



Nancy Colburn Retires after 36 Years, Becomes Scientist Emeritus

By Ashley DeVine, Staff Writer

Although Nancy Colburn, Ph.D., retired in January after 36 years at NCI, she won't be disappearing from the NCI campus at Frederick anytime soon; she's been appointed scientist emeritus in the Laboratory of Cancer Prevention (LCP), Center for Cancer Research (CCR).

Career Began in Early Days of Genetic Discoveries

Colburn received her Ph.D. in biochemistry from the McArdle Laboratory for Cancer Research, University of Wisconsin, in 1967. "It was really exciting in the mid-60s to be studying molecular biology. Everything was so new. Who could imagine such exciting discoveries about how genetic information got communicated and transmitted?" she said.

Colburn's career began in academia. She taught for four years at the University of Delaware and three years at the University of Michigan. "I feel it's really valuable to have experience in the academic world when you're going to be a principal investigator (PI) in the intramural program," she said. "Every time I wrote a grant—at Delaware, at Michigan, and here—I got high scores and was funded. You have to have that kind of credential in order to be appointed to a grant study section."

From Teacher to Researcher

Colburn came to work at NIH in 1976. She intended to stay for a few years before going back



Nancy Colburn, Ph.D., scientist emeritus, Laboratory of Cancer Prevention, Center for Cancer Research.

to teaching. "I got a job offer to go to Purdue, and I was all set to go in 1979," she said. Then George Todaro offered her a principal investigator position in the Laboratory of Viral Carcinogenesis, in Bethesda. "My lab got started for the first year in Building 37, and then we were told we were going to move to Frederick," she said.

In 1996, Colburn decided to leave the Laboratory of Viral Carcinogenesis, and she was able to take her

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Scientist Emeritus

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resources with her. She became chief of the Gene Regulation Section, Laboratory of Biochemical Physiology. In 1998, Colburn moved to the Basic Research Laboratory, where she stayed until she was appointed chief of LCP in 2003.

to be an oncogene. If you find out what's happening in the resistant line that's not happening in the sensitive line, it's likely to be a tumor suppressor," she said.

Colburn's lab also showed that Pcd4 was a tumor suppressor in genetically

and humans. The results of one study of obese and non-obese mice fed a diet enriched with beans showed that colon carcinogenesis was decreased in the obese mice. The results also revealed potential serum biomarkers of efficacy, Colburn said. Efficacy, or response, indicators are important for targeting the intervention to those likely to benefit.

Achievements and Awards

In 2000/2001, Colburn approached the director of the intramural NCI with an idea to form a mouse models for cancer prevention faculty. At the time, the director wanted to form faculties of basic and clinical researchers to promote collaboration.

"The idea of it was that if you engineer the mice right, you can go through a whole lot of experiments to show that they model real human cancer and that they can therefore be used for asking questions about drugs, drug discovery, and drug development," she said.

Colburn earned an Animal Models for Cancer Prevention Working Group Merit Award in 2002 for developing this faculty.

The mouse models for cancer prevention faculty became the Cancer Prevention Faculty (to include a human translational focus) and held retreats in 2001, 2003, and 2005. "We would get three or four people to speak at a session, typically a basic scientist, a translational scientist, and a clinical scientist," Colburn said. "This stimulated people to start up collaborations you never would have imagined."

Another memorable NIH conference for Colburn was the Molecular Targets for Cancer Prevention event at Natcher Auditorium in 2009. "We had some outstanding speakers from all over the country, as well as internal speakers," she said. "The big thing about cancer prevention is that it's more successful than cancer treatment. Cancer treatment once the cancer is already somewhat advanced is very difficult; you have to try to turn back so many things that have gone wrong." ■



Nancy Colburn at her retirement celebration in January, with (from left) Alan Rein, Ph.D., HIV DRP Retroviral Replication Laboratory; Jack Farrell, her husband; and Bruce Shapiro, Ph.D., CCR Nanobiology Program. Rein was one of Colburn's first colleagues at the NCI campus at Frederick and Shapiro was a collaborator in interdisciplinary research.

Discovering New Molecular Targets for Cancer Prevention

Much of Colburn's career as a researcher has been spent conducting gene regulation studies, she said. She considers her greatest accomplishments to be the discovery and validation of two new molecular targets for cancer prevention: tumor-suppressing translation inhibitor Pcd4 and oncogenic transcription factor AP-1.

"We discovered Pcd4 using a cell culture model that I had generated, which was one-of-a-kind—it's the only one in the world that's ever existed—that allows you to study tumor promoter-induced transformation," Colburn said.

She explained that in a cell culture model, one cell line is genetically sensitive and the other is genetically resistant. "If you find out what's happening in the sensitive line that's not happening in the resistant line, it's likely

engineered mice, and this discovery was translated to human cancers. "In just about every kind of cancer known to man, what happens is that the Pcd4 goes away during carcinogenesis," she said. "Two different mechanisms cause it to disappear—that gives you a therapeutic possibility because what you'd like to do is target those mechanisms to keep Pcd4 from disappearing."

In studying the role of transcription factor AP-1 in carcinogenesis and cancer prevention, Colburn's lab discovered that AP-1 activation is required to promote tumor cells in a cell culture model and to promote skin tumors in vivo. Targeting AP-1 for tumor prevention was then extended to mouse and human models and human-relevant exposures, such as human papilloma virus and UVB.

Colburn's lab also conducts dietary intervention studies to discover biomarkers of colon cancer in mice

Remembering Joseph Mayo and His Contributions to Animal Science

By Carolynne Keenan, Guest Writer

In the 1990s, when Joseph Mayo, D.V.M., ran out of gas leading coworkers home from a meeting in Bethesda, he pulled over to the side of the road on I-270 and waited for help. He didn't have to wait long; within a few minutes a passing motorist took pity on the group of scientists and offered them a lift back to Fort Detrick.

Random acts of kindness just happened when Mayo was around, explained Melinda Hollingshead, D.V.M., Ph.D.,

experimentation or improved animal care practices," according to the American Association for Laboratory Animal Science website.

Mayo and Clarence Reeder, Ph.D., a retired NCI colleague, revolutionized how science is done, by advocating for the use of clean—meaning disease-free—mice in laboratory research. "His push for clean animals and clean facilities is what allowed NCI to move into tumor-based testing," Hollingshead explained.

His legacy isn't just in the

World War II Veteran with a Ph.D. in Veterinary Medicine

Mayo was a World War II veteran, serving in the Navy in the South Pacific and taking advantage of the possibilities offered by the GI Bill after serving his country.

Mayo graduated from the University of Alabama at Tuscaloosa in 1949; then, he graduated from Auburn University with a doctorate in veterinary medicine in 1957. He followed that up with a master's degree, also from Auburn University, in 1965.

He worked in a private veterinary practice in Alabama, his home state, from 1957 to 1963. After a two-year stint as an instructor in physiology at Auburn University while earning his master's degree, Mayo joined the staff at the Southern Research Institute in Alabama. He worked there as the head of the Experimental Solid Tumor Section, Cancer Screen Division, from 1965 to 1974.

32 Years at NCI

In 1974, Mayo switched gears and became the chief of the Biological Testing Branch, Developmental Therapeutics Program, NCI campus at Frederick. He held that position for 32 years, retiring in 2006.

Even though he retired, Mayo still worked as a special volunteer for the lab he formerly led. In fact, Hollingshead recalled, Mayo was at the NCI campus at Frederick the day before he died.

During his tenure at NCI, Mayo worked for about a year as the acting associate director for the NCI campus at Frederick (then known as the NCI-Frederick Cancer Research and Development Center), from 1995 to 1996. He wrote numerous publications throughout his career and earned an NIH Merit Award for his work.

"He was always good to talk to and gave great advice," Hollingshead said. "You may go the rest of your life not knowing someone like him." ■

Carolynne Keenan is a public affairs specialist, NCI Office of Scientific Operations.



Joe Mayo (far right) sits with some of his immediate family. From left are Nancy Mayo (daughter-in-law), Dave Mayo (son), Bill Mayo (son), and Laura Frances Mayo (wife).

Photo courtesy of Dave Mayo.

chief of the Biological Testing Branch, who worked with Mayo for 20 years—since he hired her in 1992. "He was one of the finest people I've ever known," Hollingshead said, speaking of her long-time colleague and friend, who died suddenly in November 2012.

Mayo was one of the most well-liked and well-respected members of the National Cancer Institute campus at Frederick from the moment he stepped on the scene in 1974.

Award-Winning Animal Science Researcher

Mayo received the prestigious Charles A. Griffin Award in 2003, which "recognizes an individual or group of individuals who have demonstrated ethical scientific and/or technological advancements in humane

groundbreaking standards and practices he helped set up; Mayo also helped people.

He helped students—from veterinary students near his Alabama farm, to assisting Frederick Community College students, to even hosting study groups for his son, Joseph "Dave" Mayo, Jr., and classmates.

He was optimistic and loved life, as well as his job, said Dave, who is the Delivery and Receiving supervisor for SAIC-Frederick. Mayo didn't have plans to golf away his retirement; instead, he came back to work as a special volunteer and consultant. "He's the smartest guy I ever knew," Dave said.

Hollingshead agreed. "He set about solving problems. He knew who to call, or if he didn't know, he was smart enough to ask for help."

Awards and Events

NICBR Announces First Collaboration Project Awards

Courtesy of the NICBR Public Affairs/Community Relations Subcommittee

The National Interagency Confederation for Biological Research (NICBR) announced the 2012 NICBR Collaboration Project Award (CPA) Program winners in December. The award, the first of its kind for NICBR, was adapted from the National Cancer Institute's (NCI's) Young Investigator Award Program. This year, the CPA was bestowed to three research projects pertaining to collaborations between NICBR agencies.

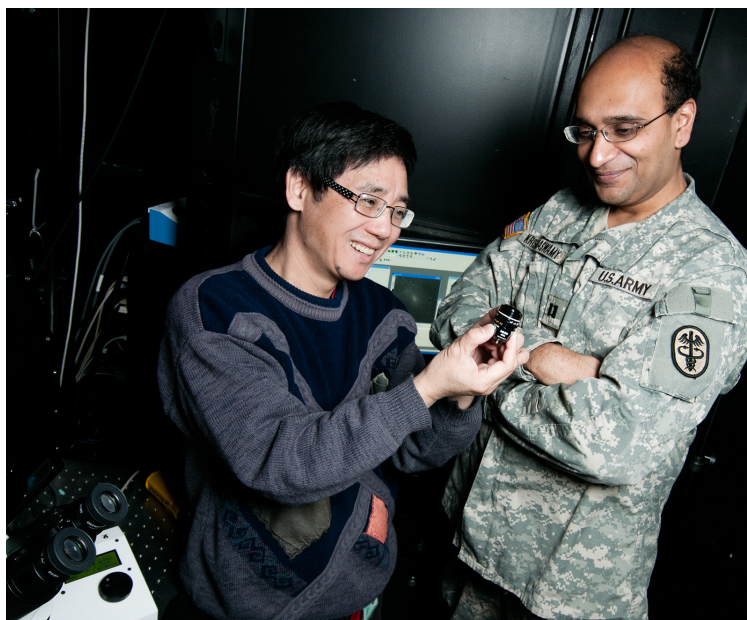
"The NICBR collaboration awards are a mechanism to encourage interactions with NICBR partners," said Howard Young, Ph.D., Laboratory of Experimental Immunology, NCI. The award is meant

to foster collaboration among the fellows, trainees, and other equivalent junior staff affiliated with NICBR partners and located at, or having a strong link to, activities at the Fort Detrick location. It is also designed to give junior investigators the chance to explore new areas of

research in a collaborative manner that takes advantage of the complementary strengths of NICBR partner laboratories.

Winners received up to \$10,000 for each project. The awards are to be used to purchase materials and supplies to aid in their research.

The awardees expressed their excitement on being a part of a new and mutually beneficial awards program. De Chen, Ph.D., said that he is very happy with the award, which enabled laboratory



De Chen (left), FNLCR, holds the new objective lens purchased with the NICBR Collaborative Project Award. His collaborator, CPT Sanjay Krishnaswamy (right) is with USAMRIID.

personnel to purchase a new, 100x objective lens to conduct the appropriate level of microscopy on their project.

Awardees Michael Lindquist, Ph.D., and Kimberly Boelte, Ph.D., decided to study how viruses affect pericytes (cells found in the central nervous system) to

get a more in-depth look at how they influence hantavirus infection—which has a potentially life-threatening outcome in humans. "I'm very excited about the award," said Boelte. "I knew Michael and his history with infection models, and we thought it was a good idea to collaborate and to pool our backgrounds on a project together."

NICBR leadership also expressed its enthusiasm for the program. NCI Fort Detrick Interagency Coordinating Committee representative Kristin Komschlies, Ph.D., said, "We are very excited to announce the winners of the NICBR Collaboration Awards. These investigators embrace what NICBR is all about—advancing biological research through collaboration and sharing of our talents, tools, and resources. We look forward to future NICBR awardees."

Summaries and progress of the 2012 awarded projects will be presented at the Spring Research Festival, taking place May 8 and 9 at Fort Detrick.

Call for Applicants for 2013 Awards

The call for applicants to the 2013 NICBR Collaboration Project Awards will be announced around the time of the Spring Research Festival. The suggested guideline is that applicants should be no more than six years out from receipt of their advanced degree or be actively working toward an advanced degree. Expected deadline for submission will be early June, and decisions on awardees will be made in July. For more information, please contact your agency's NICBR Scientific Interaction Subcommittee representative. ■

2012 Collaboration Project Award Winners

CPT Sanjay Krishnaswamy, Bacteriology Division, United States Army Research Institute of Infectious Diseases (USAMRIID), and **De Chen, Ph.D.**, Optical Microscopy and Analysis Laboratory, SAIC-Frederick, Frederick National Laboratory for Cancer Research (FNL)
Project Title: Mechanistic Characterization of Bacterial Secretion Systems with Super-resolution Fluorescence Microscopy

Feng Wei, Ph.D., NCI Center for Cancer Research, and **CPT Katie Carr**, Bacteriology Division, USAMRIID
Project Title: Evaluating the Alarmin, HMGN1, as a T cell Independent Immune Adjuvant When Combined with B. anthracis Capsule

Michael Lindquist, Ph.D., Virology Division, USAMRIID, and **Kimberly Boelte, Ph.D.**, NCI Center for Cancer Research
Project Title: The Role of Pericytes in Hantavirus-Induced Vascular Dysfunction

Awards and Events

Pathak Honored by APAO

By Nancy Parrish, Staff Writer

Vinay Pathak, Ph.D., received an award from the NIH Asian and Pacific Islander American Organization (APAO) in December 2012 for outstanding accomplishments in biomedical research.

Pathak's research focuses on understanding how retroviruses replicate, interact with their host cells, evolve, and adapt to a changing environment. His interest in retroviruses began early in his career. "I started working on retroviral mutation and replication as a postdoctoral fellow in Howard Temin's lab at the University of Wisconsin," Pathak said, "and found retroviruses to be fascinating molecular machines."

His fascination continues to this day, as he studies HIV drug resistance and host restriction factors as head of the

Viral Mutation Section in the HIV Drug Resistance Program (HIV DRP). "I think perhaps the most interesting aspect of our



Vinay Pathak, Ph.D., center, with Eric Zhou, Ph.D., left, vice president of APAO (2012), and Rashmi Gopal-Srivastava, Ph.D., APAO Award Committee chair.

current efforts is to understand how HIV-1 can overcome human antiviral APOBEC3 proteins and to identify small-molecule

inhibitors that can serve as a new class of anti-HIV drugs."

Pathak joined the National Cancer Institute in 1999, when he was recruited to the HIV DRP. "Then and now," he said, "I think it is one of the best places in the world for retrovirology research."

Each year, the APAO honors two outstanding individuals in the NIH Asian and Pacific American community: one for Scientific Achievement, and the second for Leadership Excellence. When he learned about the APAO award for Scientific Achievement, he said, "I felt honored and humbled."

Originally from India, Pathak came with his family to California when he was a teenager. He earned his undergraduate degree at the University of California, Los Angeles, and his doctorate at the University of California, Davis. ■

HIV DRP Launches Lecture Series to Honor David Derse

By Anne Arthur, Guest Writer, and Nancy Parrish, Staff Writer

The First Annual David Derse Memorial Lecture and Award was held at the National Cancer Institute campus at Frederick in December 2012 to honor the outstanding accomplishments of David Derse, Ph.D. (1949–2009), and to stimulate the exchange of innovative ideas that Derse was well known for promoting throughout his scientific career.

The lecture series is sponsored by the HIV Drug Resistance Program (HIV DRP), with support from Hye Kyung Chung-Derse, Ph.D., the National Cancer Institute, the Foundation for NIH (FNIH), and contributors to the FNIH memorial fund for David Derse.

Patrick Green, Ph.D., delivered the inaugural lecture, entitled "HTLV-1 Transforming Genes: Tax versus Hbz." A professor and associate dean for Research and Graduate Studies, College of Veterinary Medicine, director of the Center for Retrovirus Research,

and leader of the Comprehensive Cancer Center Viral Oncology Program at The Ohio State University, Green has more than 25 years of research experience in murine and human retroviral pathogenesis, with a more specific focus on human T-cell leukemia virus (HTLV). He has been appointed a member of numerous NIH study sections and scientific panels, and currently serves as editor of *AIDS Research and Human Retroviruses* and as a member of the editorial boards of *Retrovirology* and the *Journal of Virology*.

In his introductory remarks, Stephen Hughes, Ph.D., director, HIV DRP, noted that, in selecting the first lecturer, "we wanted to select not only a scientifically distinguished speaker but someone whose research interests were close to Dave's and someone who was not only a colleague but a friend of Dave's."



Left to right: Patrick Green, Ph.D., Hye Kyung Chung-Derse, Ph.D., and Stephen Hughes, Ph.D.

As head of the Retrovirus Gene Expression Section in the HIV DRP, Derse focused his research efforts on the molecular mechanisms of retrovirus infection and replication, concentrating on the human viruses HIV-1 and HTLV-1.

The Derse memorial lecture series was created to honor Derse's memory,

Hughes said, by presenting a lecture "he would have attended and enjoyed." Hughes described Derse as bringing "a generosity of spirit, a sense of proportion, unflinching good humor, and the warmth of his personality to everything he did... and in this way we hope both to perpetuate and to share some of the virtues and wisdom that Dave had in his life." ■

Anne Arthur is technical laboratory manager, HIV Drug Resistance Program.

NCI Technology Transfer Center

New Website Helps You Find What You Need

By Karen Surabian, Contributing Writer

The National Cancer Institute's Technology Transfer Center (NCI's TTC) recently launched a redesign of its website. New graphics, color scheme, and updated features provide a user-friendly environment for finding information related to technology transfer at NCI.

You'll be able to easily navigate the new TTC website for information about invention reporting, transferring materials and information, and collaborating/partnering with NCI. Begin on the home page to review interesting news and events related to technology transfer at NIH.

You can also "get connected" to TTC by linking to a form for requesting general or specific information, as well as by signing up for e-mail alerts for co-development opportunities.

Tabs Categorize Major Topics

Tabs at the top of the page will help you quickly find major topics from anywhere on the website. Here's what you'll find when you click on each of the tabs:

"Standard Forms & Agreements" brings you to frequently used agreements, including Material Transfer Agreements (MTAs), Confidential Disclosure Agreements (CDAs), and Cooperative Research and Development Agreements (CRADAs) as well as the Employee Invention Report (EIR) form.

"Co-Development & Resources" brings you to descriptions of technologies in development. Outside parties (usually companies) may review these descriptions to determine their level of interest in partnering with an NCI scientist to further develop the technology or in licensing it directly.

"Careers & Training" links you to various training opportunities from different organizations as well as to information about TTC's Fellowship Program, which comprises the marketing track and the agreement negotiation track.

National Cancer Institute
at the National Institutes of Health | www.cancer.gov

Technology Transfer Center

NIH... Turning Discovery Into Health

Standard Forms & Agreements | Co-Development & Resources | Careers & Training | Intellectual Property & Inventions | About TTC

Welcome to the Technology Transfer Center

The Technology Transfer Center (TTC) of the National Cancer Institute makes it easy for industry and academia to interact and partner with National Institutes of Health laboratories and scientists to support technology development activities.

Recent Opportunities

- > Nitric Oxide-Releasing Polymers for Wound Healing »
- > Optical Microscope Software for Breast Cancer Diagnosis »
- > Selective Treatment of Cancer Cells, HIV and Other RNA Viruses »

Some of our successful collaborations »

News & Events

- > CRADAs: They're Not Just for NCI Anymore
- > The National Cancer Institute's Small Business Innovation Research (NCI SBIR) Development Center released thirteen funding opportunities for FY2013

View All »

Get Connected with TTC
Complete the
Information Request
form and we'll respond as soon as possible and add your information to our Marketing database for future opportunities.

Get Co-Development announcements automatically!
Your information will not be used for any other purposes.

Email Address (required)
Name

Listserv Subscription

Join our LinkedIn Group
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The NCI TTC's redesigned website provides an inviting, user-friendly environment.

"Intellectual Property & Inventions" brings you to useful resources regarding patenting and inventions as well as links to information about reporting an invention and keeping laboratory notebooks for patenting purposes.

"About TTC" brings you to a description of the role of TTC and how it supports the technology development activities of NCI and other institutes within NIH.

How You Can Add to the TTC Website

TTC invites you to explore its new website and provide feedback on its features. Here's how:

- Sign up to receive more information about co-development opportunities.
- Pass along this information to colleagues, both in or outside your laboratory.
- Check out the information on intellectual property and inventions, including the "Guide for Keeping Laboratory Records."
- Check out some of the training opportunities.
- Check out the news and events on the homepage.
- Contact TTC at 301-846-5465 with your ideas and comments, questions, or interesting news items to be considered for posting on the site. ■

NCI Technology Transfer Center <http://ttc.nci.nih.gov/index.php>

Useful links:

"How to Report an Invention" and "Guide for Keeping Laboratory Records":
<http://ttc.nci.nih.gov/ip/report.php>

Co-Development Opportunities: <http://ttc.nci.nih.gov/opportunities/available.php>

Information Request Form: <http://techtransfer.cancer.gov/>

Advanced Technology Research Facility

Cell Phone Service Improved at ATRF

By Ken Michaels, Staff Writer

No longer will you have to walk all over the Advanced Technology Research Facility (ATRF) to find the best signal for your cell phone.

According to Brian Staiger, Contracting Officer's Technical Representative, antennas were recently installed on the roof to send cellular carrier signals into the building. From there, repeaters in turn repeat the signals throughout the building.

This improvement has now enabled reliable cellular communication in all corners of the facility.

New Exterior "Monument"

Also recently completed is the installation of a new "monument" sign at the visitors' entrance, which identifies the facility. The sign measures approximately ten feet wide by five feet high and is constructed of concrete with aluminum letters.

Adjustable photo sensors in the illumination system provide lighting of the sign after dark. ■



A permanent sign, or monument, now welcomes visitors to the Advanced Technology Research Facility. The monument was installed in March outside the visitors' entrance.

ATP Culture Club Hosts Ice Cream Social

By Ken Michaels, Staff Writer

In the interest of making the Advanced Technology Program (ATP) a more cohesive community, Chief Technology Officer Atsuo Kuki, Ph.D., has appointed a team to foster innovation by exploring ways to improve interactions between people in different laboratories at the Advanced Technology Research Facility (ATRF).

Andy Stephen, Ph.D., acting director of the Protein Chemistry Laboratory, and Jim Hartley, Ph.D., Protein Expression Laboratory (PEL), organized this effort, which began last

year. The team includes Josip Blonder, Ph.D., Laboratory of Proteomics and Analytical Technologies; Tammy Eyler, Basic Science Program; Leslie Garvey, PEL; Matt Hansen, Nanotechnology Characterization Laboratory; Kristen Pike, Laboratory of Molecular



Attendees line up to choose from assorted goodies at the December 18 ice cream social hosted by the ATP Culture Club.

Technology (LMT); Ronnie Roberts (PEL), and Jennifer Troyer, Ph.D., LMT. The team playfully named themselves the

ATP Culture Club, and the label seems to have stuck.

To date, the Culture Club has engineered several initiatives, including laboratory tours in autumn 2012, and an ice cream social in December. The ice cream social was an add-on activity that followed presentations by Stephen on NCI's three "Big Ideas," and by Thorkel Andreasson on the Ras pathway.

The Culture Club also provides coffee and cookies to promote attendance at the videocast Frederick Faculty Lecture Series presentations.

Ideas Are Invited

The club is currently considering ways to improve content on the large display screens in the ATRF's atrium, and is evaluating a broad range of possibilities for bringing the ATP community, and perhaps ultimately the entire ATRF, closer together. Suggestions for events and activities that will advance the socialization effort are welcome.

Please contact any member of the Culture Club with ideas and suggestions. ■

Platinum Publications

The following 35 articles have been selected from 12 of the most prestigious science journals published during the past six months.

Blood

Bjorkstrom NK, Beziat V, Cichocki F, Liu LL, Levine J, Larsson S, et al. CD8 T cells express randomly selected KIRs with distinct specificities compared with NK cells. *Blood* 120(17):3455–3465, 2012. <http://bloodjournal.hematologylibrary.org/content/120/17/3455.long>

Brenchley JM, Vinton C, Tabb B, Hao XP, Connick E, Paiardini M, et al. Differential infection patterns of CD4(+) T cells and lymphoid tissue viral burden distinguish progressive and nonprogressive lentiviral infections. *Blood* 120(20):4172–4181, 2012. <http://bloodjournal.hematologylibrary.org/content/120/20/4172.long>

Micci L, Cervasi B, Ende ZS, Iriete RI, Reyes-Aviles E, Vinton C, et al. Paucity of IL-21-producing CD4(+) T cells is associated with Th17 cell depletion in SIV infection of rhesus macaques. *Blood* 120(19):3925–3935, 2012. <http://bloodjournal.hematologylibrary.org/content/120/19/3925.long>

Cancer Research

Hsu S, Kim M, Hernandez L, Grajales V, Noonan A, Anver M, et al. IKK-epsilon coordinates invasion and metastasis of ovarian cancer. *Cancer Res* 72(21):5494–5504, 2012. <http://cancerres.aacrjournals.org/content/72/21/5494.long>

Liu Y, Chen K, Wang C, Gong W, Yoshimura T, Liu M, et al. Cell surface receptor FPR2 promotes antitumor host defense by limiting M2 polarization of macrophages. *Cancer Res* 73(2):550–560, 2013. <http://cancerres.aacrjournals.org/content/73/2/550.long>

Mitchell JB, Anver MR, Sowers AL, Rosenberg PS, Figueroa M, Thetford A et al. The antioxidant Tempol reduces carcinogenesis and enhances survival in mice when administered after nonlethal total body radiation. *Cancer Res* 72(18):4846–4855, 2012. <http://cancerres.aacrjournals.org/content/72/18/4846.long>

Portal-Nunez S, Shankavaram UT, Rao M, Datrice N, Atay S, Aparicio M, et al. Aryl hydrocarbon receptor-induced adrenomedullin mediates cigarette smoke carcinogenicity in humans and mice. *Cancer Res* 72(22):5790–5800, 2012. <http://cancerres.aacrjournals.org/content/72/22/5790.long>

Ren SX, Cheng ASL, To KF, Tong JHM, Li MS, Shen J, et al. Host Immune defense peptide LL-37 activates caspase-independent apoptosis and suppresses colon cancer. *Cancer Res* 72(24):6512–6523, 2012. <http://cancerres.aacrjournals.org/content/72/24/6512.long>

Zhu Z, Singh V, Watkins SK, Bronte V, Shoe JL, Feigenbaum L, et al. High-avidity T cells are preferentially tolerized in the tumor microenvironment. *Cancer Res* 73(2):595–604, 2013. <http://cancerres.aacrjournals.org/content/73/2/595.long>

Cell

Bintu L, Ishibashi T, Dangkulwanich M, Wu YY, Lubkowska L, Kashlev M, et al. Nucleosomal elements that control the topography of the barrier to transcription. *Cell* 151(4):738–749, 2012. <http://www.sciencedirect.com/science/article/pii/S0092867412012238>

Nie ZQ, Hu GQ, Wei G, Cui KR, Yamane A, Resch W, et al. c-Myc is a universal amplifier of expressed genes in lymphocytes and embryonic stem cells. *Cell* 151(1):68–79, 2012. <http://www.sciencedirect.com/science/article/pii/S0092867412011014>

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Corrections

In the December 2012 issue, the article “Frederick National Laboratory: Marking the First 40 Years” incorrectly referred to Ligia Pinto, Ph.D., and her staff in the HPV Immunology Laboratory, as the developers of the HPV vaccine. The article should have stated that Douglas Lowy, M.D., and John Schiller, Ph.D., of the Laboratory of Cellular Oncology, Center for Cancer Research, were the inventors on government-owned patents for the HPV vaccine. Pinto’s laboratory worked in support of this research. The Halloween Photo Contest article on page 21 incorrectly spelled Stacy Beachley’s first name. The *Poster* staff regrets these errors. ■

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Journal of Biological Chemistry

Bayer H, Essig K, Stanzel S, Frank M, Gildersleeve JC, Berger MR, et al. Evaluation of riproximin binding properties reveals a novel mechanism for cellular targeting. *J Biol Chem* 287(43):35873–35886, 2012. <http://www.jbc.org/content/287/43/35873.long>

Blumenthal R, Durell S, Viard M. HIV entry and envelope glycoprotein-mediated fusion. *J Biol Chem* 287(49):40841–40849, 2012. <http://www.jbc.org/content/287/49/40841.long>

Jalah R, Rosati M, Ganneru B, Pilkington GR, Valentin A, Kulkarni V, et al. The p40 subunit of IL-12 promotes stabilization and export of the p35 subunit: implications for improved IL-12 cytokine production. *J Biol Chem* 288(9):6763–6776, 2013. <http://www.jbc.org/content/288/9/6763>

Ligons DL, Tuncer C, Linowes BA, Akcay IM, Kurtulus S, Deniz E, et al. CD8 lineage-specific regulation of interleukin-7 receptor expression by the transcriptional repressor Gfi1. *J Biol Chem* 287(41):34386–4399, 2012. <http://www.jbc.org/content/287/41/34386.long>

Xiao CY, Wang RH, Lahusen TJ, Park O, Bertola A, Maruyama T, et al. Progression of chronic liver inflammation and fibrosis driven by activation of c-JUN signaling in Sirt6 mutant mice. *J Biol Chem* 287(50):41903–41913, 2012. <http://www.jbc.org/content/287/50/41903.full>

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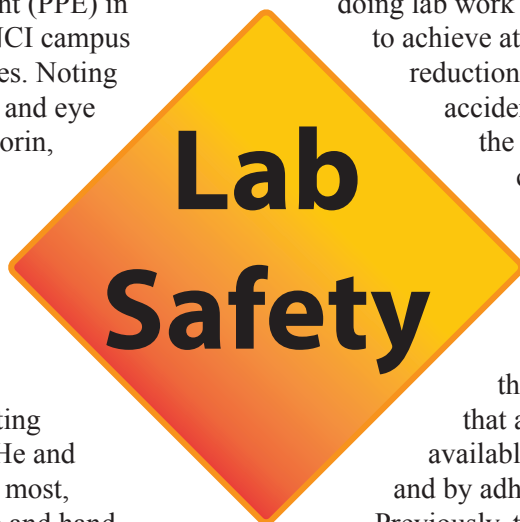
New Policy Focuses on Lab Coats, Safety Glasses, and Footwear

By Paul Stokely, Guest Writer

When working in any laboratory or animal facility, you must wear a lab coat, protective eyewear, appropriate gloves, and closed-toe shoes, unless you are performing purely administrative tasks.

That is the new policy for personal protective equipment (PPE) in laboratories at all NCI campus at Frederick facilities. Noting an increase in hand and eye injuries, Randall Morin, Dr. PH, as director of Environment, Health, and Safety (EHS), was tasked with reviewing the root causes of such accidents and updating the current policy. He and his team found that most, if not all, of the eye and hand injuries were preventable with the appropriate PPE.

David Heimbrook, Ph.D., chief executive officer (CEO) of SAIC-Frederick, has made a priority of making the safety policy more easily understood by laboratory staff members and their supervisors. "A safe workplace is something that we owe ourselves and our coworkers," Heimbrook said.



"After discussions with both contractor and government leadership, I felt that the former personal protective equipment policy was a little ambiguous. By requiring all personnel to wear appropriate PPE any time when they are doing lab work of any sort, we plan to achieve at least a 50 percent reduction in the number of accidents or injuries in which the absence of PPE is cited as a specific cause or contributory factor. I fully expect all personnel to assist in meeting this target by ensuring that appropriate PPE is available to our employees, and by adhering to this policy."

Previously, the responsibility of selecting appropriate laboratory PPE was placed on supervisors, with assistance from EHS as requested. This led to an array of policies, many of which did not sufficiently protect workers from eye splashes or finger injuries—the two most commonly reported injuries. The new policy sets a threshold level of PPE for all laboratory and animal facility staff. Additional PPE such as respirators,

face shields, or steel-toed boots may be required for specific activities.

EHS is training all supervisors to understand and enforce the new PPE policy. This training has also been added to New Employee Orientation for all newly hired laboratory, animal care, and GMP production supervisors.

*"A safe workplace is something that we owe ourselves and our coworkers."
— SAIC-Frederick CEO
Dave Heimbrook*

The new policy has the support of both contractor and government management and will be enforced through management channels with assistance from EHS, according to Morin.

Please contact EHS with questions or concerns at 301-846-1451.

For more information about the new policy, go to the Chemical Hygiene Plan, at http://home.ncifcrf.gov/ehs/uploadedFiles/C-1_Chemical_Hygiene_Plan.pdf, and Personal Protective Equipment program, at [http://home.ncifcrf.gov/ehs/uploadedFiles/C-11%20Personal%20Protective%20Equip\(2\).pdf](http://home.ncifcrf.gov/ehs/uploadedFiles/C-11%20Personal%20Protective%20Equip(2).pdf) ■

Paul Stokely is an environmental safety officer, Environment, Health, and Safety Program.

Tragedy at UCLA Emphasizes Importance of PPE

One incident in particular has focused attention on the use of PPE in laboratories.* In 2008, a 23-year-old University of California, Los Angeles (UCLA), research associate, manipulating a highly reactive pyrophoric reagent, was killed when her clothes caught fire and she suffered extensive burns.

At the recommendation of the California Division of Occupational Safety and Health, the Los Angeles County District Attorney charged the supervisor in late 2011 and he was arraigned in September 2012. Preliminary hearings on the case continued through January 2012. Charges against the laboratory supervisor included failure to provide safety training for employees, failure to correct unsafe conditions quickly, and failure to require employees to wear PPE.

This was the first time a supervising scientist was singled out for prosecution as a result of a laboratory death. Although the laboratories at NCI at Frederick do not use this particular reagent often, a similar incident occurred here in August 2012, but the outcome was much less serious and resulted in only minor injuries, according to Morin.

*<http://www.darkdaily.com/criminal-case-against-chemistry-professor-centers-on-lab-accident-and-death-of-chemistry-research-assistant-910#axzz2H2VdSetm>

Stull Repeats as Chili Champ

By Ken Michaels, Staff Writer



Jim Stull

Jim Stull, winner of the ninth annual Protective Services Chili Cookoff in January of last year, proved that he's no one-trick pony; he brought a brand new recipe to the 2013 event and won again. And

he did it decisively. His Black Bean 'n' Pumpkin Chili garnered 107 points; the second place winner netted less than half that with 52.

"For me, a good chili is just not hot and spicy. It has to have a distinctive flavor that makes you want to come back for more."

– Jim Stull

The chili recipe he entered is indeed his own. It arose from a telephone conversation with his 89-year-old grandmother in Portland, Maine, who suggested he try a pumpkin chili. His mother-in-law (Eileen Walton who works in Purchasing) followed up by sharing a recipe for a pumpkin chili. Stull then

gathered three more recipes from the Internet, and combined the four, making adjustments in the ingredients. He made a test batch the week before the cookoff and tweaked the recipe some more until he got what he wanted: a winner!



Participants took their role as chili judges seriously.

Record Turnout

The 10th annual event was attended by 110, which is a record turnout. Debora Reckley, Purchasing, won second place

and Ross Smith, IT security, Data Management Services, finished third, in a field of 26 entries. Stull is a supervisor in the Laboratory Animal Sciences Program.

Jim Stull's Black Bean 'n' Pumpkin Chili Recipe

Ingredients:

- 1 medium onion, chopped
- 1 medium sweet yellow pepper, chopped
- 2 tablespoons olive oil
- 3 garlic cloves, minced
- 3 cups chicken broth
- 2 cans (15 ounces each) black beans, rinsed and drained
- 2½ cups cubed cooked chicken
- 1 can (15 ounces) solid-pack pumpkin
- 1 can (14½ ounces) diced fire roasted tomatoes, undrained
- 1 can (8 ounces) garlic and onion tomato sauce
- 2 teaspoons dried parsley flakes
- 2–3 teaspoons chili powder
- 1½ teaspoons dried oregano
- 1½ teaspoons ground cumin
- ½ teaspoon cinnamon
- ¼ cup white sugar
- ½ teaspoon salt

Directions:

In a large skillet, sauté the onion and yellow pepper in oil until tender. Add garlic; cook one minute longer. Transfer to a five-quart slow cooker; stir in the remaining ingredients. Cover and cook on low for five hours. ■

Eyewash Stations Need Weekly Testing

By Bruce Tobias, Guest Writer

According to a new policy, supervisors must ensure weekly testing of emergency eyewash units in areas under their control.

The purpose of this testing is to flush the line and verify proper operation. Testing must be documented on an inspection tag attached to or near the eyewash unit. Call Environment, Health, and Safety at 301-846-1451 if you need a new tag.

This new weekly flushing requirement is in the Chemical Hygiene Plan, Chapter C-1 of the *FNL Safety and Environmental Compliance Manual* (<http://home.ncifcrf.gov>).



Regardless of the style of the eyewash station, it must be tested weekly for functionality.

[gov/ehs/uploadedFiles/C-1_Chemical_Hygiene_Plan.pdf](http://home.ncifcrf.gov/ehs/uploadedFiles/C-1_Chemical_Hygiene_Plan.pdf).

If any eyewashes are not working properly (uneven flow or too little water), contact the Facilities Maintenance and Engineering Helpdesk at 301-846-1068

or fmctrbltdsk@nih.gov. Your program will not be charged for repair costs.

"The eyewash in your laboratory or animal facility needs to work in an emergency. If you are not flushing your eyewashes weekly, please start now." –Bruce Tobias

You do not need to test eyewash units in common-use areas, such as hallways, attics, or basements. Protective Services tests these units weekly. ■

Bruce Tobias is manager, Occupational Safety and Environmental Health, Environment, Health, and Safety Program.



Congratulations to the December 2012 Poster Puzzler winner! Steven Seaman, biological laboratory technician, Tumor Angiogenesis Section, Mouse Cancer Genetics Program, Center for Cancer Research, is pictured (left) with Melissa Porter, executive editor of the *Poster*. ■

The Poster Puzzler:

It's Not a Superhero Logo

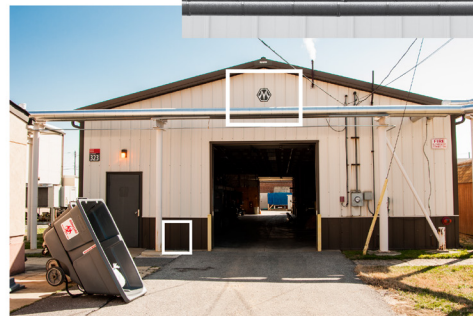
By Ashley DeVine, Staff Writer, and Len Wrona, Contributing Writer

The December Puzzler image is an “M” logo on Building 323. No, it’s not a superhero logo; it’s the symbol for Morton Buildings, Inc., a supplier of metal buildings. Built in 1944, Building 323 was originally used as a greenhouse. The greenhouse was demolished in 1994 and replaced with the current building. Facilities Maintenance and Engineering uses the building to store large, motorized equipment, such as forklifts, front-end loaders, and boom lifts. ■



Puzzler

***It's Not a
Superhero
Logo***



What Is It? Where Is It?

Your challenge, should you decide to accept it, is to correctly identify the item and its location from the picture to the right. Clue: It's somewhere at the NCI campus at Frederick or Fort Detrick. Win a framed photograph of the Poster Puzzler by e-mailing your guess, along with your name, e-mail address, and daytime phone number, to poster@mail.nih.gov. Alternatively, you can send us your guess, along with your name and daytime phone number, on one of the *Poster* forms found on the front of the *Poster* stands in the lobbies of Buildings 426 and 549. All entries must be received by **Friday, May 31, 2013**, and the winner will be drawn from all correct answers received by that date.

Good luck and good hunting! ■



Have Poster, Will Travel

The *Poster* Meets Margo

By Nancy Parrish, Staff Writer

While attending the Advances in Genetic Biology and Technology (AGBT) meeting in February in Marco Island, Florida, Claudia Stewart, Associate Scientist, Laboratory of Molecular Technology, paused in front of “Margo the Mermaid” to have her picture snapped with the *Poster* in hand.

This meeting is “the premier next-generation sequencing meeting in the U.S.,” Stewart said, where new platforms are launched. This year the focus was less on new instrumentation or major changes to existing technology, and more on resequencing, she said. In addition, there were a “large number of clinical and cancer-related talks and posters.”

The sculpture at the Marco Island Marriott is by John Gowdy, a well-known sand sculpture artist who makes a new sculpture for the hotel every six months, Stewart said. ■



Claudia Stewart pauses in front of a statue of Margo the Mermaid while attending a scientific meeting in Marco Island, Florida.

Employee Diversity Team

Winter Cornucopia

Display Cases, Movies, and Raffles—Oh My!

By Andrea Frydl, Contributing Writer

In December, Alicia Gussio (SAIC-Frederick) and Robert Koogler (NCI) were the lucky winners of free movie tickets to Regal theaters. They each correctly answered questions about the Employee Diversity Team's (EDT's) November display case featuring the fall harvest.

If you love movies and would like to enter future contests, watch for EDT's "List NCI-Events" e-mail announcements. Then, answer the short quiz in the e-mail about the EDT display case (located in the front lobby of Building 549) and submit your answers in the box next to the display.

Each month, the EDT features a film that embraces diversity and shows it for two days in the Scientific Library during lunch hours. The film is then filed at the library for reserving on demand. The EDT will announce the movie showings through the "List NCI-Events" listserv.



Left to right: Laura Geil, previous chair of the EDT; Andrea Frydl, new chair of the EDT; and Myla Spencer, new member from the ATRF.

Join the Team

The EDT is always looking for bright, dedicated new members. Being a member of the team will give you an opportunity to network with fellow employees and put your skills to use. If you're interested in joining or would like more information, contact Andrea Frydl at 301-846-5382 or andrea.frydl@nih.gov. The EDT meets in Building 549 on the first Thursday of every month from 9 to 10 a.m.

In January, the EDT welcomed its new Advanced Technology Research Facility member, Myla Spencer.

Honoring Women at the National Cancer Institute at Frederick

March 1 marked the beginning of women's history month. In honor of the women who work here at NCI, SAIC-Frederick, and contractor locations in Frederick, the EDT will feature the "Women of NCI at Frederick" in the June issue of the *Poster*. Honorees were announced in early March based on nominations submitted during January and February. If you have questions regarding the "Women of NCI at Frederick," please contact Andrea Frydl. ■

Thought for the Quarter

"A woman is like a tea bag—you can't tell how strong she is until you put her in hot water."

Eleanor Roosevelt,
Former First Lady

Employee Diversity Team Welcomes New Chair

The Employee Diversity Team (EDT) welcomes Andrea Frydl as its new chair. Frydl is a public affairs specialist in the Office of Scientific Operations at the NCI campus at Frederick. She has a diverse background of work experience throughout the Department of Health and Human Services, including the U.S. Food and Drug Administration and the National Institute of Neurological Disorders and Stroke. "I am happy to take on the role of new chair," Frydl said. Laura Geil, past chair of the EDT and scientific program analyst, will continue to be involved with the team.

Websites of Note

By Ashley DeVine, Staff Writer

Throughout the newsletter, you'll find websites that provide you with more information than we can put in the articles. In addition, many days, weeks, and months are devoted to the recognition of particular health care issues. Here are a few dates that seem most pertinent to NCI at Frederick.

April

National Donate Life Month: <http://www.organdonor.gov/index.html>

May

American Stroke Month: <http://www.cdc.gov/stroke/>

HIV Vaccine Awareness Day, May 18: <http://www.niaid.nih.gov/news/events/hvad/Pages/default.aspx>

Green Team News and Upcoming Events

By Melissa Porter, Staff Writer

Spring Plant Swap 2013

This past October, you may have seen several members of the Green Team standing in front of Building 549 giving out free plants or offering to take extra plants off your hands—this was the first Green Team Fall Plant Swap.

“The plant swap was a very positive experience for everyone who participated, even those we recruited as they walked by. I thoroughly enjoyed organizing it. I think the idea of nurturing brings out the best in everyone,” said team member Dolores Winterstein, a guest researcher in the Laboratory of Molecular Immunoregulation.

So when you are cleaning out your garden this spring, consider bringing your extra plants to the 2013 Green Team Spring Plant Swap, which will be held May 6–9 during the Spring Research Festival.

Website and Newsletter

If you would like to learn more about what the Green Team is up to, check out the team’s website and newsletter.

The Green Team newsletter, compiled by Linda Brandenburg, a cost analyst in Facilities Maintenance and Engineering, features seasonal tips on being “greener” at home and work. It also includes

information on some of the Green Team’s ongoing initiatives, such as eyeglass donations.

The team recently started a monthly trivia contest, so watch your e-mail for the monthly question. Everyone who submits the correct answer will be entered into a drawing for a reusable water bottle, lunch bag, or shopping bag.

save energy and about incentives and rebate programs available in Frederick County.

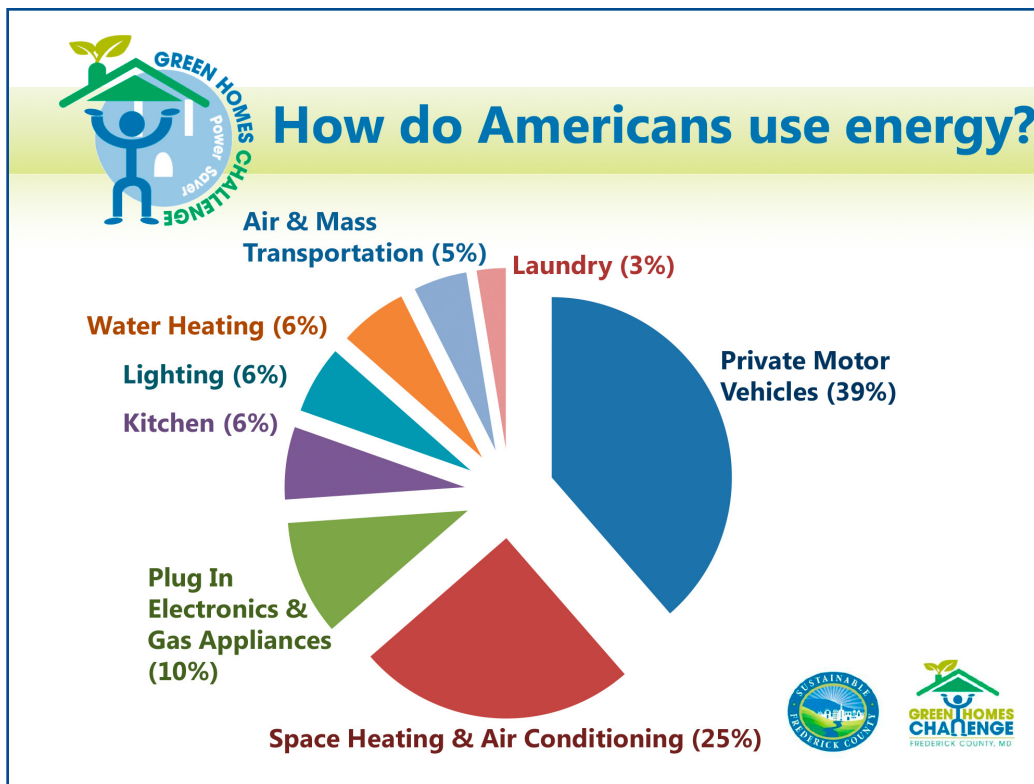
“Mrs. Harder gave a thorough and interesting presentation regarding energy usage and home energy savings. She also presented funding opportunities for home owners. Some of these opportunities are unique to Frederick County and not widely known,” Bindewald said.

A highlight of the seminar, Bindewald said, was when the audience was presented with an unlabeled pie chart corresponding to how Americans use energy. The audience was asked to label the pieces of the pie with items such as heating and air-conditioning, appliances, and lighting. “It was not as easy as it sounds,” Bindewald said. It gave the audience more awareness about the different components of home electricity use, he said.

According to Harder, a group of girl scouts was the only group that completed the activity without mistakes.

The next seminar has been scheduled for April 9 at 12:30 p.m. in Building 549 conference room B. This seminar will be about the Frederick County Green Leader Program.

The Green Team continues to look for new events and initiatives to foster a more environmentally friendly workplace. If you are interested in joining the team or have questions or suggestions, e-mail the Green Team at FNLGreenTeam@mail.nih.gov. ■



Sabrina Harder from the Frederick County Office of Sustainability and Environmental Resources used this pie chart during her presentation at the NCI campus at Frederick last fall to show how Americans use energy. Image courtesy of Sabrina Harder.

The Green Team’s website, <http://ncifrederick.cancer.gov/Staff/GreenTeam/Default.aspx>, provides “green” tips and news from the team. The content is updated frequently by Winterstein, so check back often.

Seminars

Last fall, team member Eckart Bindewald, Ph.D., senior computational scientist in the Image Processing Section, Nanobiology Program, organized a seminar presented by Sabrina Harder from the Frederick County Office of Sustainability and Environmental Resources. Harder spoke about ways to

Student Interns

CTC-Trained Interns Ready for Cancer Research

By Sarah Hooper, Contributing Writer;
Walter Hubert, Guest Writer; and
Nancy Parrish, Staff Writer

Editor's note: As we went to press, we learned that the CTC Biomedical Sciences Program was recently named Career and Technology Education program of the year by the Maryland state Department of Education.

Why should NCI and the Frederick National Laboratory for Cancer Research (FNLCR) take an interest in a local high school program? Because training a new



Danielle Needle, left, confers with Shawn Hess in the laboratory. Hess is a Werner H. Kirsten student intern enrolled in the CTC Biomedical Sciences Program.

generation of cancer researchers is a top priority of this facility.

Progress in cancer research depends on fresh ideas, dedication, and enthusiasm. NCI's internship programs seek motivated students with just these qualities to train in its laboratories at the Frederick campus. Likewise, FNLCR strives to be a leader in producing both new scientists and better treatment options for cancer and AIDS patients.

Werner H. Kirsten student interns from the Frederick County Public School

System's Career and Technology Center (FCPS's CTC) Biomedical Sciences Program fulfill both of these needs.

Specialized Program to Train Emerging Scientists

Since opening its doors 30 years ago, the CTC has evolved into an impressive center for academics, pre-professional learning, and vocational training. Five years ago, the Biomedical Sciences Program was added to offer students practical experience in a laboratory setting, beyond the typical lecture presentations and limited laboratory time in high school.

With their hands-on training at the tech center, student interns from the CTC Biomedical Sciences Program are able to hit the ground running when they step into a lab on the NCI campus at Frederick; they can work independently, are highly motivated, and bring new perspectives to the projects at hand. Such talent is much sought after in most scientific laboratories, where resources and manpower for training are often in short supply.

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"I love it!"

By his own admission, Shawn Hess, a Tuscarora High School senior, had "no clue" what he wanted to do before enrolling in the CTC Biomedical Sciences Program. The popular television program "NCIS" sparked an interest in forensics, but he quickly realized that if he wanted to do what the character Abby Sciuto (a forensic specialist) does, he needed to "get better at science." Now in his third year at the CTC, he is enthusiastic about scientific research as well as his chosen career path.

He applied to the CTC program specifically because of the depth of the science. Although finding it a "much harder class than I was ever used to," he appreciates the opportunity to do hands-on lab work instead of advanced placement classes, "where it's just more book work than ... lab work."

The CTC program focuses on the human body and medicine, he said, with entire sections devoted to single organs and the impact of disease and drugs on these organs. His experience at the CTC included working with protein gels and transforming bacteria. So when he stepped into the Protein Engineering Section of the Macromolecular Crystallography Laboratory of NCI's Center for Cancer Research, "I knew what I was talking about," he said. "I knew what I had to do, and when I got into the swing of the lab, it started becoming easier."

His mentor, Danielle Needle, biologist, agrees. "CTC students really get a jump start on laboratory work," she said. "We can go straight to the scientific work with them right away."

When asked to comment on the CTC program in general, Hess's response was immediate and positive. "I love it!" he said. "I love the teacher. I love the help I've been able to get."

Drive an Electric Vehicle? Now You Can Charge It on Campus

By Melissa Porter and Ashley DeVine, Staff Writers

As of October 2012, there were 13,967 public electric vehicle charging stations available in the U.S., 406 of which are located in Maryland, according to the Department of Energy. In January, the National Cancer Institute campus at Frederick added two more to Maryland's total.

Two 240-volt charging stations were installed by Facilities Maintenance and Engineering staff in the northwest corner of the Building 350 parking lot, at the request of NCI and Craig Reynolds, Ph.D., director, Office of Scientific Operations. The cost is 50 cents per hour of charging, with the use of a credit card. The parking spaces are on a first-come, first-served basis.

"I currently fill my tank (eight gallons of gasoline) every 1,200 miles of driving, but with the charging stations on campus, I expect this to be as infrequent as eight gallons every 4,500 miles," said Richard Lempicki, Ph.D., head of the Laboratory of Immunopathogenesis and Bioinformatics, who drives a Chevy Volt. He expects to save about \$150 per year by using the charging stations on campus.

Peter Boving, a fire prevention inspector in the Environment, Health, and Safety Program, drives a Toyota Plug-In Prius. With the charging stations on campus and charging at home every night, he believes his fuel efficiency will improve from 70 to 80 mpg in the summer and from 60 to 70 mpg in the winter.

Even though his car only travels 12 miles on the electricity from each charge, Boving said, "Now I can go 10 or 12 days between gasoline fill ups." He used to fill the tank of his old car every four days.

"The installation of the charging stations shows that we are committed to being good environmental stewards and are recognizing the trend in more environmentally friendly vehicles," Reynolds said. ■



The electric vehicle charging stations are located in the northwest corner of the Building 350 parking lot. From left, Commander Rene Hernandez, Naval Medical Research and Development Command, and Richard Lempicki, Ph.D., Laboratory of Immunopathogenesis and Bioinformatics.

continued from page 16

CTC Staff Are Dedicated to Success

The success of the students is, in no small part, due to the passion and dedication of Kathy Koops, the biomedical sciences instructor at the CTC. She is especially grateful for the internship opportunities offered through FNLCR. "The professional and personal growth experienced by the biomed students who have participated in internships with NCI and USAMRIID is phenomenal," she said.

Implementing and growing the biomedical program to its full, two-year scope also took the acumen of Greg Solberg, CTC principal. CTC's

advantage, he said, "is that we have more contact hours than most biomed programs, and, as a result, our students have an opportunity to experience more depth in the activities than most of their counterparts across the country."

According to Solberg, CTC students "have done extremely well on their end-of-course assessments, outperforming every biomed program in Maryland and ranking among the highest in the country."

Representatives from FNLCR and NCI (including the authors of this article), as well as from local biomedical/health care businesses, serve on the advisory committee for the CTC Biomedical

Sciences Program "to provide feedback to CTC about the program's relevance and effectiveness.

To learn more about CTC's Biomedical Sciences Program, visit <http://education.fcps.org/ctc/Biomedical>, or contact Walter Hubert, Ph.D., hubertwg@mail.nih.gov, or Sarah Hooper, hoopersl@mail.nih.gov.

To find out how you can become a mentor to a Werner H. Kirsten student intern, visit https://ncifrederick.cancer.gov/careers/student_programs/internships/SIP/, or contact Julie Hartman, hartmanjb@mail.nih.gov. ■

Walter Hubert, Ph.D., is an assistant project officer, Office of Scientific Operations.

R&W Club Frederick Readies for Spring and Beyond

By Carolynne Keenan, Guest Writer

What do discounted Frederick Keys tickets, a wine tour of Frederick area vineyards, a Segway tour of Washington, DC, a summertime National Parks tour, and a special children's Easter party have in common? All are activities that the Recreation & Welfare (R&W) Club Frederick is currently developing for spring 2013.

At the first members meeting in January, Roxanne Angell, R&W Club Frederick chair, unveiled plans under development to make 2013 a successful year.

In addition to scoring discounts at area businesses and being able to cash in on discounted tickets to events at The Weinberg Center and the Frederick Keys baseball games, R&W Club Frederick members can participate in all the fun events throughout the year.

Membership is \$9 for the calendar year. Members can take advantage of the

special R&W Club Frederick activities and anything offered by the parent organization, the Bethesda-based R&W.

What's Ahead in 2013

Successful fundraisers such as Fudgie Wudgie, Pizza Hut, and Glory Days, Jewelry Is Fun, and Books Are Fun, in which R&W Club Frederick received a portion of the proceeds, are likely to be repeated in 2013.

Any government employee, retiree, or contractor can join R&W Club Frederick. The group is open to all Fort Detrick employees as well, except active military members. Membership runs from January to December, so join early to take advantage of the discounts, events, and activities available to members.

For more information, visit the club's website at <http://ncifrederick.cancer.gov/>



Roxanne Angel discusses R&W Club Frederick plans for 2013 at the kickoff meeting.

<Staff/RecreationWelfare/Default.aspx> or e-mail RWClubFrederick@nih.gov. ■

Carolynne Keenan is a public affairs specialist, NCI Office of Scientific Operations.

Weight Watchers Produces Big Losers

By Nancy Parrish, Staff Writer

Eighteen people who enrolled in Weight Watchers have lost more than 247 pounds since January, when the 12-week program was introduced at the NCI campus at Frederick and the Frederick National Laboratory for Cancer Research.

Sponsored by the Frederick Recreation & Welfare Club (R&W), the Weight Watchers program was voted #1 in Best Weight Loss Diet, Best Commercial Diet Plan, and Easiest Diet to Follow categories in the *U.S. News & World Report* Best Diets of 2013 report, according to the Weight Watchers website (<http://www.weightwatchers.com>).

Kirsten Edler, RN, who leads the group, explained that Weight Watchers "is a lifestyle, not a diet."



Kirsten Edler, Weight Watchers leader, introduced the plan to employees at the kick-off meeting in January. Edler stressed that the program promotes activity and a healthy, balanced food plan, as well as being aware of the routines and spaces that affect how and what you eat.

Because no food or group of foods is prohibited, she said, members may eat the foods they like in a sensible portion size.

"It is important that employees be given the opportunity to improve and monitor their personal health status," said Howard Young, Ph.D., Laboratory of Experimental Immunology, Center for Cancer Research, one of the R&W organizers. "I think that we are very fortunate in Frederick to have a great OHS [Occupational Health Services department] that strives to improve employees' health, and the addition of Weight Watchers is meant to complement their activities."

The full cost of the program is paid for by the participants, Young noted. "If there is sufficient demand and an appropriate agreement can be worked out with Weight Watchers," Young said, "I foresee that this could be an ongoing program offered twice a year." ■

Fitness Challenge Kicks Off Another Year

By Ashley DeVine, Staff Writer

Fourteen years ago, Will Sheffield was overweight, out of shape, had high cholesterol, and had been smoking for 20 years. His doctor warned him that he was at a serious risk for developing diabetes and having a heart attack or stroke.

“By March, I will be smoke-free for 14 years, and by changing my lifestyle, I have become healthier and more physically fit; anyone can do the same thing if they want too,” Sheffield said at the Fitness Challenge Kickoff on January 15.

Sheffield is no longer a borderline type 2 diabetic, his cholesterol and triglycerides are normal, and he has lost more than 41 pounds.



An audience member joins Will Sheffield (right) onstage to try out hula hooping.

Participation Recap

SAIC-Frederick Chief Executive Officer (CEO) Dave Heimbrook, Ph.D., started the kickoff by providing an update on Fitness Challenge participation for 2012 and since 2006, when the challenge was initiated by former CEO Larry Arthur, Ph.D.

“Just last year, we added about 125 new people [to the program],” Heimbrook said. “That brings the total number of people who have taken the challenge to 956.” An objective for 2013 might be to get that number to 1,000, Heimbrook said.



The winning team of the 2012 Walking to Wellness program: from left, Peter Frank, Shelley Perkins, Cammi Bittner, Jane Jones, and Ralph Hopkins.

Fitness Challenge 2012 Winners

Walking

1. Wayne Helm – 3,823 miles
2. Steven Stull – 2,118 miles
3. Kimberly Peifley – 800 miles

Running

1. Stephan Dobson – 1,965 miles
2. Beth Buckheit – 1,917 miles
3. Andrew Watson – 1,020 miles

Biking

1. Tom Gannon-Miller – 13,792 miles
2. Mark Whitmore – 7,388 miles
3. Stephanie Pluckhorn – 974 miles

Other Activities

1. Will Sheffield – 557 hours
2. Yunden Badralmaa – 490 hours
3. Courtney Silverthorn – 380 hours

Weight Loss

1. Halee Helmer
2. Beth Baseler
3. Barbara Kending

New Enrollees

- Walking: Richard Frederickson – 273 miles
 Running: Maureen Dyer – 46 miles
 Biking: Yueqing Xie – 916 miles
 Other Activities: Amy Blumhardt – 47 hours
 Weight Loss: Dayon Dixon

Walking to Wellness 2012 Top Five Teams

1. **The Strolling Stones:** 2,755.68 miles
 Members: Jane Jones, Cammi Bittner, Ralph Hopkins, Shelley Perkins, and Peter Frank
2. **In It to Win It:** 2,755.23 miles
 Members: Michael Eichelberger, Roberta Harner, David Johnston, Tom Gannon-Miller, and Thomas Delauter
3. **Team Walkabout:** 2,212 miles
 Members: Pam Young, Teresa Ewing, Terri DeLloyd, Amy Blumhardt, and Robin Wright
4. **Team SI:** 1,603 miles
 Members: Karen Lau, Dara Riva, Danielle Fink, Laura Coffin, and Diane Briggs
5. **The Seasoned Soles:** 1,599 miles
 Members: Beth Baseler, Lisa Timmer, Corina May, and Laurie McMahan

Top Five Individual Walkers

1. Michael Eichelberger: 848 miles
2. Roberta Harner: 699 miles
3. Jane Jones: 616 miles
4. Cammi Bittner: 593 miles
5. Beth Baseler: 575 miles ■



Some of the Fitness Challenge 2012 year-end winners with Dave Heimbrook (far left). Front row: Steve Stull, Beth Buckheit, Courtney Silverthorn, Beth Baseler, Amy Blumhardt. Back row: Heimbrook, Stephan Dobson, Kimberly Peifley, Andrew Watson, Tom Gannon-Miller, Halee Helmer, Yueqing Xie, Yunden Badralmaa, Barbara Kending, and Will Sheffield.

Smith Assists in Superstorm Sandy Relief Efforts

By Cathy McClintock, Contributing Writer

It should have been routine by now for a 30-year volunteer firefighter/ emergency medical technician from Thurmont, Md., but it wasn't.



Ross Smith at the Guardian Hose Company in Thurmont, Md. *Photo courtesy of Guardian Hose Company.*

That first night, as Ross Smith, IT security, looked across the Hudson River from Jersey City, N.J., he saw an unusually dark New York skyline.

After superstorm Sandy hit the eastern seaboard, Smith and colleagues from the National Guard, Federal Emergency Management Agency, Red Cross, Port Authority of New York & New Jersey, New York Fire Department, and Jersey City Fire Department were called for assistance. Smith described what he found in New Jersey and New York as "humbling."

The day-to-day work consisted of assisting fellow emergency responders in the Jersey City and Hoboken areas with providing both comfort and an immediate sense of safety and security to residents. With limited access to electricity, plumbing, and supplies, Smith was responsible for directing those affected

to churches and facilities capable of providing food and shelter.

"You see people who had lost everything, and you just wanted to help in some small, little way. It was hard to look on all the destruction and really know where to start, both for the relief workers and the affected residents," he said.

Smith's colleagues decided to put a little extra "thanks" in Thanksgiving, and helped serve and deliver thousands of meals throughout Jersey City.

Wherever he traveled in New York or New Jersey, Smith found people willing to help and wanting to make a difference.

"They would pretend it was no big deal, but you could tell they cared, no matter where they traveled from. You have no idea of the gravity of what took place—you just can't fight Mother Nature," he said. ■

Racheff Awarded Honorary Doctorate, Delivers Commencement Speech

"Steal, Fail, Gamble, Doubt, Collude and Conspire, and Do Little"—this was the humorous and unconventional title



Jim Racheff, left, was awarded an honorary doctorate by Hood College President Ronald Volpe.

Photo courtesy of Hood College.

of the Hood College Graduate School commencement speech, delivered on May 19, 2012, by DMS Chief Executive Officer Jim Racheff, who was awarded an honorary doctorate of humane letters degree.

In conferring the degree, Hood College President Ronald Volpe highlighted Racheff's professional accomplishments as well as his continued leadership and contributions to improving the Frederick community and higher education.

His keynote speech encouraged graduates to find inspiration in unexpected places, leverage knowledge from failure to create future successes, take calculated risks, challenge assumptions and the status quo, harness the value of collaboration, and give of themselves to others. ■

Helpdesk Assists with a Variety of Problems

Computer users at the NCI campus at Frederick may contact the Frederick Helpdesk with IT-related requests for service and support, or with any computer-related questions. DMS staff provides general desktop computer support, account password resets and e-mail assistance, support for applications, systems, and websites, assistance with suspected virus or IT security problems, assistance with purchasing IT equipment, access to site-licensed software, and information regarding PIV cards and PIN resets.

PIV card PINs and digital certificates can be reset at any of three NCI campus at Frederick Lifecycle Workstation locations: Building 426, room 159 (call 301-228-4500 for an appointment); Building 362, room 40 (no appointment necessary); or Advanced Technology Research Facility room E2212 (call 301-846-1283 for an appointment).

The Helpdesk is staffed from 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding holidays. Users can expect most desktop support requests to be addressed within five working days; "urgent" requests are addressed within one working day. To contact the Frederick Helpdesk, call 301-846-5115, e-mail fredhelpdesk@nih.mail, or visit the website: <http://css.ncifcrf.gov/helpdesk>. ■

Third Annual Resource Fair Held April 11

By Robin Meckley, Contributing Writer

For the third year in a row, the Scientific Library hosted a Resource Fair for NCI at Frederick employees so they can learn about the resources available to support their research.

This year's fair, held April 11 from 10 a.m. to 3 p.m., featured a variety of outside vendors presenting valuable resources that are available from the Scientific Library. Representatives of databases and other tools set up their display tables in Building 549. They also offered demonstrations and answered questions in the library's Technology Training Lab. These lab presentations were also videocast to a conference room in the Advanced Technology Research Facility. ■

OneSearch Available Soon

For years, Scientific Library users have asked the same question: "Why can't I search all the different databases at the same time?" With the new resource, OneSearch, that wish may come true!

OneSearch, a resource that will be available soon, is a fast way to search Scientific Library collections—journal articles, books, media, and more—using a single search box. A large central index is compiled from more than 7,000 publishers and content providers, covering more than 90 percent of the library's electronic journal subscriptions. OneSearch is powered by Summon from Serials Solutions.

Entering terms in the OneSearch search box will allow users to simultaneously search the Scientific Library's online catalog, most of the library's online journals, the full text of the online books collection, and databases such as Web of Science and PubMed. A click or two from the results screen may take users to full-text journal articles or book chapters, or will provide availability information for print books.

The staff of the Scientific Library will let everyone know as soon as this new resource is available for use. ■

Browse without a Browser at the ATRF Library

ATRF employees asked and the library responded: print journals are now available in the ATRF Library.

Employees can now browse 20 print journals, which will rotate, with one issue available at a time for each title. The library will also temporarily display some new books each week. ATRF employees may indicate their interest in these books by signing the wait lists.

"Paper—an artifact of our glorious past—some say, yet others still love the feel of it, the weight of the words in their hands, the aroma of fresh ink,

the sound of a turning page, the experience of browsing without a browser," commented Alan Doss, a chemical informationist in the Scientific Library.



Alan Doss, a chemical informationist in the Scientific Library, stands next to the journal rack at the ATRF, where 20 print journals are displayed on a rotating basis.

The following print journals are now available at the ATRF Library:

Anticancer Research
Cancer Letter
Cancer Research
Cell
Genes & Development
International Journal of Molecular Medicine
International Journal of Oncology
Molecular Cell
Nature
Nature Reviews Cancer

Nature Genetics
Nature Medicine
New England Journal of Medicine
Nucleic Acids Research
Oncogene
Proceedings of the National Academy of Sciences
Science
Science News
Scientific American

The *Frederick News-Post* will also be available. ■

In the Interest of Greater Precision

By Ken Michaels, Staff Writer

This article is about a few “odds and ends” that may contribute to more precise oral and written communication.

More on Abbreviations

A couple of questions have come my way since we published the article entitled “It’s Eff En Ell” (see the *Poster*, December 2012, page 27). The first has to do with making abbreviations plural. The rule is to express the abbreviation in all capitals followed by a lowercase s—with no spaces and no apostrophe: “I saw three UFOs yesterday.”

Although it’s an all-too-common mistake to use an apostrophe to create a plural form, it is a mistake nevertheless. An apostrophe is used to indicate possession or an attribute, not to indicate a plural. Our CEO’s preferred form of transportation is correctly referred to as Dave Heimbrook’s motorcycle (because it belongs to him). But if you have a conversation with Heimbrook and Dave Butfer, you might say that you spoke with “the Daves,” because there are two of them. Similarly, in the case of the three UFOs, you might also refer to estimating “a UFO’s velocity,” because it’s an attribute.

The other question has to do with the article that precedes an abbreviation: do I use “a” or “an?” The rule is that it depends on how the abbreviation is pronounced, not how it is spelled. NIH, for example, begins with the letter n, but it’s a soft n; we say “enn eye aitch.” Since it’s a soft n, the proper article is an. “An NIH institute” is correct. NORAD also begins with the letter n, but in this case it’s a hard n, because NORAD is pronounced as a word, hence “a NORAD installation.”

Which vs. That

In the Scientific Writing Workshop that Scientific Publications, Graphics & Media used to offer, my former colleague, Maritta Grau, devised a means of clarifying the proper use of these two words, which can be confusing. Consider the following graphic:

“Which” vs. “That”



I live in the third house, **WHICH** has a palm tree beside it.



I live in the third house **THAT** has a palm tree beside it.



What we see here are five houses in a row, three of which have a palm tree in the yard. Consider these two statements:

“I live in the third house, which has a palm tree in the yard.”

“I live in the third house that has a palm tree in the yard.”

The two statements are directing your attention to two different houses. The first means you live in house number three, because it’s the third house on the street. But the second means you live in house number five, because it’s the third house that has a palm tree in the yard.

Notice the comma in the “which” statement. It indicates that what follows is nonessential to the meaning of the statement. In other words, “which” clauses are nonrestrictive, or nonessential to the meaning of the sentence. “That” clauses, on the other hand, are restrictive, or essential to the meaning of the sentence.

Other Odds and Ends

Fewer vs. less. Use less when referring to quantity and fewer when referring to a number. Examples: less time; fewer minutes.

Innumerable vs. numerous. These words are not synonymous. Innumerable means too many to count, whereas numerous means many. Example: The beach contains innumerable grains of sand, but the library has numerous books.

Fortuitous vs. fortunate. Fortuitous means accidental or happening by chance. Fortunate means lucky, indicating good fortune. If you bumped into an old friend on the street, that would be fortuitous. If you actually liked this old friend, it would be fortunate.

Criteria vs. criterion. Criterion is the singular form of criteria. Hence, use “these” or “those” with criteria, and “this” or “that” with criterion.

I encourage you to be conscientious about precise meaning when choosing words. Effective communication is an important goal; the more precise we are with our use of the language, the more likely it is that the goal of our writing will be achieved. ■

Note: The “odds and ends” word pairs are based on tips taken from back issues of *Communication Briefings*, published by Briefings Publishing Group, 300 N. Washington St., Ste. 605, Alexandria, Va.

New Faces at the National Cancer Institute at Frederick

Eighty-seven people joined the facility in October, November, and December 2012.

The National Cancer Institute at Frederick welcomes...

Marc **Bailly** ■ Ryan **Baughner** ■ Christine **Biser** ■ Margaret **Cam** ■ Bridget **Cantwell** ■ Kalyan **Chakrabarti** ■ Keqiang **Chen** ■ Laura **Choi** ■ Lisa **Coleman** ■ Howard **Cyrus** ■ Peter **Fitzgerald** ■ Terry **Galloway** ■ Sai Janani **Ganesan** ■ Julie **Heinecke** ■ Odessa **Henderson** ■ Steven **Hohman** ■ Ya **Hu** ■ Scott **Keasey** ■ George **Klarmann** ■ Malgorzata **Klauzinska** ■ Pradeep **Kota** ■ Govind **Kunduri** ■ John **Lee** ■ Sandra **Li** ■ Mary **Loesch** ■ Khanh **Ma** ■ Mariam **Malik** ■ Michael **Mina** ■ Catherine **Muir** ■ Victor **Nelson** ■ Selinda **Orr** ■ Adam **Parks** ■ Sergey **Plisov** ■ Carol **Rimel** ■ Waheed **Shahren** ■ Meena **Sharma** ■ Caesar **Smith** ■ Na-Young **Song** ■ Alexander **Stuffer** ■ Aamir **Zariwala** ■ Zhi Ming **Zheng**

SAIC-Frederick welcomes...

Fereshteh **Abedinpour** ■ Ademiposi **Adegbulugbe** ■ Mary **Anderson** ■ Jesse **Aronson** ■ Mary **Barcus** ■ Christian **Barton** ■ Milind **Bendigeri** ■ Kristen **Brown** ■ David **Chang** ■ Jon **Demulder** ■ Jonathan **Doyon** ■ Lance **Edwards** ■ Vicki **Fortinper** ■ Kellianne **Gaskins** ■ Jeevan Prasaad **Govindharajulu** ■ Timothy **Gower** ■ Melissa **Gregory** ■ David **Gresham** ■ Gary **Griffiths** ■ Ji **He** ■ Brittany **Jackson** ■ Angela **James** ■ Payal **Khanna** ■ Stanislav **Khoruzhenko** ■ Samuel **Kimani** ■ Christine **Legg** ■ Wen **Luo** ■ Marie **Malbah** ■ Simin **Manole** ■ Linda **Middour** ■ Archana **Monie** ■ Laurie **Morrissey** ■ Francis **Owusu** ■ Rachel **Phelps** ■ Thiagarajan **Prakash** ■ Henry **Scheetz** ■ Ashley **Shoemaker** ■ Han **Si** ■ Conrado **Soria** ■ John **Stottlemeyer Jr.** ■ Yvonne **Wall** ■ Shenpei **Wu** ■ Zhi **Xie** ■ Ruoting **Yang**

Data Management Services welcomes...

David **Kunkel** ■ Sivakumaran **Subramanian** ■



Frederick National Laboratory Programs

Frederick National Laboratory and Ft. Detrick
Fitness Challenge 2013

<http://saic.ncifcrf.gov/fitnesschallenge/>

Frederick National Laboratory Suggestion Committees

<http://ncifrederick.cancer.gov/campus/committees/>

Upcoming Events and Dates to Note

Poster Puzzler Entries Due May 31

Spring Research Festival Week. May 6–9

Farmers' Market Plant Sale. May 7

Spring Research Festival, May 8 and 9
sponsored by the National Interagency
Confederation for Biological Research (NICBR)

Spring Plant Swap. May 8 and 9

Memorial Day, NCI at Frederick closed May 27

Farmers' Market opens in front of Building 549 June 4
Market is held every Tuesday until October 29.

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Comments or suggestions for the *Poster* may be directed to poster@mail.nih.gov.

Need a large-print format of the *Poster*? Call 301-846-1055.

Spring Research Festival

NICBR-Sponsored Spring Research Festival Set for May 8 and 9

By Ashley DeVine, Staff Writer

For the first time, the Spring Research Festival (SRF), scheduled for May 8 and 9, will be sponsored by all of the agencies that are part of the National Interagency Confederation for Biological Research (NICBR).

“That means that all of our NICBR partners at Fort Detrick will be working together to organize and support the festival, which focuses on the most recent collaborative biological research from our respective scientists, technicians, fellows, and students,” said Kristin Komschlies, Ph.D., NICBR Fort Detrick Interagency Coordinating Committee (FDICC) representative for NCI.

NICBR comprises the following agencies, which are co-located at Fort Detrick: the National Biodefense Analysis and Countermeasures Center, Department of Homeland Security; the National Cancer Institute; the Agricultural Research Service, United States Department of Agriculture; the Centers for Disease Control and Prevention; the National Institute of Allergy and Infectious Diseases; the Naval Medical Research Center; the U.S. Army Medical Research and Materiel Command; and the U.S. Food and Drug Administration.

“The annual Spring Research Festival provides a venue for our scientists to present their research findings, network with other NICBR scientists across research disciplines, and establish new collaborative relationships,” said Doug Luster, who leads the Agricultural Research Service’s Foreign Disease-Weed Science Research Unit.



The fungus-growing ant, *Apterostigma dentigerum*, is the theme of this year’s Spring Research Festival. Courtesy of Michael Poulsen.

Fungus-Growing Ant Chosen as Theme

The theme of the 17th annual SRF is *Apterostigma dentigerum*, a fungus-growing ant that is native to Central and South America. The ants have mutualistic, or mutually beneficial, interactions with fungus, which they use for food, and actinobacteria, which produce selective antibiotics to protect the fungus from parasites.¹

According to David Newman, D. Phil., chief, Natural Products Branch of the Developmental Therapeutics Program, “It is, in fact, quite common for antifungal agents to have reasonable antitumor

activity when tested, due to the very close biochemical similarity of fungi to man in a genetic sense.”

Festival Week Kicks Off May 6

The NICBR postdoctoral/postbaccalaureate symposium entitled “Host Response to Disease,” will kick off festival week on May 6, beginning at 8:30 a.m. in the Building 549 auditorium.

On May 7, some of the collaborative research taking place through NICBR will be presented in a forum at the NICBR Research Collaborations Symposium in the Building 549 auditorium.

Poster presentations will take place on May 8 and 9 from 10 a.m. to 2:30 p.m. Registration for SRF exhibitors, speakers, and poster presenters is open until April 19. The festival location is the back parking lot of Building 1507 (Odom Fitness Center).

The SRF will also include a health and safety exposition, educational information, safety and scientific displays, and commercial exhibits of the latest scientific equipment and technologies.

For more information, visit the SRF website: <http://ncifrederick.cancer.gov/Events/Srf>, or contact Julie Hartman, SRF chair, at srfnci-frederick@mail.nih.gov or 301-846-7338. ■

¹Oh, D.-C., Poulsen, M., Currie, C.R., and Clardy, J. (2009). Dentigerumycin: a bacterial mediator of an ant-fungus symbiosis. *Nature Chemical Biology* 5(6): 391–393.



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<http://ncifrederick.cancer.gov/ThePoster>