

CALS connect

► Community as Place Conference Planned for July

Cornell Cooperative Extension and the Community and Rural Development Institute, along with a host committee of Cornell faculty, staff, and extension professionals from across New York State are planning for the annual meeting of the Community Development Society and International Association for Community Development. More than 400 community development practitioners, researchers, policy makers, and citizen leaders from around



the world are expected to convene on the Ag Quad from July 19–23 for a conference titled “Community as Place.”

Place-based communities include attention to social, human, natural, built, and financial capital in a balanced and holistic way.

The conference theme includes but is not limited to issues of culture; the roles of visionaries, academics and everyday folk; minority and ethnic groups; youth and community development; indigenous development; rural development; inclusive community development; anti-poverty work; mobility; globalization and migration; and peace and conflict.

The conference embraces common efforts to foster meaningful collaborations, extend the community development network, and holistically integrate community-based research, policy, and practice toward the goal of building healthy and sustainable communities of place. It provides a valuable opportunity to sharpen professional skills, discuss critical issues, and interact with colleagues.

Full conference details are available on the web site at <http://www.cds2003.org>

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New Leadership for Academic Programs

It is my pleasure to announce that Don Viands has accepted the position of CALS associate dean and director of academic programs. He succeeds Dean Sutphin, who left Cornell in December to return to his alma mater, Virginia Tech, to take the position of associate dean and director of academic programs in its College of Agriculture and Life Sciences. Don brings to the job a strong commitment to CALS and significant experience as a leader, an educator, and a researcher. I have asked him to use this column to provide an overview of his immediate priorities as our new associate dean and director of academic programs:

"CALS has been rated number one among agricultural colleges in the United States. My objective will be to work with the faculty members, staff, and students to provide our students the best academic experience as we prepare them to be leaders and contributors to society.

"One of my priorities is to review curricula across the college. I also will facilitate interdepartmental and inter-college discussions about collaborative and cross-major programs. Another critical task will be to help establish an agricultural science program for traditional students from farm or rural backgrounds. I will be chairing a committee to be charged with creating this interdisciplinary program. I am committed to increasing opportuni-

ties for undergraduate research. In the area of admissions, our goal is to address the issue of diversity in CALS, with an emphasis on admitting underrepresented minority students.

"Faculty development is another important component in the improvement of the academic experience for CALS students, and I am committed to enhancing opportunities for faculty members to develop their skills in teaching and advising. Facilities are also important to the educational experience, and I will work with Senior Associate Dean Bill Fry to continue to monitor the status of CALS classroom facilities and to improve them."

Don plans to maintain his research program in forage breeding and genetics in the Department of Plant Breeding, and he hopes to continue teaching his course, Quantitative Genetics in Plant Breeding (PL BR 717), which is offered every other year. He also will continue to fulfill his extension appointment through participation in field days and other outreach efforts. Don will be a valuable source of continuity and insight for the Office of Academic Programs. I look forward to working with him to address the critical academic and advising issues facing the college.

Susan A. Henry, Ph.D.
The Ronald P. Lynch Dean of
Agriculture and Life Sciences



J.F. '96
Ag Quad from
Mauw

Food Scientists Develop New Bioassay for Rapid Detection of Cholera Toxin

The illness of cholera, usually associated with contaminated water or seafood, is caused by the ingestion of viable *V. cholerae* bacteria, which produce cholera toxin. If untreated, cholera toxin causes severe diarrhea, rapid dehydration, and even death in a few hours. Because of its potential as a biowarfare agent, the interest in detecting this toxin recently has increased.

Richard Durst, professor of bioanalytical chemistry in the Department of Food Science and Technology, has a career interest in the development of bioassays for food safety and environmental monitoring. He and his research group at the Bioanalytical Research Laboratory at the New York State Agricultural Experiment Station at Geneva conducted research to develop an immunoassay for cholera. Their recent result: a sensitive and rapid capillary migration strip bioassay for the detection of cholera toxin (CT) from *Vibrio cholerae*.

The scientists—including Soohyoun Ahn, graduate student, and Thomas DeCory, research support specialist—worked in collaboration with Antje Baeumner, an assistant professor in the Department of Biological and Environmental Engineering.

To effect its toxicity the cholera enterotoxin binds to ganglioside receptors on the target cell, explains Durst. The ganglioside, GM1, which is the cell receptor for

the cholera toxin, was used to prepare the CT-specific liposomes for the assay. GM1 was added to a cholesterol and phospholipid mixture used to prepare the liposomes, which also encapsulate red dye. Antibodies against CT were immobilized in a capture zone on plastic-backed nitrocellulose membrane strips. In the assay protocol, the liposomes are added to the toxin sample in a test tube and, after a two-minute incubation, the test strip is inserted.

When present in the sample, toxin molecules that are bound to gangliosides on the liposomes are captured in the antibody zone on the strip and produce a colored band. The intensity of the band, proportional to the toxin concentration, can be visually estimated or quantified by computer scanner densitometry.

The assay was tested with various food samples spiked with the toxin. While the detection limit decreased by a factor of 10 to 100 in most food samples, the detection limit was still much lower than that for other types of CT assays, Durst says.

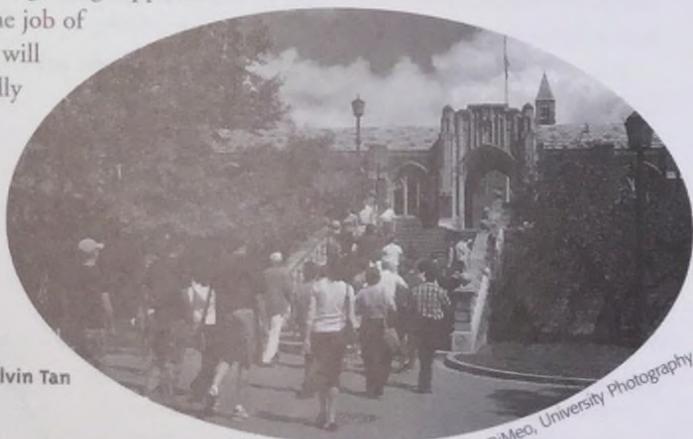
The bioassay can be completed within 20 minutes. The research demonstrates the feasibility of using this assay system to detect the toxin directly in field screening of water and food samples, without the need for sophisticated instrumentation.

CALS Admissions Applications Increase

CALS is bucking a flat to slightly downward trend in applications to Cornell with a surge in applications for undergraduate studies this year. More than 3,300 first-year applications have been received by the admissions office to date, the highest since 1998 (3,216) and a 14 percent increase over last year. And this number is expected to rise a few notches when the final tally is completed at the end of January. Admissions officials are even hopeful that it might eclipse the 1997 total of 3,454.

"The increase in applications is completely due to the strength of the college's academic programs," says Robert Springall, director of admissions for CALS. "We are getting a large applicant pool with talented, interesting students, which makes the job of selecting applicants difficult. Of course, that means we will have the pick of the best and brightest students that really fit the special environment of the college."

As with previous years, half of the applicants are New York residents. The rise in applications coincides with ongoing outreach efforts by CALS to increase awareness and to ensure that prospective students and their families have the information they need to meet college eligibility requirements and apply to the college.



Kelvin Tan

photo by Frank DiMeo, University Photography

Inside CALS:

The Department of Plant Pathology at the New York State Agricultural Experiment Station in Geneva is a world-renowned center of excellence within the discipline of plant pathology. The department is known for the quality of its personnel and the breadth of research opportunities available for students, postdoctoral associates, research associates, and visiting scientists. The Geneva department and the Department of Plant Pathology in Ithaca make up the graduate Field of Plant Pathology at Cornell.

Plant pathology is the study of plant diseases and the pathogens that cause them. It also encompasses how cultural and environmental impacts affect the ability of a pathogen to cause disease. Plant pathology includes fundamental biology as well as applied agricultural sciences. The discipline arose from the investigations of the potato disease that precipitated the Great Irish Famine in the 1850s. Since that time, plant pathologists have worked to understand and reduce the threat of pathogens of plants to the food supply and to ensure food security.

"Our programs at Geneva are quite diverse," says department chair Thomas Burr. "We strive to maintain a balance between applied and basic research so that we can provide answers to disease problems for the agriculture industry of New York. The scope of our effort also is broadened by worldwide collaboration with plant pathologists and scientists in related disciplines."

Research at the Geneva department is conducted on primarily fruit and vegetable crops and diverse types of pathogens. Projects span the full spectrum of applied and basic research and are developed to address important problems facing the fruit and vegetable industries. Collaborative research also is conducted regularly with members in the Entomology, Horticulture, and Food Science departments and the Integrated Pest Management Program.

A common goal of many projects is to develop disease management strategies that will increase fruit and veg-

The Department of Plant Pathology

etable producers' profitability. This requires the synthesis of an integrated program that draws upon many components, including developing variety resistance through conventional breeding and genetic engineering, disease forecasting, crop rotation, and the timely application of a fungicide or biological control organism.

One of the most prominent discoveries to

emanate from the department is the transgenic papaya that saved the important Hawaiian papaya industry from complete devastation by the papaya ringspot virus. In 1998, after 20 years of research,

Professor Emeritus Dennis Gonsalves and his colleagues were able to release the seeds of two varieties of virus-resistant papaya to the Hawaiian growers, giving the industry a second chance. For their work, Gonsalves and his team recently were honored with the prestigious 2002 Alexander von Humboldt Award for Agriculture.

In recent years, apple trees in New York and Michigan have become increasingly affected by a devastating bacterial disease called fire blight. In 2000, the disease killed thousands of acres of productive apple trees in Michigan, New York, and other states. Responding to the crisis, Professor Herb Aldwinckle collaborated with colleagues from the Horticultural Sciences Department in Geneva to develop disease-resistant rootstocks that can withstand even severe outbreaks of the disease. The improved rootstocks have been commercialized and are expected to help growers improve their profitability.

Besides state-of-the-art laboratories, the Department of Plant Pathology has a host of resources at its doorstep to facilitate its research and teaching programs. The Geneva campus features approximately 800 acres of fruit and vegetable plantings for field research and demonstration plots. Furthermore, Geneva is located in



photo by Fred Hickey

Michele Holden, research technician in Thomas Burr's laboratory

the heart of central New York's farmland—within a 10- to 60-minute drive are extensive plantings of apples, grapes, various small fruit, and vegetable crops. As a result of outreach efforts by the campus, local producers are willing cooperators in many field research projects.

The department's extension program is recognized for having a significant impact on the management of fruit and vegetable diseases. Its goal is to disseminate the knowledge necessary to implement sustainable and economically sound methods of disease control.

Educational information is provided via the Internet, newsletters, trade journals, extension publications, oral presentations, in-depth educational programs for crop advisers, and demonstration trials. Members in the department regularly work with off-campus extension educators in county and regional offices, while some faculty members have formal assignments in extension.

Professor William Turechek leads Cornell's tree fruit and berry pathology group, which is responsible for assisting New York farmers in managing the diseases that threaten production. The group works with researchers, extension educators, and growers to develop good farming, food storage, and processing practices in an effort to increase market share for New York producers, while assuring consumers safe, reasonably-priced, high-quality fruits. Through its web site at www.nysaes.cornell.edu/pp/extension/tfabp producers can access current information on tree fruit and berry crop diseases and their management.

Researchers in the department also strive to help producers protect their crops efficiently and in an environmentally responsible manner. For example, research findings on grape disease management strategies—conducted by Professors Wayne Wilcox and Robert Seem,

along with David Gadoury, senior research associate—have been disseminated through extension channels to New York growers, as well as nationally and internationally. With the aid of this information, growers were able to reduce their crop losses by up to 50 percent. Significantly, about 90 percent of commercial grape growers in the region also have integrated environmentally friendly fungicide application strategies into their disease-management programs.

Together with the Ithaca department, the Geneva department recruits students for graduate study. It offers opportunities for advanced research and training for all major pathogen groups in all areas of the science, including pathogen biology and ecology, epidemiology, biological control, host-pathogen interactions, plant improvement (conventional breeding and genetic engineering), and biochemistry of and resistance to disease-control agents. The Geneva department has several research technicians and postdoctoral and research associates that play integral roles in research. The department also hosts many visiting scientists on leave from their respective institutions.

"Our faculty and staff are highly productive," says Burr. "Graduate students and research support staff are important to our department and add greatly to the productivity and overall environment. We are doing some outstanding research, and it is great to see people excited about being a part of it."

To contact the Department of Plant Pathology in Geneva, call (315) 787-2331. For more information on the graduate program, email the Plant Pathology graduate field assistant at mlh2@cornell.edu.

Kelvin Tan

Agricultural Biotechnology in a Nutshell

The College of Agriculture and Life Sciences, in collaboration with the New York State Agricultural Experiment Station in Geneva, has released a brochure on the background, development, and issues of biotechnology and genetically engineered products. Entitled *Agricultural Biotechnology: Informing the Dialogue*, the 28-page color brochure covers 14 broad subject areas with text, photos, and illustrations.

"Educational institutions can help shed some light on the dialogue about agricultural biotechnology," says Susan A. Henry, the Ronald P. Lynch Dean of CALS, "by identifying the issues and presenting information to the public about what we do and do not know about these issues."

Brochure content includes the history of biotechnology; issues about food safety, human health, the envi-

ronment, and global food systems; and the technology's development, control, and regulation.

"The purpose of the brochure is to help the public become more knowledgeable about the issues surrounding biotechnology and develop a common understanding of its benefits and risks," says Anthony Shelton, professor of entomology, and chief architect of the publication.

The brochure is being distributed to state and federal legislators, high school science teachers in New York State; Cornell Cooperative Extension educators throughout the state; and grower, food, industry, and consumer groups across the country.

A digital copy of the brochure can be viewed at www.nysaes.cornell.edu/agbiotech. Printed copies can be purchased for \$3 each from the Geneva Experiment Station (call 315-787-2248; e-mail gro2@cornell.edu), or Cornell's Media & Technology Services Resource Center (call 607-255-2080; e-mail resctr@cornell.edu).

Kelvin Tan

Activities at Mann Library

The Mann Library exhibit, *Written in Stone: Fossil Narratives from Near and Far*, prepared in collaboration with the Paleontological Research Institute, continues through February 25 in the Mann Library Addition, first floor.

Don't miss the "Chats in the Stacks" book talk with David Pimentel, entomology professor, who will discuss his recent book *Biological Invasions: Economic and Environmental Costs of Alien Plant, Animal, and Microbe Species* (CRC Press, 2002)—on Wednesday, February 26, from 4 to 5:30 p.m. in the Mann Library Addition, second floor. Refreshments will be served.

Distance-Learning Course on Grafting

Without leaving home this spring, gardeners can learn to graft multiple fruit varieties onto a single fruit tree, create unusual growth forms, and apply these skills to propagate plants that do not root easily. Cornell's Department of Horticulture is registering students for a distance-learning course, "The How, When, and Why of Grafting for Gardeners." The noncredit course includes web-based lectures and quizzes, video demonstrations, hands-on grafting, and interactive discussions. The 10-week class requires about four to eight hours of work per week and will be offered March 17 through May 23. Students will read weekly lectures, view still images and video clips of grafting procedures, participate in online discussions, and take multiple-choice quizzes. Students then will demonstrate their knowledge using hibiscus plants. The course is limited to 50 students. The last day to register is March 10. To register, view a sample lecture, or see a listing of all lectures and laboratory exercises, visit the course web site at <http://instruct1.cit.cornell.edu/courses/hort494/mg/>

Adult and Family Programs at Shoals Marine Laboratory

The Shoals Marine Laboratory, located on Appledore Island in the Gulf of Maine and operated by CALS in cooperation with the University of New Hampshire in Durham, is offering several adult and family education programs. Upcoming courses include: Island Bird Study, May 16-18; A Garden is a Sea of Flowers, July 18-20; Marine Mammals of the Gulf of

FYI

Maine, August 28-31; Seascapes and Landscapes: The Isles of Shoals in Watercolor, August 22-25; Seascapes and Landscapes: The Isles of Shoals in Pastels and other Media, August 28-31; Paddle to the Sea, September 5-8. For more information see http://www.sml.cornell.edu/adult_ed/pa-prog.htm

Lab of O Plans Internet Access to Nature Sounds and Bird Videos

The contents of the world's largest collection of nature sounds and videos of birds in their natural habitats soon will be accessible to the general public via the Internet, thanks to a gift of computer

equipment to Cornell's Lab of Ornithology by EMC Corp., of Hopkinton, Massachusetts, a world leader in systems to store, protect, move,

manage, and access digital information. When the new system goes online this year, visitors to the lab's Macaulay Library web site will be able to hear any of hundreds of thousands of digital sound recordings, view video clips, and order custom-recorded DVDs of their favorite birds. Scientific researchers, conservationists, and citizen-scientists involved in ornithology projects will have Internet access to recordings they need for their work, and broadcasters and other users of high-quality video will get material via Internet2 lines. For more information see http://www.birds.cornell.edu/lms/happenings/happeningsnewtech_index.html



Mike Hopiak, Cornell Lab of Ornithology

The Pros of Open-Access Scholarly Publishing

Since January 1, Cornell authors making submissions to the journals of one London-based publisher, BioMed Central, can now do so for free, thanks to an institution-wide subscription paid for by Cornell University Library. BioMed Central—at biomedcentral.com—is one of a growing number of “open-access” publishers, those independent publishers with a commitment to provide immediate and free access to peer-reviewed biomedical research.

An open-access publisher flips the standard subscription model upside down, providing free access to all readers (via its own web site and online public libraries such as PubMedCentral, the digital archive of the U.S. National Library of Medicine) but recovering costs by charging authors to publish in its journals. For example, the cost to publish in BioMed Central journals is \$500 per article.

Cornell's library began its institutional subscription to BioMed Central—which means that the publisher's standard author fee is waived for all Cornell-authored articles—as a way to encourage scientists to experiment with open-access publishing. Other academic institutions (such as the University of California and Harvard University) and medical research organizations (for example, the Howard Hughes Medical Institute) also have agreed to cover their scientists' publication costs when they publish in specific open-access journals.

The traditional business model of scientific publishing, in which costs are recovered (and profits made) by charging subscription fees for access to published articles, requires that access to the works be restricted to those who have paid the fees. The open-access initiative is a challenge to the existing business model of scientific publishing, a \$7 billion industry that is dominated by a small number of commercial publishers based in Europe. A recent Morgan Stanley report on the science publishing market calls scientific journals “the fastest growing media sub-sector of the past 15 years.”¹

The growth of the current system has been built on skyrocketing subscription prices—which have increased 226 percent over the last fifteen years while the cost of inflation has only increased by 57 percent, according to statistics gathered by the Association of Research Libraries.² In order to afford these spiraling costs, libraries have been forced to cancel journals and purchase fewer books. At Mann Library and Cornell's other statutory college libraries, the number of journal sub-

scriptions has decreased by 14 percent over the last 15 years even as acquisitions budgets have grown by 117 percent. At the same time, online publishing has introduced an additional expense to library budgets.

There is a crisis in scholarly publishing, but the current system of publishing is well entrenched. Any attempt to change it will require a great deal of momentum. That momentum was started in 2001 with an initiative called the Public Library of Science, at <http://www.publiclibraryofscience.org>—which urges scientific publishers to allow the research reports that have appeared in their journals to be distributed freely by independent, online public libraries of science. The Public Library of Science is circulating an open letter that invites signatures from scientists from around the world (nearly 33,000 have signed, to date) who pledge only to publish in, subscribe to, and work for journals that support free and wide access to their work. The letter has been signed by a large number of Cornell scientists.

There will be support for non-traditional publishing models if they offer researchers viable outlets for their work. Since publishing is based on the culture of each discipline, multiple solutions and some experimentation are in order. The preprint servers widely used by physicists may not work for molecular biologists. What might work better for the life sciences community is an open-access model, such as that offered by BioMed Central. Growing numbers of scientific publishers and research universities—such as Massachusetts Institute of Technology, Columbia University, University of Toronto, University of Washington, University of Rochester, Ohio State University—also are taking seriously the viability of the open-access model for scholarly publications. Cornell announced plans this past December to implement its own open-access digital superarchive sometime next year.

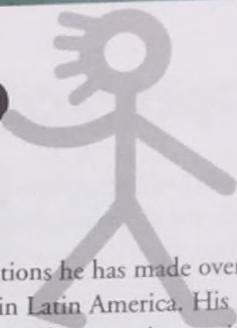
Open-access publishing is still too new to determine whether it will be successful—this is not surprising given the conservative nature of scholarly publishing. In the meantime, however, competitive publishing models and a spirit of experimentation are in order.

Philip Davis, life sciences bibliographer, Mann Library

¹ Morgan Stanley Industry Report. Media. “Scientific Publishing: Knowledge is Power” Sept 30, 2002. Available from <http://www.econ.ucsb.edu/~tedb/journals/morganstanley.pdf>

² Association of Research Libraries. Monograph and Serial Costs at ARL Libraries 1986-2000. Available from <http://www.arl.org/stats/arlstat/graphs/2000t2.html>

Who's New, Who's Who



Honors

Russ Hahn, associate professor of weed science, was presented a recognition award in November 2002 by the New York State Association of County Agricultural Agents. The award was given in appreciation of Hahn's unique contributions to Cornell Cooperative Extension agriculture programs and the agricultural industry of New York State.

H. David Thurston, professor emeritus of plant pathology, has been nominated by New York State and CALS for recognition by the Inter-American Institute for Cooperation of Agriculture for the significant con-

tributions he has made over nearly 50 years to agriculture in Latin America. His research contributions have been on disease resistance in root and tuber crops, particularly potatoes and cassava, and on sustainable practices for managing plant diseases in traditional farmer systems. From 1985 to 1990 he was chairman of the board of directors of the Consortium for International Crop Protection. Throughout his career Thurston has written several books and taught a number of courses related to tropical crops and agricultural development in Latin America. Prior to joining the Cornell faculty in 1967, he was a member for 11 years of a team of Rockefeller Foundation scientists working in agriculture in Colombia.



CALS connect

vol. 9-4, February 2003

CALSconnect is published September–December and February–June by the College of Agriculture and Life Sciences at Cornell University. Comments and suggestions are welcome and may be sent to the Executive Editor, Cornell University, 273 Roberts Hall, Ithaca, New York 14853.

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Media and Technology Services
www.cals.cornell.edu/calconnect

Cornell University is an equal opportunity, affirmative action educator and employer.

Produced by Media and Technology Services at Cornell University
www.mediasrv.cornell.edu

Printed on recycled paper.

2/03 GPP 1.5M MTS10811