the preparations for the celebration of the 100th anniversary of APS and support the newest APS Foundation "100 for 100th" campaign focused on increasing the endowment by at least $100,000.

It's simple, give $100 in honor of APS's 100th anniversary and together the Foundation hopes to raise at least $100,000 by 2008. Donations to the campaign will allow the Foundation to sufficiently increase its endowment to provide an award every year for each student travel fund currently available. Donations will also provide the opportunity for the Foundation to increase the size of the travel awards from $400 to $600.

Donators to the "100 for 100th" campaign will be designated with a special badge sticker at the meeting. Make sure to stop by the Foundation booth, located next to registration, during the meeting to make your contribution.

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