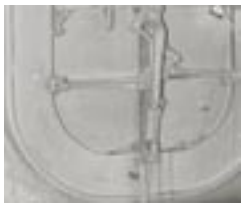
The National Cancer Institute at Frederick

Poster

What is it?
Where is it?

Story on page 6.



Campus Improvement Committee: Improving Your Work Environment

A newly formed committee is seeking suggestions for ways to improve the NCI-Frederick work environment. The mission of the **Campus Improvement Committee**, originally the Campus Beautification Committee, is to develop and maintain an aesthetically interesting campus that will enrich and inspire the NCI-Frederick community.

Paul Miller, Program Analyst, Office of Scientific Operations, formed the NCI-Frederick Campus Improvement Committee last July at the request of Dr. Craig Reynolds, Director of the Office of Scientific Operations. Of the 26 volunteers who attended one of two orientation meetings in June, 14 elected to join the Administrative Committee, which met for the first time on July 10th.

Addressing the committee at this meeting, Dr. Reynolds thanked them for their participation. He advised that no funds have been set aside specifically for campus beautification, so all proposed improvement projects will have to compete with other needs for funding support. Since funding has either been eliminated or significantly reduced in most areas, identifying areas for improvement that can successfully compete against other proposed projects will be a challenge. Therefore, the committee is tasked with coming up not only with good ideas, but with good ideas

continued on page 2

(Left to right) Martha Summers, Mike Smith, John Bell, Mark Shrader, Mike Selby (on ladder), O. M. Zack Howard, Paul Miller, Rocky Follin (kneeling), Lori Smith, Tim Rowe (in back), Scott Keimig, Ken Michaels, Gene Anderson, Zaida Parsons, and Moria Artlip

December 2004

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NCI Frederick

Campus Improvement Committee: Improving Your Work Environment

continued from page 1

that will contribute what he described as "significant value" to the NCI-Frederick community.

For example, Dr. Reynolds explained, projects that contribute to or enhance the environmental impact of the Master Plan may provide significant value. He added that identifying projects will require thinking in multiple dimensions, as some projects will be of major proportions, requiring large commitments of funds and resources, while others will be more limited in scope. Areas for consideration mentioned at the first meeting ran the gamut from improved gardening and landscaping to better signage and new paint for buildings.

Since its formation, the committee has organized itself into four areas of emphasis and formed subcommittees to screen proposals and generate ideas:

The Structures subcommittee, chaired by John Bell (Facilities Maintenance and Engineering), will oversee proposals for the installation and placement of long-term structures such as picnic tables, kiosks, and pavilions.

The Signage subcommittee, chaired by Ken Michaels (Scientific Publications, Graphics & Media), will oversee proposals for the installation and placement of external and internal signs and artwork and maintain NCI-Frederick's graphic identity.

The Planting subcommittee, co-chaired by Tim Rowe (Environment, Health, and Safety), Roberta Brown (Protective Services), and Sharon Fritz (Protective Services), will oversee proposals for planting, lawn cutting, landscaping and maintenance.

A fourth subcommittee, chaired by Paul Miller, will deal with all proposals that do not fall within the purview of the other three subcommittees.

The Administrative Committee is chaired by Mr. Miller, with Dr. O. M. "Zack" Howard as recording secretary. The entire community is welcome to submit suggestions for improvements to campus aesthetics on-line (anonymously, if you prefer) via the campus Intranet, at http://web.ncifcrf.gov/campus/committees/default.asp. ✦

Dr. Kristen Komschlies, New Assistant Project Officer

Dr. Kristen Komschlies, new assistant project officer for the NCI-Frederick Office of Scientific Operations, oversees the scientific aspects of contracts. She reviews the Statement of Work (SOW), documents that show contractors what they are to do and evaluates the work performed.

In addition, Dr. Komschlies is involved in aspects of NCI-Frederick as a FFRDC (federally funded research and development center). In a recent interview, she pointed out that NCI-Frederick is the only biomedical FFRDC the US government has, and the government imposes strict requirements on what can and cannot be done. It is her job to ensure that those requirements are followed carefully.

With a BA in biology from Gustavus Adolphus College, Minnesota, Dr. Komschlies earned her PhD in immunology from the University of Connecticut. She worked at NCI-Frederick from 1986 to 2001 for the Operations and Technical Support Contract, currently held by SAIC-Frederick, Inc. Starting as a postdoctoral fellow, she eventually became a principal investigator with her own laboratory in support of the Laboratory of Experimental Immunology.

During these years, Dr. Komschlies' focus was on immunology, specifically IL-7, a natural component of the human body. With several colleagues, she studied the body's normal use of IL-7 and its potential application as an anticancer immunological therapeutic agent. The group developed IL-7 for potential clinical trials. Her role was to perform experiments at NCI-Frederick that would help clinicians know how to administer IL-7 to patients. She said, "It was exciting work, and I enjoyed it."

In 2001, she resigned to spend time with her family, only to return this past summer as an assistant project officer in the NCI-Frederick Office of Scientific Operations. Dr. Komschlies said that having worked here before has made adjustment easier: she already knows a lot about the facility, the people and the issues they face in the laboratory, and now she helps develop mechanisms for laboratories to get the equipment, material, services, and supplies they need. She said that she has always liked working here and wants to help support the outstanding science being performed at this facility.

We're happy to have Dr. Komschlies with us again and in her new role as Assistant Project Officer. She can be reached at 301-846-5131, or by e-mail at komschliesk@ncifcrf.gov. ✦

New Faces at NCI-Frederick

NCI-Frederick Welcomes New Staff

Eighty-five people joined our Facility in May, June, July, and August 2004.

NCI-Frederick welcomes…

Xiu Chen
Yiyin Chen
Rachael Crist
Diogo Demartini
Bridget Dixon
Jill Dunty
James Gattis
Sergei Grivennikov
Nicholas Hargus
Jinyue Hu
Monica Hui
Qiong Jiang
Han-Jong Kim
Joon-Young Kim
Kyeongeun Lee
Erynn Mckenzie
Vinod Sing
Markus Sitzmann
Tami Thomae
Michaela Wendeler
Thomas Wuest
Yi Yang
Wei Yao
Huijun Zhi

Diogo Demartini

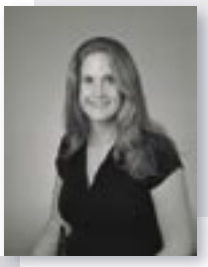
Erynn Mckenzie

Chad Berkhammer

SAIC-Frederick, Inc., welcomes…

Eugene Anderson
Eva Andersson
Rebecca Arnold
Teresa Belcher
Chad Berkhammer
Eckart Bindewald
Megan Boon
Niza Borchin
Heath Bradley
Anthony Brown, Jr.
Carla Bryant
Rita Corn
Christopher Courtney
Jacqueline Downer
Theresa Duley
Anne Gensler
Braden Greer
Patricia Hanes
John Hart
Da Wei Huang
Elaine Hurt
Deana Jackson
Christopher Jacobs
Stanislaw Kaczmarczyk
Carson Kam
Cynthia Kim
Shilpa Kurian
Chenwei Liu
Juanita Mercado
Charu Mullick
Jose Nunez
Sarah O'Brien
Joy Palabrica
Nancy Parrish
Smruti Patel
Robert Patterson
Megan Peach
Ruta Petraitiene
Cyra Ranji
James Reilly
William Rosano
April Schildtknecht
Anja Schmidtmann
Timothy Sheehy
Woodrow Smith, Jr.
Nicole Smith
Wei Tan
David Thomas
Terrence Thrasher
Michael Valmonte
Christopher Wiles
Patsy Worrell
Leonard Wrona
Ping Yu
Tao Zhao
Tongqing Zhou

Theresa Duley



Patty Smith

Tim Skoczen

Sergei Grivennikov

Nancy Parrish

Carly Kunze

Charles River Laboratories welcomes…

Kelly Goff
Carly Kunze
Amber Smith
Patricia Smith

Data Management Services welcomes…

Timothy Skoczen ✦

Poster People Profile

What Do You Do?
Ginny Greene

What do you like best about your work at NCI-Frederick?

We are making a difference! When the cure for cancer is found, Charles River Laboratories (CRL) will have had a direct role because it is a global leader in the commercial production and supply of animal research models for use in the discovery, development, and testing of new pharmaceuticals.

Ginny Greene, Secretary, Charles River Laboratories

How long have you worked at NCI-Frederick?

January will mark my 19th year; I began in 1986 as a junior clerk typist, hired for the overflow secretarial work.

That year, I also enrolled at Frederick Community College, scared to death. Thanks to a wonderful teacher and mentor, I gained self-confidence and earned my Office Technology Certificate in 1993.

I'll never stop learning. When I need to better understand software, I take another class. But my greatest training and education have come from my children. They have taught me teamwork, friendship, understanding, patience, and most of all, love; all of which I hope I practice at work.

In 1994, when CRL acquired the NCI-Frederick contract, I became Dr. Patricia Fritz's secretary, while continuing to support the entire management team and to work closely with Shirley Eyler, our Human Resources representative.

I am never bored. I might be working on an annual report one minute, timecards the next, and then on a travel packet. The variety and challenge are why I have remained at this job for 18 years. And you do not stay at a job for 18 years without having support from your supervisor, management team, and co-workers.

How do the demands of your job now differ from what you did when you first began working here? What have been the most interesting or exciting changes you've seen here, either in your job or in the facility as a whole?

One word comes to mind: computers. When I began work here, I had a desk, a telephone, and a typewriter, and shared with Shirley the office's only computer—a complicated, noisy, gigantic thing. I didn't complain much, because I was used to carbon paper and correction tape. It was a pure joy to be able to correct mistakes without retyping! Now everyone has their own computer, and I am secretary to the principal investigator instead of a junior clerk typist taking overflow work.

Being a secretary today is more than typing letters and answering the phone: One must know how to implement various software and in-house programs. Multi-tasking is essential.

When my 92-year-old mother, who was courted on a horse, asked me what e-mail is, I realized how much computers have changed this world and the way we communicate. And, after 9/11, one of the most frightening changes has been the armed guards at our gates. Things have certainly changed.

In what ways do you participate in the life of NCI-Frederick?

The NCI-Frederick Canned Food Drive, which donates money to the Frederick Rescue Mission, is dear to my heart. In 1997, I suggested to my co-workers that we raise money for the needy people of Frederick County year round. Now we hold raffles almost every week from yard sale goods, holiday baskets, or homemade items that our employees donate. Sometimes a dollar "grab" box shows up; aluminum cans are collected for recycling; and we have a penny jar. Between 1997 and 2003, CRL employees donated $7,591 to the Frederick Rescue Mission, and this year we have already surpassed $1,100. What a blessing to work with such wonderful, giving people!

I have also worked very closely with the CRL team on Take Your Child to Work Day. We have a wonderful setup for children, and the children love this day at CRL.

It is an honor to work at Fort Detrick, where so many good things are happening to make this world a better place. Because I know individual cancer survivors, I am reminded constantly of NCI-Frederick's research goals. ✦

GO, FORT DETRICK!

What Do You Do, Too?
Bill Bere

What do you like best about your work here at NCI-Frederick?

I like the atmosphere, working conditions, collaborating with other laboratories, and best of all: the people—they are just great to work with. We work toward a common goal in research, utilizing many services that help us be more productive.

How long have you worked at NCI-Frederick? In what capacity?

I've been a Laboratory Technician at NCI-Frederick about 24 years, and have been a government employee for 37 years, having transferred in March 1981 from the National Institutes of Health (NIH), Dermatology Branch, in Bethesda, Maryland.

What is your specific job title and what are your duties now? What training or education do you have for your current job?

As a Biological Laboratory Technician in the Leukocyte Cell Biology Section (LCBS) of the Laboratory of Experimental Immunology (LEI), my principal scientific responsibility is purifying and handling various human leukocyte subsets under P2 conditions. Many of the MD- and PhD-level LEI scientists use the subsets that I generate through a complex purification process, as do other laboratories throughout NCI-Frederick, NIH, and the Department of the Army.

I also perform experiments using the cell populations I have purified; obtain and maintain tumor cell lines and fresh cells for experimental assays; and perform ELISA assays, cytokine assays, chromium release assays, as well as many procedures to isolate lymphocytes from various animal tissue preparations.

In addition to scientific responsibilities, as the property officer for LCBS, I am responsible for maintaining LCBS supplies and equipment and tracking all government equipment within the four independent LCBS laboratory modules.

Bill Bere, Laboratory Technician, Laboratory of Experimental Immunology

How do the demands of your job now differ from what you did when you first began working here?

Scientific procedures and techniques have rapidly evolved. Equipment is much more advanced and more complicated than it was in the '80s, making our data much more accurate and improving our overall efficiencies.

What are some of the things you've done to participate in the life of NCI-Frederick—committees, other awards, or recognition, etc.?

For many years I have participated in the Employee Recreation Committee (ERC) Christmas party for children, as Santa Claus. I have the help of Mrs. Claus (Cheryl Nolan), and I love it. This is a great time to spend with the children. I also am involved with the Fort Detrick slow pitch softball league as manager of the Diamonds Dawgs softball team.

What have been the most interesting or exciting changes you've seen here, either in your job or in the facility as a whole?

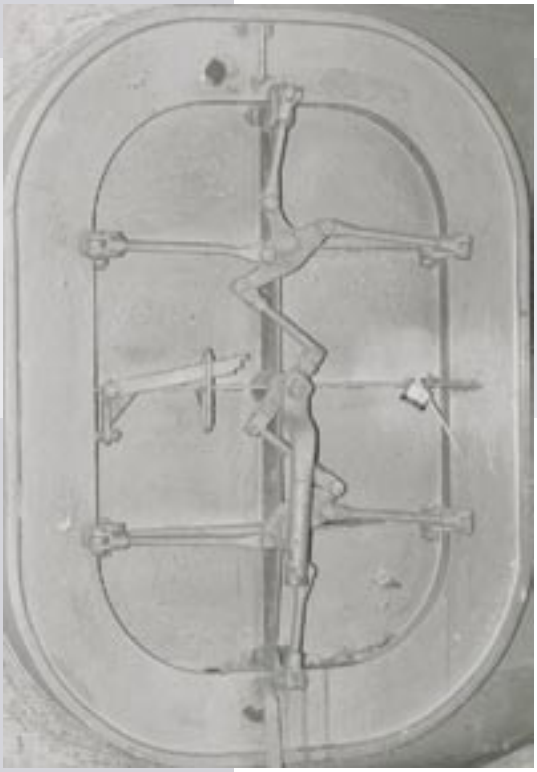
The biggest change has been the use of the computer and the Internet. The technical aspects of doing specific experiments are much more advanced, and we can collect more data faster than ever before.

One thing I like the most is working with people from different countries. It gives me the opportunity to appreciate the different perspectives of people from all over the world.

I also find using knockout mice for many of our experiments studying the immune system to be fascinating, as these animals will give us new insight into how the immune system works.

I also like how the growth of the facility has always reflected the employees' interests: From the cafeteria, to the farmers' market, to the gym and the soon-to-be-open indoor pool—all these additions make this a better place to work. While new technology has made my job much easier, the improvements in the facility have made it more enjoyable. ✦

Poster Puzzler



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 left. Clue: It's somewhere at Fort Detrick/NCI-Frederick. 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 Puzzler at poster@ncifcrf.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, **January 14**, and the winner will be drawn from all correct answers received by that date.

Good luck and good hunting! ✦

The September Poster Puzzler:

Door Panel from the Bank Barn on Nallin Pond

The Bank Barn is part of Nallin Farm, which sits on the 7,000-acre tract of land granted to Benjamin Tasker in 1727 and known originally as "Tasker's Chance." Bank barns are so called because they are built into the side of a hill, or bank, which allows for entry at lower and upper levels. Built in 1835, the Bank Barn is typical of those built by Swiss and German settlers in Pennsylvania and western Maryland. The slits in the walls provided much-needed ventilation, and, because they are flared to the inside, they could be used for defensive rifle firing. Although there is no hard evidence, the barn is thought to have been used as a field hospital and encampment site for both Union and Confederate troops during the Civil War.

Source: http://www.dcmilitary.com/army/standard/6_04/local_news/5147-1.html

Thanks to all the participants in the September Poster Puzzler! ✦

Congratulations to our September 2004 winners: **Kristen Pike,** Senior Research Associate, and **Teri Plona**, Research Assistant, Laboratory of Molecular Technology. See page 16 for their picture.

Platinum Highlight

Dr. Valance Washington, Laboratory of Experimental Immunology

Dr. Valance Washington joined NCI-Frederick's Laboratory of Experimental Immunology (LEI) in October 2001, focusing on receptor-mediated regulation of innate immunity and manipulation of this system toward cancer recognition and abatement, studying natural killer (NK) cells, macrophages, monocytes, dendritic cells and platelets.

Because cancers manipulate platelet function in order to progress and metastasize, his group's discovery of a receptor expressed specifically on platelets (TLT-1, or TREM-like transcript-1) offers a means to study and manipulate this complex interaction.

Many bodily systems are affected by tumor growth, causing complications, such as those derived from neoplastic interactions with the blood coagulation and fibrinolytic systems. Since many tumor cells can directly activate platelets and initiate blood coagulation pathways, understanding the mechanisms that regulate platelet cell surface generation of thrombin and plasmin may help in disrupting the growing tumor.

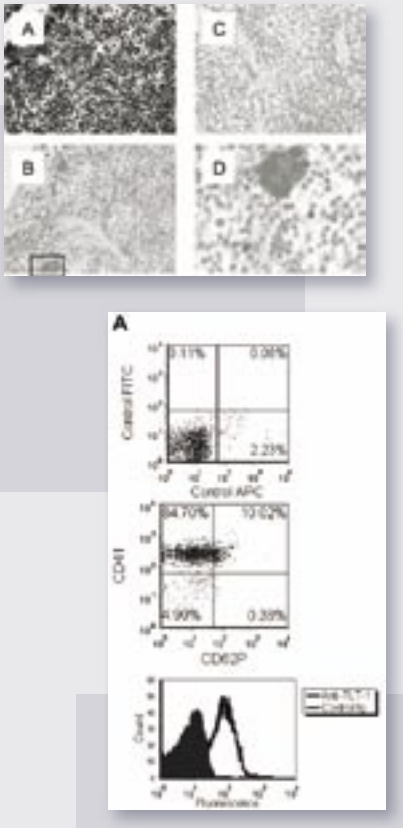
The timing of the TLT-1 discovery fits well with NCI director Dr. Andrew von Eschenbach's new initiative to better understand the relationship between vascular homeostasis and cancer progression. If the LEI succeeds, regardless of whether TLT-1 is involved in either the formation of thrombin on the surface of the platelets, or the activation of plasmin from plasminogen, researchers there will have identified a promising therapeutic target not only to regulate blood coagulation and fibrinolysis, but to slow cancer progression and reduce metastasis as well. ✦

Washington AV, Schubert RL, Quigley L, Disipio T, Feltz R, Cho EH, and McVicar DW

A TREM Family Member, TLT-1, Is Found Exclusively in the Alpha-Granules of Megakaryocytes and Platelets

Blood, 104(4):1042–1047, 2004

The triggering receptors expressed on myeloid cells (TREMs) have drawn considerable attention due to their ability to activate multiple cell types within the innate immune system, including neutrophils, monocyte/macrophages, and dendritic cells, via their association with DAP12. TLT-1 (TREM-like transcript-1) lies within the TREM gene cluster and contains the characteristic single V-set immunoglobulin (Ig) domain of the family, but its longer cytoplasmic tail is composed of both a proline-rich region and an immune receptor tyrosine-based inhibitory motif, the latter known to be used for interactions with protein tyrosine phosphatases. Here we report that TLT-1 is expressed exclusively in platelets and megakaryocytes (MKs) and that TLT-1 expression is up-regulated dramatically upon platelet activation. Consistent with this observation, confocal microscopy demonstrates that TLT-1 is prepackaged, along with CD62P, into both MK and platelet alpha-granules. Differences in thrombin-induced redistribution of CD62P and TLT-1 indicate that TLT-1 is not simply cargo of α-granules but may instead regulate granule construction or dispersal. Together these data show that TLT-1 does not function to inhibit members of the TREM family but instead may play a role in maintaining vascular hemostasis and regulating coagulation and inflammation at sites of injury. ✦



See on-line article at http://www.bloodjournal.org/cgi/content/full/104/4/1042 for full figures and detailed information.

Platinum Publications

The following 24 articles have been selected from a quarterly listing of publications in 10 of the most prestigious science journals.

Biochemistry and Biophysics

Wu ZB, Alexandratos J, Ericksen B, Lubkowski J, Gallo RC, Lu WY. Total chemical synthesis of N-myristoylated HIV-1 matrix protein P17: Structural and mechanistic implications of P17 myristoylation. *Proc Nat Acad Sci USA* **101**(32): 11587–11592, 2004.

Cell Growth and Development

Heath V, Suh HC, Holman M, Renn K, Gooya JM, Parkin S, Klarmann KD, Ortiz M, Johnson P, Keller J. C/EBP alpha deficiency results in hyperproliferation of hematopoietic progenitor cells and disrupts macrophage development in vitro and in vivo. *Blood* **104**(6):1639–1647, 2004.

Shuman JD, Sebastian T, Kaldis P, Copeland TD, Zhu SY, Smart RC, Johnson PF. Cell cycle-dependent phosphorylation of C/EBP beta mediates oncogenic cooperativity between C/EBP beta and H-Ras(V12). *Mol Cell Biol* **24**(17):7380–7391, 2004.

DNA Dynamics and Chromosome Structure

Chiang YJ, Hemann MT, Hathcock KS, Tessarollo L, Feigenbaum L, Hahn WC, Hodes RJ. Expression of telomerase RNA template, but not telomerase reverse transcriptase, is limiting for telomere length maintenance in vivo. *Mol Cell Biol* **24**(16):7024-7031, 2004.

DNA: Replication, Repair, and Recombination

Svarovskaia ES, Xu HZ, Mbisa JL, Barr R, Gorelick RJ, Ono A, Freed EO, Hu WS, Pathak VK. Human apolipoprotein B mRNA-editing enzyme-catalytic polypeptide-like 3G (APOBEC3G) is incorporated into HIV-1 virions through interactions with viral and nonviral RNAs. *J Biol Chem* **279**(34):35822–35828, 2004.

Chin K, de Solorzano CO, Knowles D, Jones A, Chou W, Rodriguez EG, Kuo WL, Ljung BM, Chew K, Myambo K, Miranda M, Krig S, Garbe J, Stampfer M, Yaswen P, Gray JW, Lockett SJ. In situ analyses of genome instability in breast cancer. *Nat Genet* **36**(9): 984–988, 2004.

Enzyme Catalysis and Regulation

Schelling P, Claus MT, Johner R, Marquez VE, Schulz GE, Scapozza L. Biochemical and structural characterization of (south)-methanocarbathymidine that specifically inhibits growth of herpes simplex virus type 1 thymidine kinase-transduced osteosarcoma cells. *J Biol Chem* **279**(31):32832, 2004.

Genomics, Proteomics, and Bioinformatics

Swietnicki W, O'Brien S, Holman K, Cherry S, Brueggemann E, Tropea JE, Hines HB, Waugh DS, Ulrich RG. Novel protein-protein interactions of the *Yersinia pestis* type iii secretion system elucidated with a matrix analysis by surface plasmon resonance and mass spectrometry. *J Biol Chem* **279**(37):38693–38700, 2004.

Genes Structure and Regulation

Bream JH, Hodge DL, Gonsky R, Spolski R, Leonard WJ, Krebs S, Targan S, Morinobu A, O'Shea JJ, Young HA. A distal region in the interferon-gamma gene is a site of epigenetic remodeling and transcriptional regulation by interleukin-2. *J Biol Chem* **279**(39):41249–41257, 2004.

Immunobiology

Sun RH, Iribarren P, Zhang N, Zhou Y, Gong WH, Cho EH, Lockett S, Chertov O, Bednar F, Rogers TJ, Oppenheim JJ, Wang JM. Identification of neutrophil granule protein cathepsin G as a novel chemotactic agonist for the G protein-coupled formyl peptide receptor. *J Immunol* **173**(1):428–436, 2004.

Sereti I, Anthony KB, Martinez-Wilson H, Lempicki R, Adelsberger J, Metcalf JA, Hallahan CW, Follmann D, Davey RT, Kovacs JA, Lane HC. Il-2-induced CD4(+) T-cell expansion in HIV-infected patients is associated with long-term decreases in T-cell proliferation. *Blood* **104**(3):775, 2004.

Yu ZY, Theoret MR, Touloukian CE, Surman DR, Garman SC, Feigenbaum L, Baxter TK, Baker BM, Restifo NP. Poor immunogenicity of a self/tumor antigen derives from peptide-MHC-I instability and is independent of tolerance. *J Clin Invest* **114**(4):551–559, 2004.

Warfield KL, Perkins JG, Swenson DL, Deal EM, Bosio CM, Aman MJ, Yokoyama WM, Young HA, Bavari S. Role of natural killer cells in innate protection against lethal ebola virus infection. *J Exp Med* **200**(2):169, 2004.

Hemostasis, Thrombosis, and Vascular Biology

Washington AV, Schubert RL, Quigley L, Disipio T, Feltz R, Cho EH, McVicar DW. A TREM family member, TLT-1, is found exclusively in the alpha-granules of megakaryocytes and platelets. *Blood* **104**(4):1042–1047, 2004.

Mammalian Genetic Models with Minimal or Complex Phenotypes

Chiang YJ, Kim SH, Tessarollo L, Campisi J, Hodes RJ. Telomere-associated protein TIN2 is essential for early embryonic development through a telomerase-independent pathway. *Mol Cell Biol* **24**(15):6631–6634, 2004.

Medical Science

Keay SK, Szekely Z, Conrads TP, Veenstra TD, Barchi JJ, Zhang CO, Koch KR, Michejda CJ. An antiproliferative factor from interstitial cystitis patients is a frizzled 8 protein-related sialoglycopeptide. *Proc Nat Acad Sci USA* **101**(32):11803–11808, 2004.

Platinum Publications

Reilly KM, Tuskan RG, Christy E, Loisel DA, Ledger J, Bronson RT, Smith CD, Tsang S, Munroe DJ, Jacks T. Susceptibility to astrocytoma in mice mutant for Nf1 and Trp53 is linked to chromosome 11 and subject to epigenetic effects. *Proc Nat Acad Sci USA* **101**(35)13008–13013, 2004.

Microbiology

Mura M, Murcia P, Caporale M, Spencer TE, Nagashima K, Rein A, Palmarini M. Late viral interference induced by transdominant gag of an endogenous retrovirus. *Proc Nat Acad Sci USA* **101**(30):11117, 2004.

Oncogenes

Li JF, Wang FL, Protopopov A, Malyukova A, Kashuba V, Minna JD, Lerman MI, Klein G, Zabarovsky E. Inactivation of RASSF1C during in vivo tumor growth identifies it as a tumor suppressor gene. *Oncogene* **23**(35):5941, 2004.

Ramakrishnan R, Fujimura Y, Zou JP, Liu F, Lee L, Rao VN, Reddy ESP. Role of protein-protein interactions in the antiapoptotic function of EWS-Fli-1. *Oncogene* **23**(42):7087-7094, 2004.

RNA: Structure, Metabolism, and Catalysis

Dash C, Yi-Brunozzi HY, Le Grice SFJ. Two modes of HIV-1 polypurine tract cleavage are affected by introducing locked nucleic acid analogs into the (-) DNA template. *J Biol Chem* **279**(35):37095–37102, 2004.

Signal Transduction

Salnikow K, Donald SP, Bruick RK, Zhitkovich A, Phang JM, Kasprzak KS. Depletion of intracellular ascorbate by the carcinogenic metals nickel and cobalt results in the induction of hypoxic stress. *J Biol Chem* **279**(39):40337–40344, 2004.

Shang WH, Adachi Y, Nakamura A, Copeland T, Kim SR, Kamata T. Regulation of amphiphysin1 by mitogen-activated protein kinase: Its significance in nerve growth factor receptor-mediated endocytosis. *J Biol Chem* **279**(39):40890–40896, 2004.

Jackson SH, Devadas S, Kwon J, Pinto LA, Williams MS. T cells express a phagocyte-type NADPH oxidase that is activated after T-cell receptor stimulation. *Nat Immunol* **5**(8):818, 2004. ✦

Employee Diversity Team

Cultural Celebrations in Your Own Backyard

Two of the more popular movies screened by the **Employee Diversity Team** in its Diversity Café have been *My Big Fat Greek Wedding* and *Bend It Like Beckham*. These movies deal with the difficulties a Greek American youth faces (*Wedding*) and those that a British Indian youth faces (*Beckham*) in trying to sustain the cultural obligations of their traditional communities that conflict with the larger society in which they live.

Each film presents a remarkably detailed look into the ethnic cultures, revolving around the build-up and celebration of traditional weddings.

Perhaps your curiosity was piqued by these movies, and you are thirsting for a deeper understanding of Greek and Indian cultures; if so, did you know that the answers are literally in NCI-Frederick's own "backyard"?

This writer attended both a Greek Festival Weekend held in September at Saints Peter & Paul Greek Orthodox Church on 7th Street and the Festival of India held November 6 in the Baker Park Armory by the Indian Association of Frederick. At each, you could participate in cultural activities and buy handicrafts, art, and food. Did I mention food? These festivals offered a veritable delicatessen of Greek and Indian cuisine.

And, perhaps most valuable of all, attendees could learn more about these cultures by chatting with the festival hosts.

The National Cancer Institute at Frederick and its local community, both with many people from many different countries, offer us all many opportunities to learn more about our co-workers' cultures. Read local papers, watch bulletin boards and e-mails for flyers, and take the time to expand your knowledge of your neighbors' cultures, especially with the answers right in your own backyard. ✦

The Proteome Project: How Many Proteins? What Can They Tell Us?

The public is familiar with the Genome Project. Publicly funded and pursued in parallel by a genomics company, Celera, it has been an international effort initiated in 1989 to sequence the approximately 3 billion base pairs of genetic information in the human cell. Most people may not be aware of the repercussions of the Genome Project, providing us not only with an understanding of the DNA sequence of the estimated 30,000+ genes—there's an active debate about what the actual number is—but also with detailed information about the products that are derived from these genes: proteins. Although there are exceptions—a notable example being ribosomal genes, which encode the structural RNAs that comprise part of the protein synthesis machinery in the cell, the ribosome, an RNA protein amalgam—a protein is the ultimate product that a gene encodes through an RNA intermediate called mRNA (messenger RNA).

The ability to analyze complex mixtures of protein is the key to new developments in the fight against cancer.

The protein repertoire of any particular cell type has been dubbed its proteome. Many scientists believe that, in addition to understanding the genome, to understand, diagnose, and treat the several thousand inherited disorders, such as Huntington's disease and cystic fibrosis, it is equally important to understand the proteome, or what every protein does in a cell. It is believed that, by knowing the composition and function of the proteome, we will have a complete understanding of how cells work. In addition, we will be able to understand not only the molecules involved in the structure and movement of a cell, but also those that catalyze the biochemical reactions required to produce the molecules that enable the cell to maintain itself, do its job (e.g., conduct nerve impulses, produce digestive enzymes), and, in some cases, replicate itself.

The tools scientists use to probe the proteome include traditional ones, such as two-dimensional (2D) gel electrophoresis (in the life sciences, "traditional" means it's over 20 years old) or more recent developments of traditional technology, such as the novel uses of mass spectrometry (MS), an analytical chemistry tool, coupled with liquid chromatography (LC; see Figure 1). As in many rapidly advancing fields, the technology and the tools that define proteomics are becoming more sensitive, the equipment is smaller and, in many cases, automated. Two-dimensional gels were one of the first intensively used technologies to help address proteomic questions because of their ability to resolve thousands of proteins by employing orthogonal separation modes to fractionate proteins based on their size and electrical charge. Unfortunately, 2D gels are limited in the number and molecular weight of proteins that they can resolve, which has spurred investigators in the field of proteomics to develop alternative technologies to characterize the proteome.

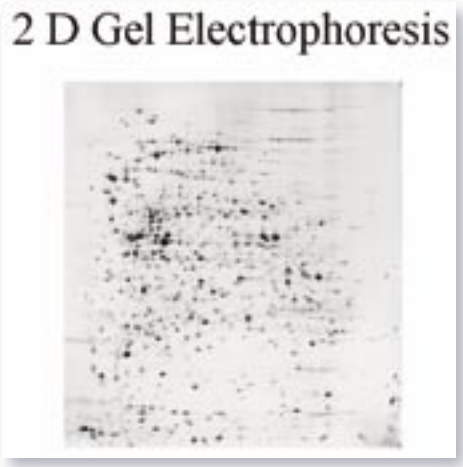


Figure 1. 2D gel following electrophoresis of a cell lysate. Figure courtesy of Dr. Timothy Veenstra, Laboratory of Proteomics and Analytical Technologies

Although improvement in LC methods coupled upstream of 2D gel fractionation has allowed the process of identifying proteins within a 2D gel to become highly automated, many proteomic investigators have opted for the more sensitive and versatile MS methods that now exist. A traditional analytical chemistry tool, MS now uses instruments developed to identify complex mixtures of protein and protein fragments (peptides).

When MS is coupled with upstream LC approaches and downstream automated, high-throughput computational analysis methods, it appears that, in the same way that the capillary DNA sequencer has become the workhorse for genome sequencing, various MS approaches have become its counterpart in the Proteome Project (Figure 2). The ability to analyze complex mixtures of protein is the key to new developments in the fight against cancer.

The **Laboratory of Proteomics and Analytical Technologies (LPAT)** directed by Dr. Timothy Veenstra includes the LC group, headed by Dr. Haleem Isaaq, and the MS group, headed by Dr. Thomas Conrads. LPAT is part of the Research Technology Program, directed by Dr. Joseph Kates. LPAT has collaborated with

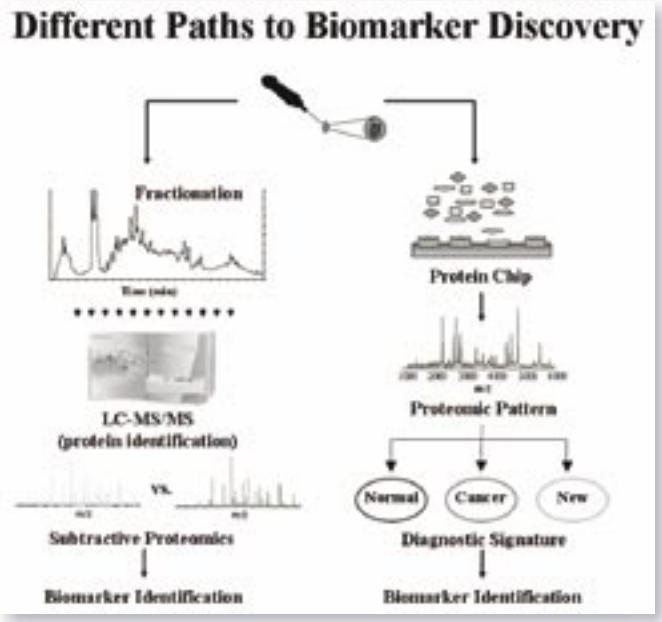


Figure 2. Flow diagram of proteomic analysis of serum from normal and ovarian cancer patients.
Figure courtesy of Dr. Timothy Veenstra, Laboratory of Proteomics and Analytical Technologies

investigators Drs. Emanuel Petricoin (FDA) and Lance Liotta (NCI) to identify differences between the cells of healthy individuals and cancer patients. In the case of ovarian cancer, current methods can identify patients in the latter stages of the disease, when patients present with obvious symptoms. Early-stage patients can also be identified fortuitously when histological testing is done; however, early-stage patients generally do not have symptoms and do not get checked. Survival five years after the diagnosis of late-stage ovarian cancer is quite poor: typically 95% of those diagnosed do not survive. On the other hand, if diagnosed in the early stage, 95% of the patients survive to at least the five-year mark.

The investigators have used a novel MS method to define the protein patterns in the serum of healthy individuals and ovarian cancer patients, retrospectively.[1] Using samples from patients with early- and late-stage ovarian cancer, they have identified patterns associated with the cancer samples that are absent in the normals. This suggests that MS could be used as an early screening diagnostic test for ovarian and other cancers, to provide better hope for survival. The power of proteomics will undoubtedly produce other valuable applications as the proteome is revealed, and diagnostic and therapeutic avenues that were formerly closed will open.

[1]Conrads TP, Fusaro VA, Ross S, Johann D, Rajapakse V, Hitt BA, Steinberg SM, Kohn EC, Fishman DA, Whiteley G, Barrett JC, Liotta LA, Petricoin EF, and Veenstra TD: High-resolution serum proteomic features for ovarian cancer detection. *Endocr Relat Cancer* **11**:163–178, 2004.

Our thanks to Paul Nisson for writing this article. ✦

NCI-Frederick Investigators Win Awards

Three NCI-Frederick investigators won awards at a recent Joint Meeting of the International Society of Interferon and Cytokine Research and the International Cytokine Society.

Cancer Scholar **Ana Gamero** of the Laboratory of Experimental Immunology and Fellow **Ana Romero** of the same lab both won Travel Awards to attend another Joint Meeting in San Juan, Puerto Rico, Oct 21-25, 2004. Both scientists work on IFN-α signaling, with a special emphasis on the STAT molecules that transmit the signal inside the cell upon engagement of the interferon molecule with its cell surface receptor.

At the same meeting **Dr. Dmitry Liepinsh**, Laboratory of Molecular Immunoregulation, won the Friderika Fischer Fellowship Award from the International Cytokine Society. Dr. Liepinsh's work focuses on characterization of lymphotoxin alpha knock-out mice with respect to the role of LTα in host defense.

Dr. Dimitry Liepinsh, LMI

Teresa Ramirez, a postbaccalaureate in the Laboratory of Experimental Immunology, was selected for a poster presentation at the annual meeting of the Society for Advancement of Chicano and Native Americans in Science (SACNAS). Ms Ramirez also won a travel/housing award to attend the meeting in Austin, TX. SACNAS has provided strong national leadership in improving and expanding opportunities for minorities in the scientific workforce and academia and in mentoring college students within science, mathematics, and engineering for almost 30 years.

More information about the International Society of Interferon and Cytokine Research can be found at www.isicr.org.

Our thanks to Dr. Howard Young for the information contained in this article. ✦

John Barone + Lee Dove = 80 Years of Service

Three-Time Winner of NIH Award of Merit Retires

After 40 years of Federal government service, the last 35 with the National Cancer Institute, **John J. Barone** will retire on December 31st from his position as Administrative Officer in the Office of the Director. Throughout his career, he received the highest accolades for his professionalism, efficiency, and organization. But perhaps even more important were the many lives he touched and the number of friendships he forged with his fellow workers at all levels of NIH.

Career Combines Science and Management

John graduated from Syracuse University in 1964, majoring in microbiology and chemistry, and for six years was a supervisory microbiologist with the Department of the Army at Fort Detrick, doing vaccine and cellular immunology research and concurrently doing his postgraduate studies at the University of Maryland. He then moved to the Surgery Branch of the National Cancer Institute, where he did tumor immunology and immunotherapy research with Drs. Donald Morton, Samuel Wells, William Catalona, and Peter Scardino.

In 1975 with an MS in management from Frostburg University, he assisted Dr. Alan Rabson in the Administrative Office, Division of Cancer Biology and Diagnosis. In 1983, he coordinated a major reorganization of the intramural research program, receiving the NIH Award of Merit for his exemplary efforts; he has earned this prestigious NIH award three times in his career. He served as the Intramural Administrative Officer of the Division until the reorganization of the entire Institute in 1996, whereupon he became Administrative Resource Center (ARC) Manager for Building 41 and was the Acting Manager, Division of Cancer Epidemiology and Genetics. In 1998 he came full-time to the NCI-Frederick ARC, as Deputy Manager and then as Manager.

A Strong Advocate for Fairness in the Workplace

Probably few of the current NIH technical support personnel realize that they are able to advance in grade level today primarily because of John's efforts. Until 1974, all Institute scientific directors had to agree on advancing any technical support staff beyond the GS-9 level. Over a two-year period, he pursued, through OPM's established procedures, a change in what he believed to be a cumbersome, and mostly unfair, employment issue. This case resulted not only in a major change in the NIH personnel system, but also in one individual receiving 1½ years of retroactive pay. Later, as a newly elected member of what was then called the Equal Employment Opportunity Advisory Group, he was responsible for the NCI's implementation of mandatory EEO training for all supervisors, which led to fewer discriminatory complaints and more amicable work partnerships.

"The NCI and NIH community have provided me with 35 years of enriching experiences..."

John often tells his staff and neophyte administrators that "We don't get many compliments in this business. However, you know when you have done your job. Keeping scientists working at the bench or in the clinic without them worrying over some administrative matter is the key to a successful administrator."

John plans to continue his long-established antiques business and private consulting work for investors, collectors, and museums; to write for national magazines; to increase his outdoor activities; and to become more involved in Frederick County's legislative affairs.

Asked for a final thought, John noted that "The NCI and NIH community have provided me with 35 years of enriching experiences and for that, I profusely thank them." ✦

John Barone + Lee Dove = 80 Years of Service

Former "Bull Gang" Member Retires

Lee F. Dove began his career in August 1964 with the National Cancer Institute, NIH, in Bethesda. As an Animal Caretaker in Building 6, working under the supervision of Don Ecker, he was part of a group of caretakers known as the Bull Gang. "We would fill in when someone had been off for a few days or on vacation. It was named the 'Bull Gang' because we had many smelly animal rooms to clean," Mr. Dove recalls.

Upon leaving the Bull Gang, he joined the Laboratory of Biology, working with Dr. Melvin Reuber under Lab Chief Dr. Walter Heston. In 1969 he moved with Dr. Reuber to the Experimental Pathology Branch, led by Dr. Umberto Saffiotti. Here, he advanced to the position of Biological Laboratory Technician, doing animal carcinogenesis work and toxicology research.

Original Staff Member of the Comparative Carcinogenesis Lab

With Dr. Reuber's departure for the University of Maryland in 1971, Mr. Dove joined a group led by Dr. Jerry Rice in the same Branch. In 1981 the group moved to Frederick to form the Laboratory of Comparative Carcinogenesis, with Dr. Rice as the Lab Chief. Here Mr. Dove began working with Dr. Alan Perantoni on molecular and biological studies of kidney development, and it is here that he is completing his government career, with Dr. Perantoni and Lab Chief Dr. Larry Keefer. His last day is December 31st.

Changes Seen in Research Requirements

Mr. Dove commented that the biggest change he has seen over the past 40 years is in the restrictions and requirements now placed on conducting research. Forty years ago, he says, a phone call could be made to the animal facility, followed by an order for some compounds, and within a week an experiment could be started. Today, a complete protocol and blueprint of detail are required, along with individual and committee reviews, and then it may take months for the protocol to be approved or denied.

"Wishes and dreams really do come true!"

Mr. Dove said that "The happiest day of my career was the laboratory's move to the Frederick Cancer Research and Development Facility in 1981." His commute decreased from 37 to 4 miles. Now when he hears on WFMD Radio of 2- to 3-mile backups on Route 270, he believes "wishes and dreams really do come true!"

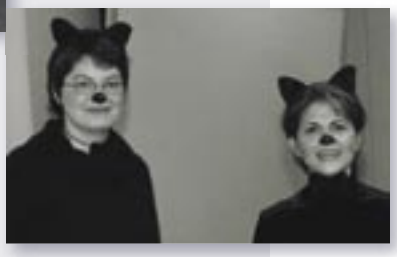
When asked what he will miss most, Mr. Dove responded, "All of my co-workers and the many friends that I have made over my long career at the NIH/NCI. I will also miss the microsurgical work that I currently do."

Where does he expect to be a year from now? "I hope to have caught up on work on my farm in Woodsboro, Maryland, so that I can spend more time at our weekend retreats in Rockingham County, Virginia, and Hardy County, West Virginia."

Good Bye, and Good Luck

The Poster staff joins the rest of the community in thanking both Mr. Barone and Mr. Dove for their many years of service, and in wishing them continued success in their retirement. ✦

Halloween Costume Contest



Farmers' Market

Did You Know...?

Women's Softball Team Raises Funds for CASA

SAIC-Frederick, Inc., takes pride in the individual and team sports it sponsors, many of which have won awards. Employees have participated in marathons such as the Susan G. Komen Breast Cancer Foundation Race for the Cure and played many different sports. This fall, the company sponsored a women's softball team in the annual Run Jane Run tournament held in Pinesburg, MD, part of a nationwide series of events to raise funds for Citizens Assisting and Sheltering the Abused (CASA).

The team placed fourth out of 28 teams, "pretty good for a pick-up team," said fourth-year organizer Kristen Pike. With pride, Ms Pike pointed out, "We beat teams that play as a unit year-round, and we defeated the Frederick County League undefeated champions. We are very thankful to Dr. Joe Kates, Barbara McElroy, and Andi Gnuschke (and Dave Bufter in years past) for donating the money for our entry and supplies, and to Cheryl Parrott for leftover Spring Research Festival T-shirts donated to our team the past four years." ✦

Front row, from left: Karen Stevens, Staples; Sharrey Hammond, Cato Inc.; Hope Butler, Frederick Community College; Kristen Pike, SAIC-Frederick, Inc.; Amber Hunter, NIST; Melissa Hose, Maryland State Dept. of Social Services. Back row, from left: Melissa Dempster, Shire Laboratories, Inc.; Amy Morse, Frederick Community College; Laura Bacanskas, Guardian Realty; Kelli Summers, Frederick County Public Schools; Diane Bickford, Wicomico County Public Schools; and Terri Summers-Working, NIST.

Do you participate in a sport that SAIC-Frederick, Inc., sponsors? Let us know how your team is doing. Send us pictures, naming the participants; we'll scan them in and return them to you. Contact Maritta Grau, graum@ncifcrf.gov, 301-846-5248; or Nancy Parrish, ntparrish@ncifcrf.gov, 301-846-6281. ✦

The September *Poster* Puzzler winners: From left, Teri Plona and Kristen Pike, Laboratory of Molecular Technology. See page 6 for historical information about this bank barn at Nallin Pond and for the picture of this quarter's *Poster* challenge. ✦

Did You Know?

A Look Back

1977

By 1977, most of the major renovations done in the conversion of the facility to a cancer research center were finished. Personnel recruitment was completed, and the organization of the scientific programs was developed. The Science Council was established to encourage collaboration among the various scientific programs established at the Frederick Cancer Research Center (FCRC).

In October, a five-year, $128.8 million contract was awarded to Litton Bionetics to operate the FCRC. This was the first multiyear contract awarded.

The library was located in Building 426, with branches in the scientific program areas. At the time, the library held 15,000 volumes and carried 418 journal subscriptions, which were supplemented by 67 databases. Today the library is under one roof, in Building 549, with 12,000 books, 700 journals and serials publications, and access to over 200 databases.

1978

The NIAID opened its first interim P-4 high containment DNA laboratory to the press.

1979

The Information Services (IS) group was established to bring together the Library, the Information Systems Department, and the Graphics Center for the purpose of supporting scientific and administrative activities involved in the acquisition, processing, control, analysis, and presentation of information.

The *Whisper of IS*, a newsletter from Information Services, was first published in August. In this issue, a short article mentioned that, because of changes in the state tax guidelines, FCRC employees who resided in Maryland had received an unexpected take-home pay increase of $2.85 per pay period. After a brief survey, the *Whisper of IS* reported that "the $2.85 will purchase a six-pack or 3 gallons of gas, depending on the employee's priorities." Those were the days!

The NCI achieved approval of its first billion-dollar budget. That's $1,000,000,000.00. Today it's over $5 billion.

1980

Computer technology was growing exponentially. Sony Electronics introduced the 3.5 inch floppy disk and drive. (*Source:* http://library.thinkquest.org/22522/timeline3_en.html)

1981

In December, the Frederick Cancer Research Center became the Frederick Cancer Research Facility.

1982

Contractor operations were broken into five components for the first time: *Scientific Library*—Data Management Services, Inc.; *Computer & Statistical Services*—Information Management Services, Inc.; *Laboratory Animals*—Harlan Sprague Dawley, Inc.; *Basic Research*—Litton Bionetics, Inc.; and *Operations*—Program Resources, Inc.

What's Your Favorite Memory of Working at NCI-Frederick?

We're always looking for more stories on the people and events that have made NCI-Frederick what it is today. If these notes on the past nudge your memory about colleagues, events (whether minor or significant, humorous or serious), or of pictures you've tucked away in a desk drawer, drop us a line at SPGM@ncifcrf.gov and tell us, or call the editors: Maritta Grau, 301-846-5248; Nancy Parrish, 301-846-6281. We'd love to hear from you. ✦

ERC Boosts Employee Morale

Looking for a free lunch? Tickets for breakfast with Santa Claus, discount movie tickets, Weinberg Center events, ski trips? Would you like to go to New York on a one-day or overnight trip?

You've probably noticed the "frequent flyers" and e-mails that are posted about events and tickets for members of the **ERC—Employee Recreation Council**. Open to all NCI-Frederick employees and designed to boost employee morale and encourage camaraderie, the ERC sponsors a variety of "fun" events for its membership and their friends and families—all for only $12 per year. Other funding to support ERC events comes from vending machine profits, committee fund-raisers, and group discount purchases.

A new ERC feature is the "I Always Wanted to Try…" questionnaire. You will find the questionnaire on the ERC Web site, http://erc.ncifcrf.gov/default.asp or you can request a copy from Carol Ingraham Tobias in Occupational Health Services, Building 426. Send your completed questionnaire to Carol Tobias, OHS, 426.

...free ice cream...

At the end of each calendar year the ERC hosts a membership drive. By signing up early, members are entitled to the entire year's activities. The 2005 membership drive is in progress. New 2005 members get the added bonus of December 2004 events as well. The $12.00 membership fee entitles you to attend all activities through December 31, 2005.

What Are the Benefits of Joining the ERC?

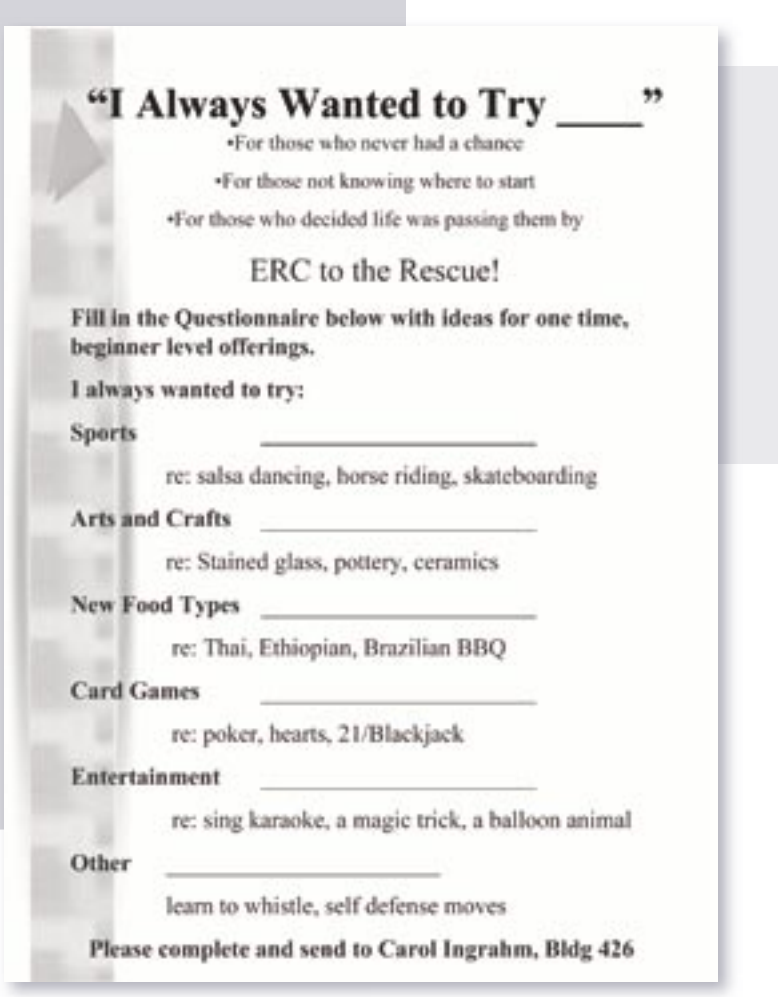
Periodically during the year, you'll also be eligible for our free ice cream, free lunches, and much more. For example, earlier this fall, the ERC sponsored a BBQ chicken luncheon at Nallin Pond. More than 240 people signed up for the event. On the day of the lunch, the remnants of one of the many horrendous 2004 Atlantic hurricanes roared through Frederick. The spirit of the ERC was evident in the number of dedicated employees who braved the torrential downpour to participate (that and the food was really good!). At the end of the day, only about 20 portions had not been picked up!

The ERC brings together the work community in a way no other organization can. Joining the ERC opens opportunities to break down barriers and share experiences with people who are otherwise just names in a phone book. As the campus population grows, the place to network is an ERC event.

...free lunches...

Now's the time to renew or sign up for membership in the ERC! Don't miss any of the opportunities we've planned for you in the coming year. Memberships are available by mail. Send your check for $12 (made payable to THE ERC) and the completed form on *The Poster* insert to Heidi Bokesch, Building 562.

Remember: The ERC is open to all NCI-Frederick employees, regardless of employer. ✦



"I Always Wanted to Try ____"

•For those who never had a chance

•For those not knowing where to start

•For those who decided life was passing them by

ERC to the Rescue!

Fill in the Questionnaire below with ideas for one time, beginner level offerings.

I always wanted to try:

Sports _____

re: salsa dancing, horse riding, skateboarding

Arts and Crafts _____

re: Stained glass, pottery, ceramics

New Food Types _____

re: Thai, Ethiopian, Brazilian BBQ

Card Games _____

re: poker, hearts, 21/Blackjack

Entertainment _____

re: sing karaoke, a magic trick, a balloon animal

Other _____

learn to whistle, self defense moves

Please complete and send to Carol Ingrahm, Bldg 426

Second Annual Chili Cook-Off a Fiery Success

People taking small samples for testing…using clean utensils for each trial…pausing to reflect on the reaction…taking detailed notes… discussing samples in hushed tones with colleagues…was this a busy NCI laboratory in action? Well, one of sorts. It was the Second Annual Chili Cook-Off sponsored by Protective Services.

Sixteen serious chili masters had spent countless hours preparing their specialties for this event. Some began the previous weekend, and tweaked their creations all week. Some even began preparations last summer, growing gardens filled with a variety of peppers. With names like "Redskins' Revenge" and "Voodoo Chile Chili," these chilis combined unexpected ingredients—chocolate and peanut butter, to name two—to create an array of dishes for every taste, from smooth and subtle to those that packed a substantial kick.

"...not so spicy. Then you realize you're sweating."

With fire extinguishers in plain view, the event attracted more than 100 "judges" from all over campus. Crockpots were set up around the room, each one numbered, and some with side dishes and toppings. Plenty of small cups and plastic spoons were available, which was a good thing because some of the more scientific judges preferred to have a clean cup and spoon for each sample. "You've got to start with a zero or it throws the whole thing off," one judge commented. Another judge, who noticed some of the dishes sneaked up on you, said, "One bite, two, three, not so spicy. Then you realize you're sweating."

With the variety of textures and flavors, it was truly hard to pick a favorite, a comment heard over and over. However, when all the votes were counted, Jamie Tammariello, Task Leader, Division of Extramural Activities, Developmental Therapeutics Program, was awarded first place, for Chili #12. Jamie will receive a 30-day reserved parking space, compliments of Protective Services. Second place went to Coleen Tabler, Medical Assistant, OHS (#14), who will receive a 10-day parking space. Ted Morningstar, Midnight/ Weekend Supervisor, Protective Services (#11), picked up third place and won a 5-day space.

Thanks to all contestants for their hard work in bringing these taste sensations to our campus. And, special thanks to Tom Gannon-Miller of Protective Services for organizing a successful event. ✦

Here Are the Chilis by Number and Their Creators

#1 – Charles Gastley
#2 – Bruce Tobias
#3 – Carol Tobias
#4 – Siobhan Tierney
#5 – Annie Rogers
#6 – Scott Keimig
#7 – Walter Knott
#8 – Tom Gannon-Miller
#9 – J.T. Moore
#10 – Renee Flemming
#11 – Ted Morningstar – 3rd Place
#12 – Jamie Tamariello – 1st Place
#13 – Jonathan Summers
#14 – Coleen Tabler – 2nd Place
#15 – Rebecca Irwin-Cohen
#16 – Peter Boving

Technology Transfer Branch (TTB)

Software Inventions at NCI-Frederick

Life seems pretty simple for a computer. All it needs to know is "0" or "1" to carry out its tasks. Strings of zeros and ones put together to create computer software programs have touched our lives in innumerable ways, and are key to advancing NCI's 2015 goal of making cancer easily treatable. Examples include the recent NCI Bioinformatics initiatives, essential for connecting the cancer communities in a sophisticated and logical fashion; NCI-Frederick's Laboratory of Experimental and Computational Biology, where advanced computing aids theoretical understandings to biological systems; and the many types of computational research support from the outstanding contracts associated with NCI-Frederick.

Because computing power is important to the future of public health everywhere, successful software development must include effective distribution methods and intellectual property protection of that software. Appropriate distribution and intellectual property protection of NCI-Frederick software make it accessible to the end-user, protect the Institute and the software developers, create opportunities for further development of the software, and further the NIH's public health mission.

Reporting Your Software Invention

Like any other invention created at NIH, software developed at NCI-Frederick by NCI or SAIC-Frederick, Inc., employees should be reported to the NCI Technology Transfer Branch (TTB) on the NIH Employee Invention Report form. Note that software inventions made by Data Management Services (DMS) employees should be reported through the DMS supervisory chain to NCI as directed in DMS's contract with NCI. At TTB, we will assist you by guiding the software invention through the NCI invention review process [See previous article on the invention review process at http://web/ThePoster/archive/Mar04.pdf]. TTB can also help determine appropriate intellectual property protections and distribution methods that best meet the NIH mission and the laboratory's research goals.

Software Intellectual Property Protection

Software intellectual property protection will be one of two types: a patent or a copyright. A patent protects the underlying concepts or ideas embodied in the software, while a copyright protects the actual written software code. Note that the inventor of the ideas and concepts for the software, who is entitled to seek patent protection, may not be the one who wrote the actual software code and is entitled to a copyright. NCI evaluates software inventions, just as it does other NCI inventions, to determine if patent protection is necessary to meet the NIH's public health mission. NCI generally only seeks patent protection to encourage a commercial party to invest financially in the technology when necessary to commercialize it.

By law, federal employees cannot copyright work conducted as official duty; however, federal contractors, such as SAIC-Frederick, Inc., can establish copyright. A copyright is established by non-federal employees when the software is affixed to a permanent medium (e.g., paper, magnetic media); generally, the contractor must ask permission from the NCI Contracting Officer to assert the copyright and register it with the United States Copyright Office. Software produced at NCI-Frederick is often a combined effort of federal, SAIC-Frederick, Inc., or outside contractor employees, creating complex circumstances with respect to intellectual property rights. By reporting your software inventions on a timely basis, you can help TTB determine who contributed to the patent and copyright, and, thus, which organizations have rights in the software created. In addition, TTB will also assist in assuring that the software is properly distributed for research and commercial use.

Getting Software to the End-User

Whether patented or not, software must reach the end-user. This may be done through licensing or through an "open-source" software network. Like other NIH resources, software can be licensed to a company or transferred to academic institutions under a Software Transfer Agreement. With licensing to companies, NCI and SAIC-Frederick, Inc., software developers share any royalties. Through the "open-source" software network and appropriate open-source public license, the software source code is available to other programmers to further develop and improve the software. "Open-source" is ideal for software programs that need many programmers or when a laboratory no longer has the time or desire to pursue further development. Regardless of the method of distribution, an appropriate license or transfer agreement will document who is the true developer of the software, protect NCI and the software developer from liability, and identify the rights and obligations of the end-user.

TTB is ready to assist you with your software inventions. Just prepare an Employee Invention Report or call TTB at 301-846-5465. ✦

One Topic— Three Ways to Learn

How do you make learning fun? You make it varied and interactive. In August of this year Occupational Health Services (OHS), the Scientific Library, and the Diversity Committee teamed up to present health information in a new way.

A best-selling book by Mark Haddon, *The Curious Incident of the Dog in the Night-Time*, about an autistic teenager who, despite his disorder, solves the mystery of the murder of his neighbor's dog, became a catalyst for discovering unique formats to discuss health topics. Having chosen the health issue of autism spectrum disorders (ASDs), the group decided to present health issues in a format that would appeal to people with a variety of learning styles.

Autism Spectrum Disorders

According to the CDC Web site http://www.cdc.gov/ncbddd/dd/aic/about/default.htm, ASDs are a group of developmental disabilities caused by an abnormality in the brain. People with ASDs tend to lack social and communication skills, usually have repetitive behaviors, and insist on routine in daily activities. Many people with ASDs also have unusual ways of learning, paying attention, or reacting to different sensations. These disorders often first manifest themselves during childhood and last throughout one's lifetime. Like everyone else, however, people with ASDs are unique, and no two people will have the same symptoms. Visit the Web site for more detailed information about autism's symptoms and conditions.

How many people have ASDs? The CDC Web site indicates that numbers vary, depending on the assessment; only a few studies have been done at this point. The site says that "in the United States during the 2000-2001 school year, more than 15,000 children 3 through 5 years of age and more than 78,000 children and adults 6 through 21 years of age were classified as having autism under the Individuals with Disabilities Education Act (IDEA)."

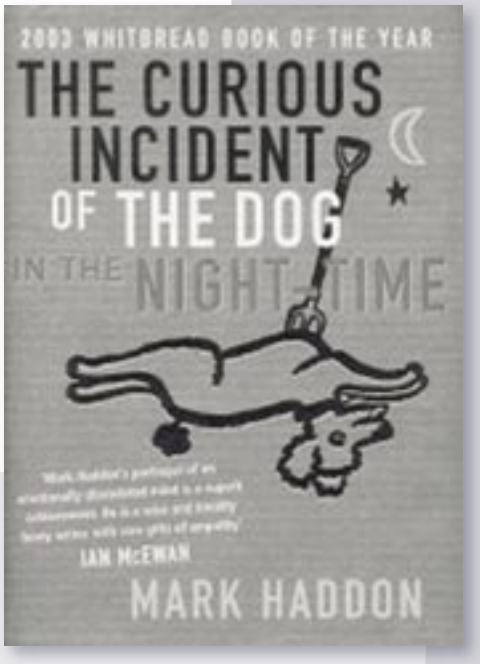
ASDs Presented in Varied Formats

The ASDs program at NCI-Frederick was presented in three formats over three weeks. For the first format, Paula Mathis, RN, OHS, the mother of a 16-year-old son with Asperger's syndrome (like the boy in *Curious Incident*), led a book discussion of *Curious Incident*. WISCO librarians Robin Meckley and Pam Zimmerman, and Diversity Committee member Ethel Armstrong (also a WISCO employee) each brought invaluable experience to the success of the presentation. The well-attended meeting provided a forum for pertinent questions and time to delve into related topics, and encouraged a lively and interesting discussion.

In the second week, *Silent Fall*, a 1995 movie starring Richard Dreyfuss, Linda Hamilton and John Lithgow, was shown over a two-day period. Dreyfuss plays a psychologist who solves the mystery of a murder of the parents of a child unable to speak because of his autism spectrum disorder.

For the third week, the group presented a panel discussion on autism spectrum disorders. Ms. Mathis discussed Asperger's syndrome from a parent's perspective, while Dr. Ralph McBee, clinical psychologist, followed with an overview of autism spectrum disorders and shared some of his clinical experiences. The panel discussion ended with a question-and-answer session.

OHS, the Scientific Library, and the Diversity Committee look forward to continuing the multi-platform presentation style. Please feel free to e-mail Paula Mathis at pmathis@ncifcrf.gov with topic suggestions. ✦



Getting to Know the Central Repository Staff

More than 30 years ago, former President Richard Nixon transformed part of Fort Detrick from a place dedicated to manufacturing biological warfare materials to a place dedicated to healing—today known as the National Cancer Institute at Frederick. Mr. Nixon's speech included Isaiah's words from the *Old Testament—"…they will beat their swords into plowshares…"*—an allusion to waging peace instead of war. To this day, NCI-Frederick continues its research committed to the search for cures in the dedication to life.

Critical to the success of this research is long-term, safe, secure storage for valuable research materials. Nearly 10 years ago, NCI constructed the Central Repository's Mechanical Storage Facility (Building 1066) to house the mechanical freezers previously located in Building 434, enabling the concurrent expansion of liquid nitrogen plumbing in Building 434 to double its previous storage capacity—today, the Nitrogen Storage Facility. Together, these two facilities make up NCI-Frederick's Central Repository.

Mechanical Storage Facility

The Mechanical Repository's team supports both large and small research efforts and runs a laboratory backup freezer program providing emergency space to NCI-Frederick laboratories.

Managing five employees whose combined repository experience is 32 years, Irma Flores, Operations Supervisor, oversees day-to-day operations of the repository, including receiving and inventory, as well as the freezers' mechanics. Ms Flores received her education from the Medical Technology School in Houston, and she chalks up everything else to "experience and on-the-job training." Her career evolved from repository specialist, to group leader, and two years ago, to operations supervisor.

Pictured outside the Mechanical Storage Facility, from left are Robert Hutchinson, Jahme Watson, Dawn Newman, Melody Eicholtz, Michelle Dorsey, and Operations Supervisor Irma Flores.

Nitrogen Storage Facility

With more than 15 years of repository experience, Paul Smith is the Central Repository Nitrogen Storage Facility's Operations Supervisor. His expertise ranges from engineering, drafting, and teaching to both technical and mechanical illustrating. Mr. Smith holds a BA from Geneva College, Beaver Falls, PA; and an MA from the University of Maryland, College Park, although he claims that most of his expertise derives from "what we called in the Army the 'school of OJT' [On-the-job training]." A Vietnam veteran, he served two years in the Army. With his experience, Mr. Smith understands every aspect of the repository services. He supervises a staff of four, with 48 years of combined repository experience.

Pictured outside the Nitrogen Storage Facility, from left are Shirley Forman, Carmen Meeks, Connie Smallwood, Tim Kofoet, and Operations Supervisor Paul Smith.

This facility provides rapid turnaround of requests to support on-campus investigators. Requests for samples are often processed and ready for pick-up within 30 minutes. In addition to daily input and withdraw activities, the staff provides controlled-rate freeze services, performed twice daily, at 10:00 a.m. and 2:00 p.m.

Staff Treats Samples as Their Own

The staff respects the time, effort, and money that went into collection of the valuable materials entrusted to them by the scientists. One research scientist recently remarked about the Central Repository staff, "I appreciate their efforts in taking care of me, my frozen 'kids,' and the investigators I serve."

McKesson's goal is to provide top-quality care and service in support of the research efforts of SAIC-Frederick, Inc., NIH, and other government agencies. If you haven't already, we encourage you to stop by and get to know the staff of the NCI-Frederick Central Repository. ✦

Data Management Services (DMS)

Helpdesk Update: New Job Tracking System

In October, the Computer Services Helpdesk debuted its new, state-of-the-art, Web-based job tracking system. Now when customers submit job requests, they will receive instant confirmation of their request and a job tracking number from the Helpdesk.

Once a job request has been completed, the user can expect to receive a computer print-out of the work performed, as well as an e-mail survey from the Helpdesk. Input from this short, five-question survey will help us provide the best service possible to our user community.

The new system is integrated with the NCI-Frederick phonebook as well as the property database. This feature allows us to keep a maintenance history on each computer, expediting the resolution.

Since its debut, the system has significantly decreased the turnaround time for completing jobs and has increased efficiency at the Helpdesk, giving us more time to enhance our current services as well as pursue new ones that could greatly benefit the NCI-Frederick community. ✦

Stephanie Sheppard is one of the friendly faces behind the Computer Services Helpdesk.

A Wealth of Information: The Computer Services Helpdesk Web Site **http://css.ncifcrf.gov/helpdesk**

The Computer Services Helpdesk Web site is a "one-stop shop" for your computer needs. This helpful site allows the NCI-Frederick community to submit job requests as well as check the status of pending requests. The site also offers interesting facts, such as the current number of service requests pending and the average turnaround time for the last seven days. As you scroll through the site, you can stay up to date by reading important anti-virus information. You can also review the list of NCI-Frederick site-licensed software available for both PC and Macintosh. In the market for a new computer and need purchasing advice? Read "Review MCS Guidelines for Purchasing Computers and Software" for help.

Microcomputer and Communications Support, in conjunction with the Helpdesk, provides a wide range of computer services to the NCI-Frederick community. To learn more about our department and the services we offer, click "Read Answers to Frequently Asked Questions about MCS."

Stay informed—log on to http://css.ncifcrf.gov/helpdesk. ✦

Contacting C&SS

Computer Services Helpdesk
Web: http://css.ncifcrf.gov/helpdesk
E-mail: helpdesk@css.ncifcrf.gov
Phone: 301-846-5115

Hours of Operation:
8:00 a.m.–5:00 p.m.,
Monday through Friday

NCI-Frederick Webmasters
Phone: 301-846-6700
E-mail: webmaster@css.ncifcrf.gov

Other Inquiries
Phone: 301-846-1060 ✦

IMPORTANT NOTICE: WE'RE IN A NEW LOCATION

Microcomputer and Communications Support (MCS) and the Computer Services Helpdesk have moved from Trailer 363 to Trailer 360. Stay tuned for more information on our new location in the next *Poster*. ✦

SAIC-Frederick, Inc.

Using Proteomics to Help Detect Wide Range of Diseases

SAIC-Frederick, Inc., scientists are using proteomics—the study of proteins in living cells—to help them diagnose diseases from cancer to behavioral disorders and neurodegenerative diseases.

In the **Clinical Proteomics Reference Laboratory**, Dr. Gordon Whiteley and his colleagues have developed a new diagnostic test to find recurrences of ovarian cancer. Dr. Whiteley "fingerprints" the proteins by using pattern recognition algorithms that identify hidden sub-patterns in blood serum proteins.

How does this help? More than 95% of women diagnosed with ovarian cancer at an early stage have an excellent prognosis for survival; with Dr. Whiteley's test, researchers will be able to determine which proteomic patterns match specific stages of the disease or if the patient is disease-free.

Scientists in Dr. Timothy Veenstra's **Laboratory of Proteomics and Analytical Technologies** have developed a multistep procedure to separate blood serum proteins prior to mass spectroscopy. Dr. Veenstra and his colleagues identified more than 1,800 proteins without the prior need to remove highly abundant proteins in human serum. More than 4,300 proteins have been identified in mouse serum.

Because of our strong commitment to helping fulfill the NCI's mission to alleviate the pain and suffering due to cancer, our researchers are also helping other investigators through our publicly available database of newly identified human blood proteins at http://bpp.nci.nih.gov. ✦

CUSTOMER SERVICE

Customer Service: The Name of the Game

Management everywhere these days emphasizes a team approach. Why? Because it works! Many companies encourage employees from various departments to team together to share and solve problems.

The customer is seen as a part of that team. This philosophy is encouraged at NCI-Frederick, and Dr. Larry Arthur, president of SAIC-Frederick, Inc., has encouraged customer service-oriented training sessions. Each group of training sessions is tailored to address the nature of the work and customers that a particular directorate deals with. Clear communication is an essential element of good customer service.

Ms Sukanya Bora, PHR, is the new training officer. Originally from India, she has worked in human resources, focusing on training, since 1995. In previous work, she conducted numerous team building programs, including outbound training programs.

Before joining SAIC-Frederick, Inc., Ms Bora worked at the Johns Hopkins University and the Bayview Medical Center for three years. As a training specialist, she was responsible for overseeing and conducting all training-related activities.

As a part of developing clear communication at NCI-Frederick, Ms Bora organized a 3-day workshop, entitled "Critical Thinking, Clarity and Conciseness in Writing Scientific and Technical Documents," held in November for NCI personnel and to be held in January for contract personnel.

Led by Chris Watson from Applied Communications Group, the workshop focuses on how to create accurate, influential scientific and technical documents; improve collaborative skills; overcome writer's block; write drafts quickly; communicate effectively with different types of audiences; improve planning, organizing, writing and revising skills; and facilitate customer understanding by improving clarity and conciseness and using "plain language" principles. ✦

NCI-Frederick

Cancer Letter Lists NCI-Frederick Mentors among Best

The October 8th issue of *The Cancer Letter* lists a number of NCI-Frederick scientists among those that NCI fellows, students, and trainees have selected as the best in the way that they help train future scientists. Outstanding NCI-Frederick Mentors include Daniel McVicar and Joost Oppenheim. Mentors of Merit are Nancy Jenkins, Neal Copeland, Alan Perantoni and Michael Smith. ✦

SAIC-Frederick Employees Win Awards

In line with clear communication, SAIC-Frederick, Inc., employees have won awards in several areas of communications.

Scientific Publications, Graphics and Media has earned several awards in recent months.

In the national MarCom competition, SPGM won a Platinum award in the Creativity/Design/Packaging category for "Discovery, Development, Delivery," a DVD packaging for the NCI-Frederick video released in February 2004; lead designer was Allen Kane. SPGM also was a Gold finalist for the Web Site/Home Page category; the Web page design was for the Office of Science and Technology Partnerships. Lead designer was Allen Kane. An Honorable Mention in the Marketing/Ads/Banner/Signs category was given for a sign, "The National Cancer Institute at Frederick." The sign was made for a Chamber of Commerce picnic; lead designer was Tammy Schroyer.

The International Association of Business Communicators (IABC) presented SPGM with an Award of Merit at its annual regional meeting, held October 14 at the National Press Club in Washington, DC. The award was granted in the Advertising category for "Today's Commitment, Promise for Tomorrow," an ad that appeared in *The Frederick News-Post* in the "Progress" supplement, March 2004. "Today's Commitment" also won an honorable mention at the Publications Management Magnum Opus Awards in summer 2004. Text was written by Maritta Grau; lead designer was Ellen Frazier.

Drs. Li Hua Wang, Xiaoyi Yang, Xiaohu Zhang, Weihua Xiao, and Kelly Mihalic have received the Executive Science and Technology Council Award for their article, "Suppression of Breast Cancer by Chemical Modulation of Vulnerable Zinc Fingers in Estrogen Receptor" (Nat Med 10[1]:40–47, 2004). Their research represents a new molecular intervention strategy blending molecular modeling studies, biochemistry, and molecular biology; it may be a huge leap forward in saving lives of breast cancer patients. ✦

Conferences and Events Planning Services: Making Your Life a Little Easier

Why is it that a simple thing—like bringing in a guest speaker or setting up a conference—isn't simple? Because of government approval processes and federal travel and reimbursement regulations, to name only a couple of reasons. Fortunately, help is available; when your group decides to hold a conference, a seminar, a meeting, a retreat, or some other major event, Conference and Events Planning Services is here to help you deal with the seemingly overwhelming details. A professional conference planner can make your life easier so you can get on with the business of finding cures for cancer and AIDS.

Headed by **Carlie O'Neal**, Conferences and Events Planning Services, currently located on Thomas Johnson Drive, works closely with you to develop the event in the way that best suits your needs. While this planning service has been available to NCI-Frederick employees for a number of years, several procedures have been assessed and updated to improve efficiency as well as to provide cost savings.

Carlei works closely with Finance, Accounts Payable, Travel, and Purchasing to ensure conferees are in compliance with travel and reimbursement guidelines and regulations, and any other guidelines that affect government funding of particular conference activities. Her familiarity with all of the parameters of event hosting and her experience in negotiating with hotels and meeting facilities are your guarantee that you'll always get the most favorable rates for both guest sleeping rooms and meeting and/or exhibition facilities.

Carlei has developed a number of process guidelines to help with planning for bringing in conference speakers and setting up conferences. From COA approval to guidelines for speakers, both domestic and international, these helpful guidelines can save valuable time and ensure that the right bases are tagged in the right sequence. She is fully familiar with the recently revised NCI-Frederick Travel Policy and the various guidelines it incorporates and can help you navigate safely. She also stays current, which is vital, as guidelines and procedures change frequently.

Whether your needs be large or small, Carlei's expertise in this arena is available for the asking, and can save you valuable time and energy. She can be reached at 301-228-4027, or by e-mail at onealc@ncifcrf.gov. ✦

Scientific Library Helps Readers Recycle in Many Ways!

The Scientific Library sponsored its annual Book and Audiovisual Swap in celebration of National Medical Librarians Month in October. Now in its fifth year, the event has grown in popularity every year, with donations reaching an all-time high. Participation increased from 300 donations the first year to over 1,000 this year. One person alone donated 167 items and another person brought in 100, clear evidence that there are many bookworms here at NCI-Frederick.

The Library usually begins collecting donations four weeks before the event and accepts books, videotapes, DVDs, vinyl records, audiocassettes, and CDs, provided that they are in good condition, commercially produced, and not government property. The quality of the materials donated was especially good this year, with many good-as-new hardbacks complete with intact dust jackets. Each donor receives a "book card" that serves as a coupon for selecting new items; for example, if you bring in three items, you can select three new ones from any category or combination of categories. This year, the most popular category of donations was Mystery/Science Fiction. In prior years, the favorite has been Romance. Do we have a trend going here?

Clutter or Treasure? The Answer Lies in the Eyes of the Beholder

The Book Swap is really a treasure hunt for some people and a housecleaning exercise for others. Dr. Howard Young spotted a book entitled *The Newer Knowledge of Bacteriology and Immunology* (E.O. Jordan and I.S. Falk, editors), dated 1929. Opening it, he was struck by a quotation from a *Journal of Experimental Medicine* article written in 1912, which suggested that "lymphocytes have been thought to be involved in tumor immunity." Intrigued, he dashed back to his desk to pick up a German chemistry textbook published in 1875 (and quarter bound in leather), which he brought back to swap for this one. Dr. Young has since obtained a copy of the quoted article and shared it with his entire staff, noting that this nearly century-old perspective is "right on!" The book we accepted in exchange is actually a valuable classic, entitled *Anleitung zur Quantitativen Chemischen Analyse*, written by none other than Karl Remigius Fresenius, an early chemist whose influence is still felt today. Although the copy is not a first edition, the text was the basis for major developments in the field, and is something the Library will retain for its permanent collection. Who knows what might turn up next year!

Another visitor told us that she found something in last year's swap that she had been seeking for a very long time, looking high and low in used bookstores in Illinois and Maryland, as well as online with Alibris, one of the largest out-of-print vendors. Then, quite by accident, she spotted the book, entitled *Diary of a 13 and 1/2 Year Old Boy*. Written in the 1960s and published in England, the book had been a childhood favorite. She was overjoyed with her find, and she sent it to her sister, who was very surprised to see it again after so many years.

Books Are Swapped for Different Reasons

We also learned some interesting things about what people do with the books they select. One person donated 25 books, and after she had chosen her 25 "new" items in exchange, she was

asked if there was anything more that she needed. When she explained that she was collecting books to give to underprivileged children as Christmas gifts, the librarian immediately pulled out her own receipt and donated her five remaining items to the cause. Another person was collecting books for a care package to send to a colleague serving in a critical care unit in Iraq.

While there was great activity on the first day of the Swap, we were pleased to see people returning to the Library to browse through the remaining items, which stayed on display for about a month. Once everyone had a chance to pick their favorites, the remaining items were donated to Select Seconds, whose sales benefit Frederick Memorial Hospital's health care delivery initiatives in Frederick County.

Why Do You Swap?

We are curious about any stories other participants may have to share about why they enjoy the event or what special items they may be looking for, so please don't hesitate to contact the Library at extension 1093 or e-mail library@mail.ncifcrf.gov. We'd love to hear your stories, comments, and suggestions. ✦

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http://web.ncifcrf.gov/ThePoster

The National Cancer Institute at Frederick

Poster

Frederick, MD 21702-1201

Employment Opportunities

Please contact the individual contractor's human resources representatives or go to the contractor's Web site for up-to-date, detailed information about jobs or research and training opportunities and requirements.

Charles River Laboratories
http://www.criver.com

Data Management Services
http://css.ncifcrf.gov/about/dms.html

National Cancer Institute at Frederick
http://www.training.nih.gov/postdoctoral

SAIC-Frederick, Inc.
http://saic.ncifcrf.gov
www.saic.com

Wilson Information Services Corporation
http://www-library.ncifcrf.gov

Weather Advisory

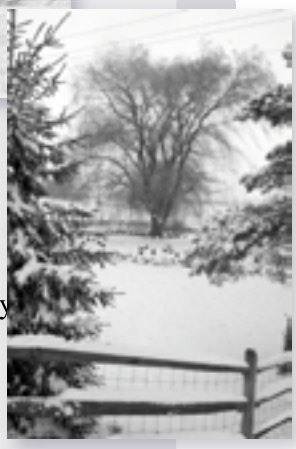
You peer out the bedroom window and see softly falling snow or the gleam of ice. Is the base closed? Here's how to find out. Call the Fort Detrick Telenews (301-619-7611), or listen to local radio/television stations for information. Please note that the *Frederick News Post*'s Sound Source has been discontinued.

Closing or Delayed Opening

Remember: When Fort Detrick is closed, NCI-Frederick is also closed; when Fort Detrick has a delayed opening, NCI-Frederick has a delayed opening. NCI-Frederick does not follow weather closing or delayed opening advisories for the NIH-Bethesda campus or Washington metropolitan area.

Early Dismissal

For early dismissal, NCI-Frederick operates independently of Fort Detrick; therefore, your supervisor will notify you if NCI-Frederick closes during work hours.



Who Ya Gonna Call?

Telephone

Recorded weather line	301-619-7611
Ft. Detrick toll free number	1-800-256-7621, *8, 37611#"
TDD	301-619-2293

Internet (This will only be used if there is a change in operating hours.)
Fort Detrick's home page: http://www.detrick.army.mil/. Weather information pops up automatically

Radio/TV

Frederick, MD

WAFY	FM/103.1
WFMD	AM/930
WFRE	FM/99.9

Hagerstown, MD

WARK	1490
WARX	106.9
WJEJ	AM/1240
WWMD	FM/101.5
WHAG	AM/1410
WQCM	FM/96.7
WHAG	TV/Ch. 2

Baltimore, MD

WBAL	AM/1090
WIYY	FM/97.9
WPOC	FM/93.1
WCAO	AM/600
B104.3	FM/104.3
WJZ	TV/Ch. 13

Thurmont, MD

WTHU	AM/1450

Williamsport, MD

WCRH	FM/90.5

Chambersburg, PA

WCHA	AM/800
WIKZ	FM/95.1

Gettysburg, PA

WGET	AM/1320
WGTY	FM/107.7

Mercersburg, PA

WSRT	FM/104.7

Greencastle, PA

WHGT	AM/1380
WAYZ	FM/104.7

Martinsburg, WV

WEPM	AM/1340
WLTF	97.5

Charles Town, WV

WMRE	AM/1550
WXVA	FM/98.3

Arlington, VA

WWVZ	FM/103.9
WWZZ	FM/104.1

Washington, DC

WTOP	AM/1500
WMZQ	1390/98.7
WRQX	FM/107.3

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