



Plant Pathology Penn State University

ANNUAL NEWS

From the Department Head

Greetings to all the Friends of Plant Pathology; I hope this annual newsletter finds you in good health and spirits. It's been a busy year for all of us here and I'd like to bring you up to date on the activities of the Plant Pathology Department at Penn State.

In overview, the Department experienced a good year on balance. It continues on its path to excellence in the land grant mission and its reputation is growing as a center for modern science. Buckhout Lab has a vibrant atmosphere that comes from dedicated staff, creative faculty, and 33 bright graduate students. On the down side, federal and state support of our program unfortunately continues to erode. The Department experienced a reduction of two faculty positions this fiscal year, but there are still 20 professors to carry the load. Last year, they averaged \$200,000 in grants and gift support! Clearly, the Department must exploit opportunities,

turn out top-notch graduates, lead new initiatives, and serve its constituencies in order to thrive. Rest assured, Plant Pathology at Penn State is lively and ready to face the future as a leader in the discipline. Please support our efforts to remain strong in any way you can.

Feel free to visit the Department any time. If you can't come in person, please visit our web site at <http://www.ppath.cas.psu.edu/> to get further acquainted with the Department. While there, be sure to take the time to visit other Penn State web sites to reconnect with the agricultural college and university. Best wishes for a fulfilling and peaceful new year. –Len Francl

40th Anniversary Celebrated

In November, the Department of Plant Pathology at Penn State University celebrated its 40th anniversary. A commemorative seminar on "The Emerging Tospoviruses: Genetics of

Change and Adaptation" was presented by **James Moyer** ('75), Head of the Department of Plant Pathology at North Carolina State University. The celebration also included a colloquium "Plant Pathology Research and Outreach Through the Years" that reviewed selected departmental programs. Colloquium presentations covered mushroom science by **David Beyer**, mycology by **David Geiser**, epidemiology by **Erick De Wolf**, air pollution effects on plants by **John Skelly**, and outreach by **Herb Cole**.



Penn State Plant Pathology Department Heads seated (l-r): James Tammen (1963-75), James R. Bloom (interim, 1975-76); standing (l-r): Samuel H. Smith (1976-81), John M. Skelly (1982-85), Herbert Cole, Jr. (1986-93), Elwin L. Stewart (1993-2002), Leonard J. Francl (2002-present)

Special guests included **James Tammen**, the first department head and former Dean of the College of Agriculture at the University of Minnesota, **Samuel Smith**, former head and President Emeritus of Washington State University, and **Eva Pell**, professor and Vice President for Research and Dean of the Graduate School at Penn State. Emeriti attendees included **James Bloom**, **John Boyle**, **Kenneth Hickey**,

Winand Hock, **Leon Kneebone**, **Felix Lukezic**, **Richard Schein**, **Lee Schisler**, and **Paul Wuest**. An evening reception featured an open microphone period, during which an oral history was shared by department members and their spouses. All individuals who have served as department head since its founding in 1963 were present, with the exception of **Paul Nelson**, Interim Head, 1981-1982, who passed away in 1996.

Faculty Notes

John Ayers directs the Penn State Pesticide Education Program, which helps ensure proper use of pesticides on the farm and in urban settings. **Janis Marshall**, **Sharon Gripp**, **Kerry Richards**, **Julie Watson**, **Rick Johnson**, **Eric Lorenz**, and **Jimi Gingerick** assist John in this effort. John also serves as director of the Northeastern Pest Management Center, a joint effort of Penn State and Cornell Universities.

Paul Backman has been actively developing programs in the area of biological control and biosecurity. The Pennsylvania Vegetable Growers, Gustafson, and Campbells Soup are funding research on inducing plant defense mechanisms using various biological control organisms. These projects involve greenhouse, field and grower trials, and have focused on tomato, cucumber and broccoli diseases, which are supported by **Kim Paley** as the technical assistant. USDA at Fort Detrick has funded a project on biological control of Canada Thistle that supports the M.S. program of **Anissa Demers**. **Dana Berner**, a USDA scientist at Fort Detrick, MD, is working

with Anissa as an Adjunct Professor, and hosting part of her research at his laboratory. A second M.S. student is **Rachel Melnick**, whose research on cocoa endophytes and disease control, is supported by USDA's international programs group. She is evaluating various bacteria and virus endophytes that may induce cocoa to be resistant to witch's broom or pod rot infections. She is working with **Bryan Bailey** at USDA's Beltsville center on portions of this research. In the area of biosecurity a new project is beginning that will link former soviet bioweapons scientists with PSU scientists. Funded by DTRA (Defense Threat Reduction Agency), these projects will work on areas such as biological weed control, sensors for detecting high threat pathogens, mycotoxins detection, etc.

Mushroom growers depend on **Dave Beyer** to solve their production problems. **Vija Wilkinson** and **Jacki Kremser** assist Dave in the lab and **Jeremy Uncles** is working on his M.S.

Barb Christ studies early blight, late blight, and powdery and common scab of potato and cooperates with other scientists to improve potato cultivars adapted to the northeast region. **Mike Peck** and **Chad Moore** ably assist in fieldwork and **Sara May** assists in the lab. Barb currently has two graduate students: **Ruofang Zhang** who is completing her Ph.D. and **Chris Burkhart** who just started his M.S. **Stefano Costanzo**, **Cory Sica** and **Sara (Mahoney) May** completed their degrees in 2003. **Xinshun Qu** is a postdoc working on the molecular biology of *Spongospora subterreanea*.

Herb Cole is an assistant to Ted Alter, the Associate Vice President for Outreach and Cooperative Extension. Herb also serves as the Professional Development Regional Coordinator for the Northeast Sustainable Agriculture Research and Education Program (SARE). **Shirley Gryczuk** is a project associate working with Herb in the Northeast SARE program and with SARE's state sustainable agriculture coordinator Jack Watson, the Ag and Natural Resources Program Leader for Penn State Cooperative Extension.

Don Davis contributes considerable expertise in forest and shade tree pathology and teaches two popular undergraduate and graduate courses. His student **Matthew Fromm** received his M.S. at Fall 2003 commencement. Don currently is mentoring M.S. candidate **Lee Kline** and co-advising **Jozsef Geml**, Ph.D. candidate, with **David Geiser**.

Erick De Wolf is now in his third year on the faculty, and has been working to develop extension and research for field crops in the Commonwealth. His research on Fusarium head blight of wheat has lead to the development of a disease forecasting system that is currently being applied in eight states. **Nick Dufault**, an M.S. student working with De Wolf, is scheduled to defend his thesis research on the ecology of the fungus causing Fusarium head blight in wheat. **Norman Conrad** is working on his Ph.D. **Julio Molineros** joined the De Wolf lab as a Ph.D. student in the fall of 2003 and will be working on the next generation of disease prediction models. **Tim Grove**, research technician, provides staff support.

Leonard Francl serves as department head and, in his spare time, conducts research in the area of plant disease epidemiology with a current emphasis on *Fusarium* head blight of wheat and barley.

Dave Geiser continues to lead the *Fusarium* Research Center with the able assistance of **Jean Juba**. **Ameena Nalim**, **Jozsef Geml**, **Carla Garzon** and **Nik Zitomer** are working on Ph.D.s, while **Ning Zhang** and **Maria Jimenez** are postdocs. In the past year, Dave and Ameena made trips to the tropics to collect fusaria, Dave to North Queensland and Ameena to Sri Lanka.

Fred Gildow studies the mechanisms of specificity between viruses and their insect vectors. **Bill Sackett** provides technical assistance while **Kara Maraden** and **Chris Wallis** are students working on plum pox for their M.S. degrees.

John Halbrendt, located at the Fruit Research and Extension Center in Biglerville, PA, helps the fruit industry cope with nematode and virus problems. For the past four years he has spent considerable time helping with the Plum Pox Virus eradication program and working on cultural practices to manage nematodes in the orchard and vineyard. **Rod Shaffer** and **Phyllis Price** assist him in his efforts.

Seogchan Kang has contributed greatly to departmental expertise in molecular genetics since coming to Penn State. His lab includes graduate students **Lori Kroiss**, **Chang Hyun Khang**, **Hae-Seon Kim**, and **Jean-Phillippe Marelli**, and post-doctoral scholar **Sook-Young Park**.

Gretchen Kuldau's research program focuses on mycotoxins and mycotoxigenic fungi with an emphasis on *Fusarium* toxins. Ph.D. student **Michele Mansfield** continues her work on silage mycotoxins and presented results at APS this summer. **Doug Archibald** has been developing HPLC and HPLC-MS methods for *Fusarium* toxins and working with new Ph.D. student **Nik Zitomer**, who is co-advised by David Geiser. Undergraduate student **Mara Golitz** is studying the presence of penicillin-producing fungi in silages. All these projects are supported by the work of research support technician **Brian Dombroski**.

Felix Lukezic is an emeritus professor who is still an engaged educator. He received an honorary appointment by the University Provost to be one of the Provost's Emeritus Faculty Teaching Scholars. Not only does he teach freshman seminar and a popular Ag general education course, but he also conveys his love of learning and plants to grade school students in a remarkable classroom session.

Alan MacNab has concentrated his research program in recent years on tomato early blight and late blight forecasting. His extension program includes all vegetable diseases with recent emphasis on cucurbit and tomato diseases, and maintenance of a web site (vegdis.cas.psu.edu) that includes vegetable disease identification, controls for commercial producers and gardeners, and seasonal blight forecasts for Pennsylvania tomato growers.

Tim McNellis is a tenure-track faculty member who is researching plant

defense mechanisms to bacteria. **Judy Sinn** is a Senior Research Assistant in the lab, and **Phil Jensen** is a postdoctoral researcher with the program. The graduate students in the lab are **Justin Dillon**, **Tzoo-fen Lee**, and **Jianxin Liu**. **Niranjani Jambunathan**, a former graduate student in the lab, graduated from Penn State with her Ph.D. degree in Plant Physiology in May 2003, was first author of a paper published in *Plant Physiology* in July 2003, and is now a postdoctoral researcher at Oklahoma State University.

Gary Moorman has completed work documenting which *Pythium* species have been the main ones causing root rots in greenhouse crops from 1996-2002. Two species (*P. irregulare* and *P. aphanidermatum*) account for most of the cases. One of his graduate students, **Paola Ramon**, completed her M.S. on biocontrol of *Pythium* and graduated December 2003. His other graduate student, **Carla Garzon**, completed all the requirements for her Ph.D., including defending her dissertation, and will graduate in May 2004. Carla began a post-doctoral appointment in Gary's lab in January. A new student, **Jeniffer Yanez**, will begin M.Agr. studies on *Pythium* in January 2004. Gary will be on sabbatical leave from May through October 2004 at VPI's field station in Norfolk, VA, studying the ecology of *Phytophthora* and *Pythium* in irrigation water with Dr. Chuanxue Hong. Gary is the President of the Northeastern Division of APS this year and the Department will be hosting the Division annual meeting in October 2004.

Eva Pell currently serves the university as the Vice-President for Research and

Dean of Graduate Studies. She holds the John and Nancy Steimer Professorship and has a student in the Plant Physiology program, **Hernan Romero**.

Pete Romaine is involved in the transgenic manipulation of the button mushroom for crop improvement. He is assisted in the lab by a postdoctoral researcher, **Carl Schlagnhauser**, and visiting scholar, **Mingjie Chen**.

Dan Royse conducts research on genetic, nutritional, and disease factors influencing successful production of edible fungi. One of his students, **Pat Collopy** has completed requirements for his Ph.D. and will graduate in May 2004. He has accepted a post-doc position at the University of Bristol, UK, beginning in January 2004. **Alma Rodriguez-Estrada** is an M.S. candidate working on bacterial blotch disease of mushrooms and **Delphina Mamiro** began Ph.D. studies in Dan's program this January. Dan currently serves as president of the World Society for Mushroom Biology and Mushroom Products based in Hong Kong.

John Skelly leads the department's research and outreach program in plant disorders caused by air pollution. **Dick Stevenson**, **James Savage**, and **Jonathan Ferdinand** provide excellent technical assistance. **Ph.D. candidate (Ecology) Teodora Orendovici** uses passive ozone monitors and researches bio-indicator plant responses in mountainous and forested central PA. We are pleased to announce that we successfully opened The Air Quality Learning and Demonstration Center within the Penn State Arboretum in August. Cooperative research and outreach programs also continue with

colleagues in Switzerland, Italy and Spain.

Elwin Stewart is focusing his research and extension education program in systematic mycology and grape vine decline diseases with an emphasis on Petri Disease and Esca. He is ably assisted in the lab by **Nancy Wenner** and is guiding **Leslie Long** to an M.S. degree. Two Ph.D. students completed their degrees under Elwin's mentorship in 2003. **Priscila Chaverri** received her Ph.D. this past summer, and **Barrie Overton** completed Ph.D. requirements in December; Barrie is continuing on in Elwin's lab as a post-doctoral scholar. (Ed. note: Elwin still appears entirely too happy in his new position.)

Jim Travis is located at the Fruit Research and Extension Center in Biglerville. His responsibilities include tree fruit and grape extension and research. The fruit pathology program focuses on alternative disease management practices to synthetic chemicals. Current research includes ground application of compost for apple and grape replant disease and microbes and various 'soft' chemicals to manage foliar and fruit diseases. Jim is assisted at University Park by **Jo Rytter**, in Erie by **Bryan Hed**, and in Biglerville by **Noemi Halbrendt**. He has three graduate students: **Phil Northover**, who now works in Manitoba, **Beth Krueger Gugino**, and **Fritz Westover**.

Wakar Uddin runs a successful turfgrass pathology program. Wakar's research focuses on epidemiology and management of gray leaf spot (blast) and anthracnose basal rot diseases, and population biology of *Magnaporthe grisea* and *Colletotrichum graminicola*.

He teaches two resident courses and one of the few Internet plant pathology courses. Wakar also operates a turfgrass disease clinic. **Mike Soika** assists Wakar with field plots and **Gnana Viji** is a postdoctoral researcher; **Bangya Ma** and **Upeksha Nanayakkara** are Ph.D. students in his laboratory.



Staff News

Staff support for the mushroom research program is provided by **Tom Rhodes**, who coordinates operations of the Mushroom Research Center and the Mushroom Test-Demonstration Facility. Tom's staff at the two facilities includes **Doug Keith**, **Joseph Martain**, and **Henry Shawley**.

Our Rock Springs Farm facility is managed by **Randy Dreibelbis**, with assistance from **Roxanne Lease** during the growing season. Roxanne also serves as our campus greenhouse supervisor.

In Buckhout Lab, **Teresa Shirk** manages our facilities and safety needs, and **John Peplinski** coordinates operations of the Plant Disease Clinic.

The administrative staff includes **Jodi Shaw**, who joined the department as bookkeeper in 2003. **Rita Smith** continues as our receptionist, **Susanne Hart** provides support for graduate education, and **Becky Peplinski** is administrative assistant.

Awards

Departmental faculty, staff, and students have had a long tradition of garnering awards in recognition of their performance. Recent awardees:

- **David Geiser** received the 2003 Alexopoulos Prize—a Mycological Society of America Distinction Award based on quality, originality, and quantity of his published works.
- **Eva Pell** was named an AAAS fellow in recognition of her meritorious efforts to advance science and its applications and was elected a Daughter of Pennsylvania in recognition of her contributions to the Commonwealth.
- **Jozsef Geml** and **Priscila Chaverri** each won graduate student research presentation awards at the annual meeting (Asilomar, CA) of the Mycological Society of America.
- The Henry W. Popp Graduate Assistantship, the James P. Roberts Scholarship, the Lester P. Nichols Memorial Award, the Harold J. Miller Memorial Grant-in-Aid, and the Arthur Gaspari Memorial Scholarship collectively benefit deserving students. Awardees in 2003 included **Nicholas Dufault** and **Ameena Nalim**—Popp Award; **Jeremy Uncles**—Gaspari Award; **Matthew Fromm**—Nichols Award; and

Patrick Collopy—Roberts Scholarship.

Faculty and staff members recognized in 2003 for service to the Department and the College of Ag Sciences included:

5-Year Award - Seogchan Kang
15-Year Award - Randy Dreibelbis, Vija Wilkinson
20-Year Award –Roxanne Lease, Mike Peck, John Skelly
25-Year Award –Pete Romaine
30-Year Award -Richard Stevenson
35-Year Award - Teresa Shirk

Library Endowment Will Preserve Departmental Archive and Enable Access to World Literature

The estate of Albert C. Hildebrandt (B.S. 1939, M.S. 1941) contained a generous gift to Penn State University for enhancement of the departmental library. Dr. Hildebrandt earned a doctorate from the University of Wisconsin and pioneered tissue culturing while a faculty member there. He was one of the earliest advocates of cell fusion as a means of incorporating new traits into a cell line.

With this endowment, we were able to become partners in the Plant Management Network offered by the American Phytopathological Society. We have initiated the renovations of the library that should be completed by late spring 2004. We are partnering with Pattee Library to obtain electronic subscriptions to journals used by the department. This is just the beginning of the opportunities that the endowment will provide us.

Endowment Report

Beside the Hildebrandt Library support mentioned elsewhere, the Department benefits from a number of endowment funds that contribute to research and teaching efforts. Our largest fund is the Mushroom Industry Endowment, which supports research by departmental faculty on all aspects of mushroom science. This year, the Department fashioned a significant new graduate education program that promotes study leaves at labs around the world. **Jean-Philippe Marelli** was awarded the inaugural trip, by which he went to Brazil and spent most of August in a lab renowned for cacao pathology. Travel awards also were made in 2003 to **Rachel Melnick, Chang-Hyun Khang, and Fritz Westover**. Finally, the department launched a fund drive to create an endowment in the name of Bill Merrill to recognize his lifelong excellence as a teacher. Please contact us for further information about financially helping the department.

Distinguished Alumni

The College of Agricultural Sciences honored **Eileen Watson** (nee King, Ph.D. '82) as an Outstanding Alumna of the College. Eileen and her husband, **Greg Watson** (M.S. '82), returned to campus for a day in the Department and a reception at the Nittany Lion Inn. The Watsons shared their career experiences with current graduate students and were able to visit many of their old friends and haunts. Eileen presently serves as the NAFTA lead for a global re-engineering project for Syngenta, a world-leading agribusiness specializing in crop protection and commercial seed

distribution. Greg has pursued a career mainly in herbicide product development with Syngenta.



Dr. Eileen Watson and Dr. Leonard Francel

The American Phytopathological Society presented the Ruth Allen Award to **Larry Madden** (Ph.D. '80) in August. The Ruth Allen Award recognizes individuals who have changed the research direction of their chosen field through the significance of their accomplishments.

Recent Graduates and Placements

Priscila Chaverri received her Ph.D. degree under the direction of **Elwin Stewart**. Priscila is working at the USDA in Beltsville, Maryland, on a post-doctoral appointment through Cornell University. **Stefano Costanzo** completed his Ph.D. under the direction of **Barb Christ** and is now a post-doctoral researcher at The Ohio State University, Wooster. **Payungsak Rauyaree** ("M"), who graduated in the Spring of 2003, earned his Ph.D. under the direction of **Seogchan Kang** and is Agricultural Scientist at the Ministry of

Agriculture and Co-Operatives in Thailand.

Our 2003 Masters graduates included **Matthew Fromm, Paola Ramon, Cory Sica,** and **Sara Mahoney May** (M.Agr.). Matt Fromm is a Consulting Forester with Wakeland Forestry Consultants, Inc., in Indiana, and Sara May is a Research Technician in Barb Christ's program here in the department.

Recent Retirements

Jean Bloom retired in mid-2003 after 12 years of dedicated service to the Department. Jean continued to contribute to the department with a temporary assignment through the end of 2003, assisting our new bookkeeper, **Jodi Shaw**. The department honored Jean at a reception in July, and in November she received her Penn State chair in recognition of 25 years of service to the University. Jean is keeping busy with her family, her new chess set, and is especially enjoying her two grandchildren, Nicholas and Gracie.

In January 2003, **Larry Jordan** retired from his position as Manager, Ag Research Farms, in the Department of Plant Pathology, after 41 years of service to Plant Pathology, the College of Ag Sciences, and Penn State. At his retirement reception, Larry was presented with a scrapbook of photos and memories from friends and colleagues who worked with him over his many years in Plant Pathology. Larry is spending his retirement raising beef cattle on his farm.

Obituaries

Dr. William Merrill, Jr., died January 28, 2003, at age 69. Bill joined the Plant Pathology faculty at Penn State in 1965 and retired as Emeritus Professor in 1999. Bill led the oak wilt research programs until the mid-1970s and later became involved in the epidemiology and control of Christmas tree diseases. Bill's foremost interest, however, was excellence in teaching. In recognition of his dedication to teaching, Bill received a number of awards, including the Lindback Award, Penn State's highest teaching honor; and the Teaching Award of the American Phytopathological Society. APS also recognized Bill for his strong interest in the Phytopathological Classics.

Bill will be remembered not only for his contributions to the teaching programs in Plant Pathology, but also for his sense of humor and his enthusiasm for sharing his knowledge and experiences with others.

Correspondence

If you would like to correspond with retirees, current members of the department, or other alumni, please send your message c/o the departmental office:

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