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Where is it?

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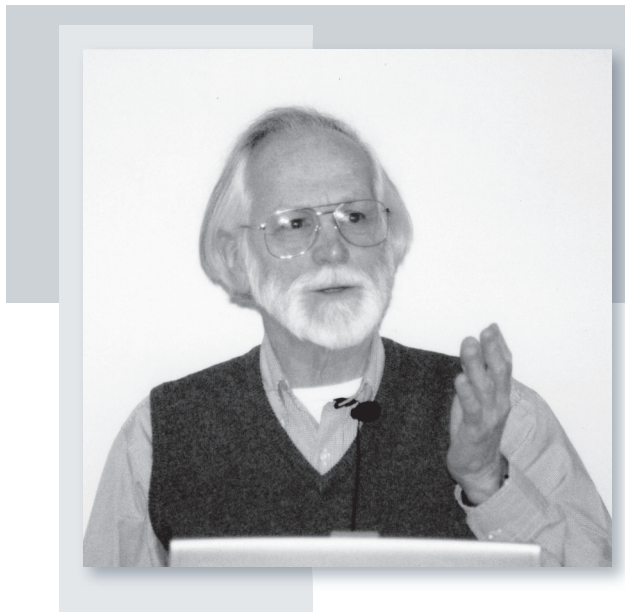


# Poster

## Spring Research Festival

### Nobel Laureate Featured at Spring Research Festival: J. Michael Bishop Addresses Full House

Dr. J. Michael Bishop, Chancellor of the University of California at San Francisco, who shared the 1989 Nobel Prize for Physiology or Medicine with former NIH Director Harold E. Varmus, was the keynote speaker at May's Spring Research Festival.



Dr. Bishop lectured on "Mouse Models for Human Cancer" to a "full house," noting that his group had gotten "unexpected lessons from mouse models." His group has done extensive research using mouse models of liver cancer.

Among these lessons, Dr. Bishop said that potential roles for MET and MYC oncogenes have been authenticated; they've determined that the mouse model is indeed a reasonable facsimile of human HCC (hepatocellular cancer); and that there are specific, distinctive pathways leading from the

MET oncogenes to beta catenin to HCC and from hepatoblastoma/HCC to HCC/adenomas.

Exploring the mechanisms of tumor lymphoma, they have been able to mimic Burkitt's lymphoma in the mouse model, leading to possible treatment of this aggressive disease.

Using a new generation of mouse models for preclinical testing of therapeutics, based on Dr. Andrei Goga's research in Dr. Bishop's laboratory, they've found that treatment for as little as three weeks with Purvalanol to inhibit cell cycle kinases in cells overexpressing MYC seems to arrest tumors.

Dr. Bishop emphasized the utility of mouse models to provide

insight into genetic contributions to tumorigenesis and facilitate molecular exploration of tumorigenesis.

Science in the Cinema showed *Race for the Double Helix*, exploring the work of James Watson and Francis Crick, with the assistance of Maurice Wilkins, in defining the double helix structure of DNA and earning them the 1962 Nobel Prize in Physiology or Medicine. After the movie, Dr. Mary Carrington, a principal investigator in human genetics with the Laboratory of Genomic Diversity and director of the

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# Spring Research Festival

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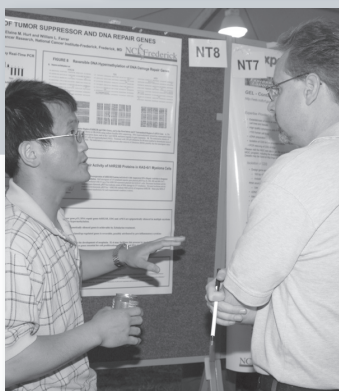
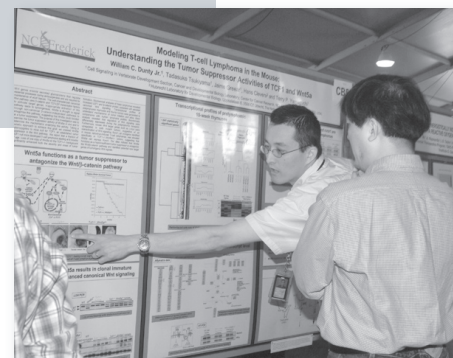
Basic Science Directorate, discussed the DNA discovery and its impact, and the role of Dr. Rosalind Franklin and other scientists.

More information on Dr. Bishop is available at:

[http://nobelprize.org/redirect/links\\_out/prizeawarder.php?from=/medicine/laureates/1989/presentation-speech.html&object=ki&to=http://info.ki.se/index\\_en.html](http://nobelprize.org/redirect/links_out/prizeawarder.php?from=/medicine/laureates/1989/presentation-speech.html&object=ki&to=http://info.ki.se/index_en.html)

Read the text of Dr. Bishop's Nobel Lecture and learn more about his research at the e-Nobel site:

<http://nobelprize.org/medicine/laureates/1989/index.html> ♦



# New Faces at NCI-Frederick

## NCI-Frederick Welcomes New Staff

Sixty-three people joined our Facility in December 2004, and January and February 2005.

### Charles River Labs welcomes...

Lauren Putman  
Mary Rostkowski ♦

### NCI-Frederick welcomes...

Cyril Barinka  
Won-Jun Choi  
Arun Dakshinamurthy  
Casper Groth  
Anjali Joshi  
Ourania Kosti  
Junghwa Lim  
Hong Lou  
Melissa McKay  
Daniel Monson  
Radek Malik  
Snehalata Pawar  
Arti Santhanam  
Manjistha Sengupta  
Bo Zhu ♦

Cyril Barinka



Mary Rostkowski



Melissa McKay



### WISCO welcomes...

Chris Miller  
Jeanne Hazzard ♦

Won-Jun Choi



### SAIC-Frederick, Inc., welcomes...

Judy Becerra-Pineros  
Craig Belldina  
Karen Blackburn  
Francis Bonsu  
Liang Cao  
Keysha Charles  
Brenda Chasteen  
Kelly Cochran  
Kathryn Compton  
Run Cung  
Marina Dobrovolskaia  
Qian Dong  
Johnny Epps  
Naheed Fatima  
Mildred Gapara  
Leah Giambarresi  
Jennifer Gnuschke  
Elizabeth Goddard  
Nicole Hoffman  
Richard Jackson  
Mohamad Jamiluddin  
Cynthia Kleppinger  
Vasantha Kumar  
Casey Matthews

Susan Mertes  
Daniel Meyers  
Tracey Miller  
Juan Morales-Contreras  
Claes Ohlen  
Brooke Overcash  
Mark Parta  
Anil Patri  
Joan Pontius  
Ester Rozenblum  
Sally Rucker  
Kimberly Shafer  
Donald Shriner  
Poonam Sood  
Stephan Stern  
Paul Stokely  
Shari Thomas  
Jannean Williams  
Rita Zaledonis  
Liubov Zaritskaya ♦

Jeanne Hazzard



Arun Dakshinamurthy



Lauren Putman



Chris Miller



## Poster People Profile

### *What Do You Do?*

#### *Mary Carol Fleming*



*Mary Carol Fleming,  
Senior Nurse Practitioner,  
Occupational Health Services*

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

As a senior nurse practitioner, I work with many employees one-to-one. I enjoy the diversity of the employees, and providing services to protect their health and safety at work is rewarding, both personally and professionally.

The field of occupational health services bridges the disciplines of medicine and nursing with program management, industrial hygiene, safety, and risk management. That makes my job extremely interesting and challenging. Fortunately, scientific experts on site and medical experts at the CDC and NIH are available for consultation.

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

I was hired as an occupational health nurse in Occupational Health Services (OHS) nearly 15 years ago.

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

Today, my job title is Senior Nurse Practitioner. I am board-certified as an advance practice registered nurse for adults and a board-certified occupational health nurse specialist. In addition to my regular duties as an experienced nurse practitioner, I manage the international travel medicine program and the herpes simplex virus surveillance program. I continue to provide expertise to the Ergonomics Team, and I have a special interest in the prevention and treatment of cumulative trauma disorders.

I completed my master's degree in nursing at the University of Maryland, Baltimore, for the Adult Nurse Practitioner in 2000 and also was board-certified by the American Board of Nurses as a Certified Registered Nurse Practitioner-Adult (CRNP). To maintain certifications, actual work experience and continuing education credits are required annually.

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

I function independently as an occupational health care provider. Although I act under a collaborative agreement with an M.D., my job requires excellent, independent

medical judgment and decision-making skills, very important in accident response. I first worked as clinical staff; now, as a senior nurse practitioner, I provide clinical leadership.

*What have been the most interesting or exciting changes you've seen here?*

The facility has grown so much. We now provide services for approximately 2,000 employees. Many work off-site, so some consultations are done by phone. We coordinate tests, vaccines, and blood work into one office visit, when possible. The OHS staff has expanded; computer software facilitates scheduling and recordkeeping. Obtaining and supplying multiple donor specimens has become a daily part of the OHS morning routine. I am most excited by the NCI clinical trials being done in collaboration with other countries. I prepare employees medically prior to their traveling to Uganda, Mali, China, and elsewhere.

*How do you participate in the NCI-Frederick community—committees, other awards, or recognition, etc.?*

In 2001, I received the SAIC-Frederick, Inc., Scientific Achievement award for my participation on the Ergonomics Team. I established the Ergonomic Program and served as the first ergonomic program coordinator, providing ergonomic training to employees, supervisors, and engineers. A specific work task analysis of 13 different job positions was also completed, and an occupational therapist/ergonomist was on-site for individual referrals. ♦

## Poster People Profile

### *What Do You Do, Too?*

#### *Cliff Hubbard*

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

The people. I work with a group who like to do a good job and are proud of what they do. They also have a sense of humor, so when you go home in the evening you have a feeling of a job well done and you are laughing. It's a great feeling.

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

I have been at NCI-Frederick for ten years now, as the Facility Manager for Charles River Labs.

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

I am the Facility Manager, responsible for producing and shipping high-quality laboratory animals to investigators all over the world. I am a high school graduate and started with Charles River in 1965 in an animal barrier production room as an animal technician. At the main facility in Wilmington, Massachusetts, I was involved in virtually every aspect of producing animals, working in isolators, making shipping containers, delivering animals to customers, running autoclaves, and working in cage wash. Because of my background, I was asked to be the Production Manager at CRL's facility in Margate, England, where I worked for two years. After moving back to Wilmington, I became Plant Manager in Portage, Michigan, for six years. After several more years at corporate

headquarters in Wilmington, I came to Frederick. It's hard to believe that 10 years have passed since that decision, because it's been so enjoyable living in this area.

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

I came to Frederick as the Facility Manager, so basically I am still doing the same job. I suppose that when you really like what you do on a daily basis, it doesn't make a difference what your duties are.

*What have been the most interesting or exciting changes you've seen here?*

I like the way the facility has grown. Buildings have been put up and jobs have been created. There is a lot of construction now going on and there is talk of more.

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



*Cliff Hubbard, Facility Manager,  
Charles River Laboratories*

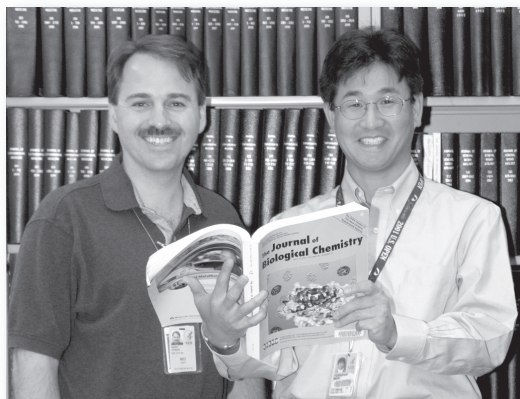
I am a member of the Employee Recreation Committee (ERC) and the Café Users Committee. In the past I have also been on the Take Your Child to Work Day Committee. ♦

## Platinum Highlight

*Dr. Toshiyuki Mori and  
Dr. Barry R. O'Keefe,  
Molecular Targets  
Development Program*

This quarter's Platinum Highlight features Dr. Toshiyuki Mori and Dr. Barry R. O'Keefe. They and their colleagues wrote the article whose abstract is below. While the two men trained on opposite sides of the world, their training was very similar. Majoring in drug metabolism and toxicology, Dr. Mori obtained his PhD in 1995 in pharmaceutical sciences at Hokkaido University, Sapporo, Japan, while Dr. O'Keefe earned his PhD in pharmacognosy at the University of

Illinois Chicago's Health Sciences Center in 1994. Since that time, both have worked in the Molecular Targets Development Program (MTDP), under Dr. James B. McMahon.



The MTDP's discovery of Griffithsin reflects the program's focus on team

science using HTS technologies to screen the NCI's Natural Products Repository for novel anti-cancer and anti-HIV compounds. Dr. O'Keefe's Protein Chemistry Group specializes in isolating and characterizing novel proteins from natural product extracts, while Dr. Mori's research has further extended the application of phage display technology to isolate unique peptides and antibodies for molecular-targeted cancer research. Eventually, their work may lead to development of new prophylactic and therapeutic agents for the prevention and treatment of HIV; specifically, the potential development of anti-HIV female-controlled microbicides, which are urgently needed worldwide. ♦

*Mori T, O'Keefe BR, Sowder RC, Bringans S, Gardella R, Berg S, Cochran P,  
Turpin JA, Buckheit RW, McMahon JB, Boyd MR*

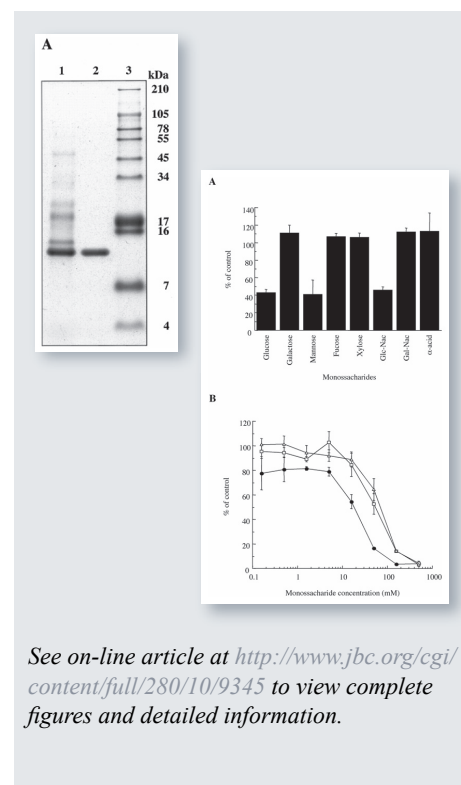
### *Isolation and Characterization of Griffithsin, a Novel HIV-Inactivating Protein, from the Red Alga Griffithsia sp.*

*J Biol Chem 280(10):9345-9353, 2005*

Griffithsin (GRFT), a novel anti-HIV protein, was isolated from an aqueous extract of the red alga *Griffithsia sp.* The 121-amino acid sequence of GRFT has been determined, and biologically active GRFT was subsequently produced by expression of a corresponding DNA sequence in *Escherichia coli*. Both native and recombinant GRFT displayed potent antiviral activity against laboratory strains and primary isolates of T- and M-tropic HIV-1 with EC50 values ranging from 0.043 to 0.63 nM. GRFT also aborted cell-to-cell fusion and transmission of HIV-1 infection at similar concentrations. High concentrations (e.g., 783 nM) of GRFT were not lethal to any tested host cell types. GRFT blocked CD4-dependent glycoprotein (gp) 120

binding to receptor-expressing cells and bound to viral coat glycoproteins (gp120, gp41, and gp160) in a glycosylation-dependent manner. GRFT preferentially inhibited gp120 binding of the monoclonal antibody (mAb) 2G12, which recognizes a carbohydrate-dependent motif, and the (mAb) 48d, which binds to CD4-induced epitope. In addition, GRFT moderately interfered with the binding of gp120 to sCD4. Further data showed that the binding of GRFT to soluble gp120 was inhibited by the monosaccharides glucose, mannose, and *N*-acetylglucosamine, but not by galactose, xylose, fucose, *N*-acetylgalactosamine, or sialic acid-containing glycoproteins. Taken together, these data suggest that GRFT is a new type of lectin that binds

to various viral glycoproteins in a monosaccharide-dependent manner. GRFT could be a potential candidate microbicide to prevent the sexual transmission of HIV and AIDS. ♦



See on-line article at <http://www.jbc.org/cgi/content/full/280/10/9345> to view complete figures and detailed information.

# Platinum Publications

*Editor's note: The following 29 articles have been selected from a quarterly listing of publications in 12 of the most prestigious science journals.*

## Apoptosis

**Croft DR, Coleman ML, Li SX, Robertson D, Sullivan T, Stewart CL, Olson MF.** Actin-myosin based contraction is responsible for apoptotic nuclear disintegration. *J Cell Biol* 168(2):245–255, 2005.

## Biological Sciences

**Kanugula S, Pauly GT, Moschel RC, Pegg AE.** A bifunctional DNA repair protein from *Ferroplasma acidarmanus* exhibits O-6-Alkylguanine-DNA alkyltransferase and endonuclease V activities. *Proc Natl Acad Sci USA* 102(10):3617–3622, 2005.

## Biophysics

**Ma BY, Pan YP, Gunasekaran K, Venkataraghavan RB, Levine AJ, Nussinov R.** Comparison of the protein-protein interfaces in the P53-DNA crystal structures: Towards elucidation of the biological interface. *Proc Natl Acad Sci USA* 102(11):3988–3993, 2005.

## Cell and Tumor Biology

**Sun RH, Gao P, Chen L, Ma DL, Wang JM, Oppenheim JJ, Zhang N.** Protein kinase C zeta is required for epidermal growth factor-induced chemotaxis of human breast cancer cells. *Cancer Res* 65(4):1433–1441, 2005.

## Cellular Immunology and Immune Regulation

**Lyakh LA, Sanford M, Chekol S, Young HA, Roberts AB.** TGF-beta and vitamin D-3 utilize distinct pathways to suppress IL-12 production and modulate rapid differentiation of human monocytes into CD83(+) dendritic cells. *J Immunol* 174(4):2061–2070, 2005.

**Rodriguez-Galan MC, Bream JH, Farr A, Young HA.** Synergistic effect of IL-2, IL-12, and IL-18 on thymocyte apoptosis and Th1/Th2 cytokine expression. *J Immunol* 174(5):2796–2804, 2005.

**Sun GP, Liu XL, Mercado P, Jenkinson SR, Kypriotou M, Feigenbaum L, Galera P, Bosselut R.** The zinc finger protein Ckrox directs CD4 lineage differentiation during intrathymic T cell-positive selection. *Nat Immunol* 6(4):373–381, 2005.

## DNA: Replication, Repair, and Recombination

**Williams KL, Zhang YJ, Shkriabai N, Karki RG, Nicklaus MC, Kotrikadze N, Hess S, Le Grice SFJ, Craigie R, Pathak VK, Kvaratskhelia M.** Mass spectrometric analysis of the HIV-1 integrase-pyridoxal 5'-phosphate complex reveals a new binding site for a nucleotide inhibitor. *J Biol Chem* 280(9):7949–7955, 2005.

## Gene Expression

**Kim YS, Nedospasov SA, Liu ZG.** TRAF2 plays a key, nonredundant role in LIGHT-lymphotoxin beta receptor signaling. *Mol Cell Biol* 25(6):2130–2137, 2005.

**Yant SR, Wu XL, Huang Y, Garrison B, Burgess SM, Kay MA.** High-resolution genome-wide mapping of transposon integration in mammals. *Mol Cell Biol* 25(6):2085–2094, 2005.

## Genes: Structure and Regulation

**Pengt B, Hodge DR, Thomas SB, Cherry JM, Munroe DJ, Pompeia C, Xiao WH, Farrar WL.** Epigenetic silencing of the human nucleotide excision repair gene, *Hhr23b*, in interleukin-6-responsive multiple myeloma KAS-6/1 cells. *J Biol Chem* 280(6):4182–4187, 2005.

## Genetics

**Kobiler O, Rokney A, Friedman N, Court DL, Stavans J, Oppenheim AB.** Quantitative kinetic analysis of the bacteriophage lambda genetic network. *Proc Natl Acad Sci USA* 102(12): 4470–4475, 2005.

**Svenningsen SL, Costantino N, Court DL, Adhya S.** On the role of Cro in lambda prophage induction. *Proc Natl Acad Sci USA* 102(12): 4465–4469, 2005.

## Genomics, Proteomics and Bioinformatics

**Liotta LA, Lowenthal M, Mehta A, Conrads TP, Veenstra TD, Fishman DA, Petricoin EF.** Importance of communication between producers and consumers of publicly available experimental data. *J Natl Cancer Inst* 97(4):310–314, 2005.

**Salvador JM, Mittelstadt PR, Guszczynski T, Copeland TD, Yamaguchi H, Appella E, Fornace AJ, Ashwell JD.** Alternative P38 activation pathway mediated by T cell receptor-proximal tyrosine kinases. *Nat Immunol* 6(4):390–395, 2005.

**Staats B, Qi LQ, Beerman M, Sicotte H, Burdett LA, Packer B, Chanock SJ, Yeager M.** Genewindow: An interactive tool for visualization of genomic variation. *Nat Genet* 37(2):109–110, 2005.

**Teeling EC, Springer MS, Madsen O, Bates P, O'Brien SJ, Murphy WJ.** A molecular phylogeny for bats illuminates biogeography and the fossil record. *Science* 307(5709):580–584, 2005.

## Glycobiology and Extracellular Matrices

**Mori T, O'Keefe BR, Sowder RC, Briggins S, Gardella R, Berg S, Cochran P, Turpin JA, Buckheit RW, McMahon JB, Boyd MR.** Isolation and characterization of Griffithsin, a novel HIV-inactivating protein, from the red alga *Griffithsia sp.* *J Biol Chem* 280(10):9345–9353, 2005.

## Hematopoiesis

**Jelacic T, Linnekin D.** PKC delta plays opposite roles in growth mediated by wild-type Kit and an oncogenic Kit mutant. *Blood* 105(5):1923–1929, 2005.

**Sugaya M, Watanabe T, Yang A, Starost MF, Kobayashi H, Atkins AM, Borris DL, Hanan EA, Schimel D, Bryant MA, Roberts N, Skobe M, Staskus KA, Kaldis P, Blauvelt A.** Lymphatic dysfunction

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## Platinum Publications

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tion in transgenic mice expressing KSHV K-cyclin under the control of the VEGFR-3 promoter. *Blood* 105(6):2356–2363, 2005.

### Immunology

**Herbeuval JP, Boasso A, Grivel JC, Hardy AW, Anderson SA, Dolan MJ, Chougnat C, Lifson JD, Shearer GM.** TNF-related apoptosis-inducing ligand (TRAIL) in HIV-1-infected patients and its in vitro production by antigen-presenting cells. *Blood* 105(6):2458–2464, 2005.

**Jones KS, Akel S, Petrow-Sadowski C, Huang Y, Bertolette DC, Ruscetti FW.** Induction of human T-cell leukemia virus type I receptors on quiescent naive T lymphocytes by TGF-beta(1,2). *J Immunol* 174(7):4262–4270, 2005.

**Mohamadzadeh M, Olson S, Kalina WV, Ruthel G, Demmin GL, Warfield KL, Bavari S, Klaenhammer TR.** Lactobacilli activate human dendritic cells that skew T cells toward T helper

1 polarization. *Proc Natl Acad Sci USA* 102(8):2880–2885, 2005.

**Tai XG, Cowan M, Feigenbaum L, Singer A.** CD28 co-stimulation of developing thymocytes induces Foxp3 expression and regulatory T-cell differentiation independently of interleukin 2. *Nat Immunol* 6(2):152–162, 2005.

**Zhang N, Inan S, Cowan A, Sun RH, Wang JM, Rogers TJ, Caterina M, Oppenheim JJ.** A pro-inflammatory chemokine, CCL3, sensitizes the heat- and capsaicin-gated ion channel TRPV1. *Proc Natl Acad Sci USA* 102(12):4536–4541, 2005.

### Inflammation

**Cataisson C, Pearson AJ, Torgerson S, Nedospasov SA, Yuspa SH.** Protein kinase C alpha-mediated chemotaxis of neutrophils requires NF-kappa B activity but is independent of TNF alpha signaling in mouse skin in vivo. *J Immunol* 174(3):1686–1692, 2005.

### Microbiology

**Nikolenko GN, Palmer S, Maldarelli F, Mellors JW, Coffin JM, Pathak VK.** Mechanism for nucleoside analog-mediated abrogation of HIV-1 replication: Balance between RNase H activity and nucleotide excision. *Proc Natl Acad Sci USA* 102(6):2093–2098, 2005.

### Oncogenes

**Sithanandam G, Fornwald LW, Fields J, Anderson LM.** Inactivation of ErbB3 by siRNA promotes apoptosis and attenuates growth and invasiveness of human lung adenocarcinoma cell line A549. *Oncogene* 24(11):1847–1859, 2005.

**Weber HO, Ludwig RL, Morrison D, Kotlyarov A, Gaestel M, Vousden KH.** HDM2 phosphorylation by MAPKAP kinase 2. *Oncogene* 24(12):1965–1972, 2005. ♦



## CCR Fellow Wins Ruth and William Silen, M.D., Award

Dr. Samuel T. Waters, one of four CCR fellows who participated in the March New England Science Symposium in Boston, has won the **Ruth and William Silen, M.D., award** for his talk, “Genetic Analysis of Mouse Gbx Transcription Factors During Neural Development.”

Dr. Waters is a postdoctoral fellow in the Genetics of Vertebrate Development Section, headed by Dr. Mark Lewandoski, Cancer and Developmental Biology Laboratory, which is part of the Cancer and Developmental Biology Laboratory headed by Dr. Colin Stewart.

This is the second year for the Silen awards; Dr. Silen was dean for Faculty Development and Diversity at Harvard Medical School and is now Harvard’s Johnson & Johnson Distinguished Professor of Surgery, emeritus. ♦



## Three-dimensional Analysis of Molecular Pathways in Tissue

Tissue development and function, and disease-related processes such as tumorigenesis, are driven in large part by communications between neighboring cells. In order to understand the molecular basis of these communications, we must quantitatively analyze the molecular pathways of individual cells while the cells remain alive in their natural tissue environment.

Several simple steps are involved in performing such analyses. Researchers use fluorescence to label tissue samples for specific molecules of interest, followed by three-dimensional (3D) image acquisition with a confocal microscope. Next, the images are analyzed by computer algorithms that first segment (delineate) the individual cells or cell nuclei in the tissue, followed by quantification of the levels and spatial-temporal distribution of specific molecules in each cell in the context of neighboring cells. The eventual goal is to mathematically model this quantitative and dynamic spatial information so that we can

explain and predict the outcome of complex molecular pathways operating in tissue.

Until now, a major bottleneck preventing widespread use of such analyses has been the lack of an efficient method to segment individual, whole cells and cell nuclei from 3D images of intact tissue or tissue models grown from cultured cells. To accomplish this segmentation task, a consortium of scientists from the Image Analysis Laboratory (Dr. Prabhakar Gudla, Mr. Jason Collins, and Dr. Stephen Lockett), the Advanced Biomedical Computing Center (ABCC; Dr. Dean McCullough and Dr. Jack Collins), SAIC-McLean (Dr. Weicheng Shen), and Silicon

Graphics, Inc. (SGI; Dr. Curtis Lisle) is developing automatic image analysis algorithms and 3D image visualization and interaction tools. The end-user will be able to efficiently and accurately segment tens to hundreds of cells of the user's choosing from a 3D tissue image; in addition, users will be able to use the software from their own computer via a web browser connection to the ABCC.

The figures below illustrate our preliminary results.

Please contact Dr. Stephen Lockett, [slockett@ncifcrf.gov](mailto:slockett@ncifcrf.gov), 301-846-5515, if you anticipate applications of this software in your research or are interested in collaborating in its development. ♦

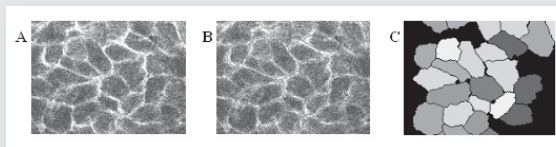


Figure 1: Example of the two-dimensional (2D) version of the segmentation algorithm. A: 2D image of whole cells labeled with Oregon Green 488 phalloidin, which predominantly labels the cell membranes in this sample. B: Image overlaid with the borders of the segmented cells. Note that the user did not choose to segment all cells, and avoided those cells whose borders were not clearly discernible by visual inspection. C: Segmented cells displayed in different colors (Excerpted from Baggett et al., *Cytometry*, accepted, 2005). ♦

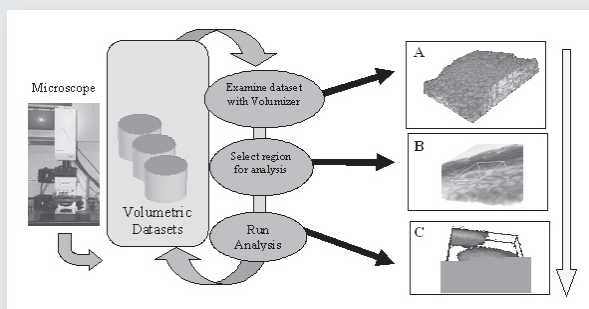


Figure 2: Schematic of the image data flow and analysis. Images acquired from the microscope will be automatically archived and analyzed at the ABCC. Users will view and interact with the images in real time at their own computer through a web browser. A: Volume rendering of a 3D image of cell nuclei in tissue. B: Interactive selection of a sub-volume for analysis. C: Segmentation of cell nuclei in the sub-volume. (Courtesy of Dr. Curtis Lisle, SGI) ♦

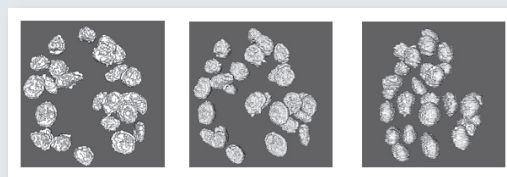


Figure 3: Surface-rendered views at three different angles of cell nuclei segmented using a 3D dynamic programming algorithm (McCullough et al., manuscript in preparation). ♦

Our thanks to Dr. Stephen Lockett, Image Analysis Laboratory, for this article.

## International Women's Day Celebration

### *Dr. Grace Yeh Speaks at NIH for International Women's Day Celebration*

Mother's Day isn't the only day that women are celebrated. International Women's Day is another. Recently, Dr. Grace Yeh, Chief of the Cellular Defense and Carcinogenesis Section, Laboratory of Metabolism, NCI, was one of three panelists who spoke about their research and career paths at the NIH International Women's Day celebration honoring women in science.

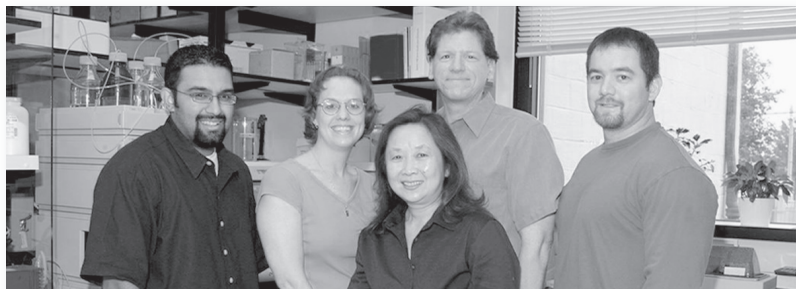
#### *Familiar Cancer Statistics*

In her talk, Dr. Yeh focused on the powerful statistics of cancer, reminding her audience that NCI's goal is to eliminate the suffering and death due to cancer by 2015 through careful treatment, early detection and diagnosis, and prevention of the disease.

She pointed out that of the more than 1.2 million Americans who develop cancer every year, nearly half die of the disease. Approximately 5-10% of all cancers result from inherited gene mutations. Tobacco use contributes 175,000 deaths each year, while other cancers develop from infections/inflammatory disorders and/or a diet that is high in fats, sugars, and total calories.

She noted that diets rich in fruits and vegetables are associated with a reduced risk of most types of cancers. For example, according to World Health Organization data, adapted by the American Cancer Society, 1992, the incidence of breast and prostate cancer is markedly higher in the Western world than in Asian countries. Asian immigrants to the US who maintain an "Eastern" diet retain the lower rates of cancer development, while those who adopt a "Western" diet increase their cancer risk.

Talk of diet risks led easily into a discussion of Dr. Yeh's research: fruits, vegetables, and grains contain thousands of chemicals called



*Cellular Defense and Carcinogenesis Section, Laboratory of Metabolism, NCI. From left: Omar Memon; Sara Bass; Dr. Grace Yeh, chief; Dr. Henry Ciolino; and Dr. Chris MacDonald.*

phytochemicals. Dr. Yeh's Cellular Defense and Carcinogenesis Section has used the aryl hydrocarbon receptor pathway as a molecular target of chemoprevention—the inhibition, reversal, or retardation of carcinogenesis by the administration of natural or synthetic agents.

#### *Women Scientists' Advisory Board*

Dr. Yeh also finds time to participate in the Women Scientists' Advisory Board (WSA), established in 1992 [see *The Poster* <http://web.ncifcrf.gov/ThePoster/archive/May03POSTER527WEB.pdf>]. The WSAs advise the Scientific Director about issues relevant to women scientists; represent women scientists at Lab/Branch Chief meetings; inform and solicit opinions from the Institute's women scientists on issues that will affect them; attend NIH-wide WSA meetings; and serve on search committees for tenure-track, tenured scientists, and Lab/Branch Chiefs in their institutes.

#### *Powerful Women Scientists Influenced Career Choice*

Dr. Yeh identified three women who influenced her own career decisions: Dr. Margaret Pittman, the first female NIH laboratory chief, who made significant contributions to microbiology, including work on pertussis and tetanus toxin vaccines;

Dr. Rosalind Franklin, a pioneer molecular biologist responsible for much of the research and discovery that led to understanding DNA's structure, but who died from ovarian cancer in 1958, four years before Watson, Crick and Wilkins received a Nobel prize for the double-helix model of DNA; and Dr. Yeh's sister, Theresa Lan, who died of cancer at age 38. Dr. Yeh said that her speech at the Women's Day celebration was in part to honor her sister.

#### *Celebrating Women's Achievements in Science*

"International Women's Day gives us the opportunity to celebrate the important achievements in science of women all over the world," said FIC Acting Director, Dr. Sharon Hrynkow.

Dr. Vivian W. Pinn, Associate Director for Research on Women's Health and Director for the NIH Office of Research on Women's Health, added, "In particular, we are recognizing women worldwide for the valuable impact they have had on our quality of life."

Dr. Elias Zerhouni, NIH Director, introduced the late-afternoon program, while Dr. Karen Hofman, FIC Director of the Division of Advanced Studies and Policy Analysis, moderated. The event was sponsored by the Fogarty International Center (FIC) and the Office of Research on Women's Health. ♦

## Civil War Medicine

### *Civil War Medicine: Lessons We've Learned— Improving Survival Rates*

*[Editor's note: This is the first in a two-part series on some of the medical lessons learned during and after the Civil War—lessons that have helped shape modern medicine. The second part, "Caring for the Wounded," will be covered in our September issue. If you have any information on these topics you'd like to share with us, please contact the editors at Scientific Publications, Graphics & Media, 301-846-5248/6281.]*

In many ways, the American Civil War, or the War Between the States, 1861–1865, was a watershed era. It represented a tremendous rip in the American social fabric that has taken much of the past 143 years to mend. However, it was also a pivotal learning experience, especially in the realm of medicine. A number of medical procedures, commonplace today, were developed, often accidentally, during the Civil War.

In the Battle of Antietam (September 17, 1862), 23,000 men were wounded, killed, or missing in action. Surgeons during that battle and during its aftermath amputated about 7,000 limbs, averaging less than 8 minutes for each! Later on, surgeons realized that the amputations increased soldiers' survival as much as 80%.

However, despite the increased survival rates, many soldiers still died of infection. A second lesson came about as surgeons noticed that, when instruments sticky with blood were boiled to clean them, soldiers who were operated on with these clean (sterilized) instruments survived longer. Today, we have such stringent demands for "clean" rooms that in many biosafety level 2 and above laboratories, researchers must gown up and then don fresh uniforms or "scrubs" if they leave the lab and return later.

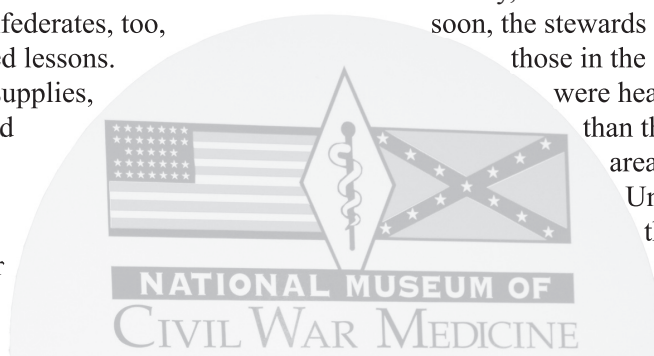
Another lesson came with methods for taking care of wounds. Some surgeons didn't suture the end of an amputation; instead, they packed it with lint. The packing was changed daily, the wound rinsed with tepid water, repacked and rewrapped. Doctors soon realized that soldiers treated this way—wounds cleaned and re-dressed each day—had fewer infections and thus were more likely to survive than those with sutures alone.

The Confederates, too, contributed lessons. Short on supplies, they boiled horsehair to make it more pliable for stitching wounds;

unknowingly, they were also making the horsehair sterile.

Another lesson: Iodine helped in healing. Despite what doctors were learning about amputations and dressing wounds, the biggest single killer of the soldiers was infection, not guns. Draining accumulated fluid from wounds left a horrible smell. To reduce the odor, the stewards, or male nurses, sprayed iodine in areas where soldiers with smelly, infected wounds lay;

soon, the stewards noticed that those in the sprayed areas were healing better than those in other areas of the rooms. Unknowingly, the stewards were killing germs as well as odor! ♦



Interested in learning more about American medical practices during the Civil War? Visit these demonstrations and events:

Gettysburg Battlefield, Gettysburg, PA:

Interesting events for all ages; take ranger-led walking tours of battlefield sites July 1-3, or attend "Casualties of War," a one-hour program on Civil War medicine held at the Cyclorama Center.

Antietam Battlefield, Sharpsburg, MD:

You don't have to go to the National Mall in Washington, DC, to enjoy terrific music in celebration of the United States' Independence Day. Just go to Antietam Battlefield—but be sure to get there early.

The National Museum of Civil War Medicine (NMCWM), Frederick, MD:

Contact the NMCWM by e-mail at [info@civilwarmed.org](mailto:info@civilwarmed.org)

Run by the NMCWM, Pry House Field Hospital Museum is located at Antietam Battlefield. A summer lecture, "The Battlefield Embalmer: Preserving the Civil War Dead," will take place June 25–June 26; 11:00 a.m.–3:00 p.m.

NMCWM's annual Civil War medical conference takes place September 30–October 2, in Hagerstown, MD.

For more information on these and other events, go to

<http://www.nps.gov/gett/gettevents/summer05.htm>.

<http://www.nps.gov/anti/salute.htm>.

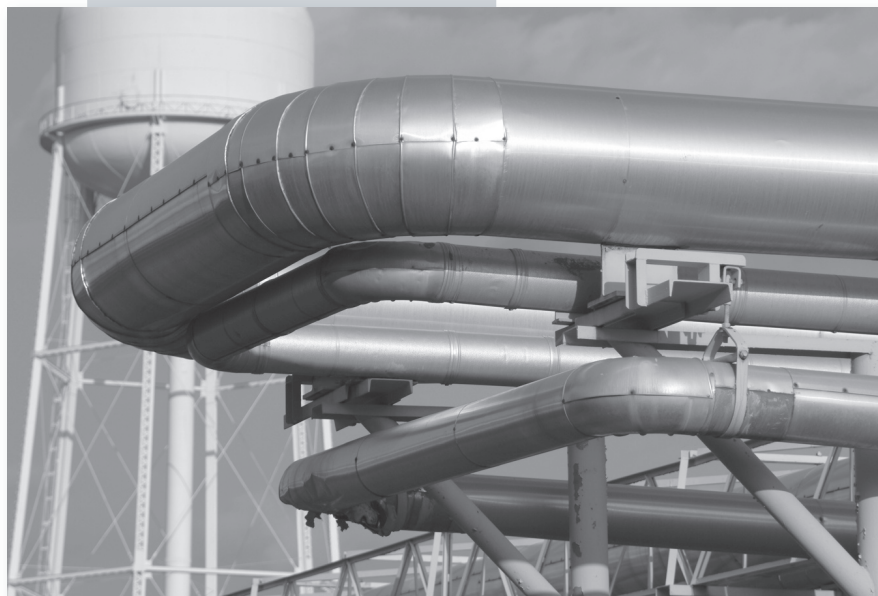
<http://www.civilwarmed.org/>. ♦

# Poster Puzzler

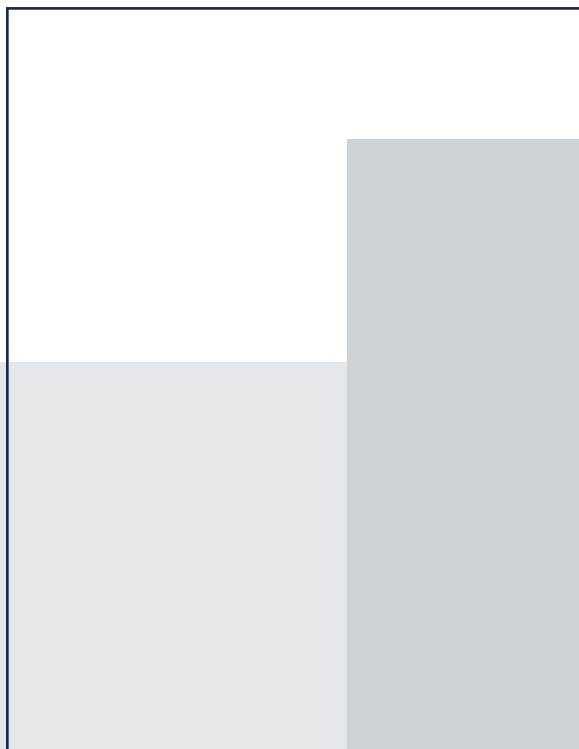
*What is it?*

*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](mailto: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, **August 12**, and the winner will be drawn from all correct answers received by that date.



Good luck and good hunting! ♦



## *The Poster Puzzler:*

### *Brick pattern on Building 469*

Originally constructed in 1951 by the Department of Defense as the Bacteriological Development Laboratory, Building 469 actually began as three buildings, 467, 468, and 469. For 20 years, the buildings housed labs, showers/ changing rooms, animal holding rooms, a glassware washing facility, a machine shop, and administrative and support spaces. When they sat unoccupied from 1970 until 1982, no major interior renovation was done for the building. In 1982, the Molecular Oncology Building 434 was annexed, and the complex was given the single building number, 469. A brick pattern above the main entrance was used as an intake louver for an air-handling unit. During the 1982 renovation, this unit was removed and the louver opening was bricked over, leaving the brick pattern that we see today.

Special thanks to Rocky Follin, FME, for providing information for this article.

Thanks to all participants in the March *Poster* Puzzler! ♦

Congratulations to our March Winner,  
**Eileen Downey**, Senior Financial Analyst,  
Applied Developmental Director ♦

# Did You Know?

## A Look Back

1988

Take a trip down your computer's "memory lane": Some of the recommended software in use in 1988 at FCRF (Frederick Cancer Research Facility) was Wordperfect 4.2, Lotus 1-2-3, Symphony 1.2, dBASE III, REFLEX 1.1, and Windows 2.03.

C&SS and the Publications Department (now known as Scientific Publications, Graphics & Media) moved to their current location, Building 362. An Open House was held to celebrate the move.

The December 1988 issue of NCI-FCRF Network, the facility's newsletter, carried a definition of the Internet, and then went on to describe a manual published by the ASCL (Advanced Scientific Computing Laboratory) explaining the services and capabilities of this new-fangled network.

C&SS added microcomputer services with one part-time hardware specialist; within 6 months, the position was made full time.

1989

A Steering Committee was established to plan and implement a facilitywide electronic data communication and mail system network.

The Publications Department purchased a Polaroid passport camera capable of instantly producing two photographs, eliminating the need to wait for darkroom prints. The Photography Department was proud to announce the purchase of a numbering slide mounter that automated the mounting of slide film. The wonders of modern technology!

1990

The Frederick Cancer Research Facility assumes a new name: NCI-Frederick Cancer Research and Development Center.

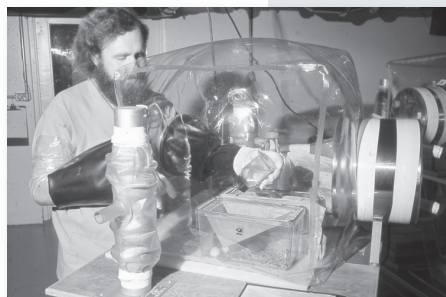
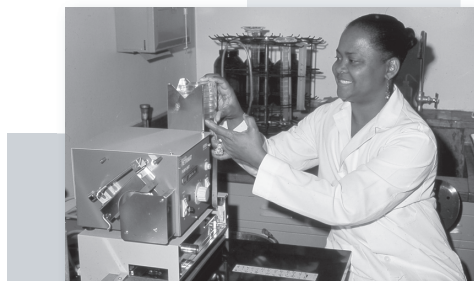
1991

The American Stop Smoking Intervention Study (ASSIST) was launched by NCI, in partnership with the American Cancer Society. This 8-year study was the largest federally funded demonstration project to help states develop effective strategies to reduce smoking (<http://www.cancer.gov/newscenter/pressreleases/ASSIST>).

1992

The Scientific Library announced its project underway for automating its card catalog system.

By now the use of microcomputers on campus had grown at an exponential rate, with the attendant demand for service and repair. In the first quarter of 1992, over 200 trouble calls had been logged. ♦



NATIONAL CANCER PROGRAM



# Campus Improvement Committee

## Campus Improvement Committee Makes Significant Improvements

Walking or driving around campus lately, you have probably noticed something new—the red and white banners on many utility poles, marking the perimeter and main traffic routes of the NCI-Frederick campus. The banners were installed in early May as part of a Campus Improvement Committee project to highlight the National Cancer Institute presence at Fort Detrick.

The 33 new banners are the same size as the banners featuring an American flag design the Army installed a few years ago in remembrance of the September 11<sup>th</sup> victims. They are also mounted with the same style of fixtures and at the same height as the Army banners, making them similar, yet unique. The artwork on the banners was designed by Scientific Publications, Graphics & Media and uses symbols suggestive of a scientific environment.

Under the direction of Ken Michaels, chairman of the signage subcommittee, the banners were designed to instill a sense of pride in our facility by presenting a permanent, visual reminder to employees and visitors alike of the important work that goes on here. “Much of our facility is located at Fort Detrick,” commented Mr. Michaels, “but we are the National Cancer Institute, and that’s a lot more clear to visitors now that the NCI logo is conspicuously evident all around campus.”

Your walks around campus should be even more visually appealing by now, with the planting of hundreds of flowers throughout the NCI-Frederick campus. Geraniums, petunias, asters, impatiens, zinnias, four-o’clocks, black-eyed susans, and many other perennials and annuals were distributed to over a dozen volunteers, who planted them in their areas of choice. Many of the plants were grown from cuttings and seeds planted by volunteers in February, and now should be in full, glorious bloom.

According to Tim Rowe, chairman of the planting subcommittee, “This truly was a volunteer project, and we weren’t really sure how it was going to work out. But the response has been good—NCI-Frederick is supportive, and there really is quite a bit of interest within the campus.” Mr. Rowe believes that interest will continue to grow, and, “as people walk around and start to notice some of these small improvements, we can build momentum for next year and the following years.” He is particularly impressed with the sense of teamwork and community this project has fostered, noting, “It’s a great community spirit builder—you have scientists and administrative people and maintenance staff all working together to make their workplace a little nicer.”

Upcoming projects include planting two Wye oak seedlings this summer, repair and/or upgrading of picnic tables, and “green space” reclamation and improvement projects. Watch your e-mail for these and other opportunities to participate in the Campus Improvement Committee’s activities. Or, if you’d like to make a comment or offer a suggestion, visit the Web site: <http://web.ncifcrf.gov/campus/committees/campusimprovement/>. ♦



## Student Intern Program

### *SIP Students Winners at International Science Fair*

Two students from NCI-Frederick's **Werner H. Kirsten Student Intern Program (SIP)** brought home high honors from the Intel International Science and Engineering Fair, held in early May in Phoenix, Arizona. Amanda Leatherman, a senior at Urbana High School, won Second Place in the Microbiology category, for her research on inhibitors of SIV fusion, entitled "Kinetic Analysis of Viral Fusion Using Peptide Inhibitors." Alan Gee, a senior at Frederick High School, won the top scholarship award of \$5,000 from the National Anti-Vivisection Society. Entitled "Metastable Conformations in the Secondary Structure of the Poly (A) Signal in the Human Immunodeficiency Virus Type-1," his research used complex mathematical and computational algorithms to study the structure and function of HIV-1.

The largest pre-college science fair in the world, this event brought together over 1,400 students from 40 different countries for the week-long competition. In addition to meeting students from all over the world, one of the highlights of the trip, according to Alan, was getting to eat ostrich.

**The road to Phoenix wasn't easy.** Amanda and Alan first had to enter—and win—the Frederick County Science and Engineering Fair in March, in which 110 middle and high school students presented 315 projects. Amanda took home grand prize from this fair, with Alan placing as first runner-up, making them the representatives for Frederick County at the international event.

Amanda works with Dr. Catherine Finnegan, and Alan works with Dr. Bruce Shapiro, both in the Laboratory of Experimental and Computational Biology (LECB). They credit their internship experience here as nurturing

their strong interest in science and helping them channel these interests into specific directions. Amanda will be going on to Ursinus College, where she hopes to major in neuroscience and minor in biology or law. "I've always been intrigued by science, and I've always wanted to make a difference in someone's life," she commented, and she believes using her knowledge of science is a great way to help people.

Alan is a self-proclaimed "math person" ("I loved the Challenge-24 game!"), but before he came to NCI-Frederick, he wasn't sure what kind



*Alan Gee and Amanda Leatherman, winners at the Intel International Science and Engineering Fair.*

of math he wanted to pursue. After a year in the LECB, he now knows he wants to study some form of applied math. He will pursue his studies when he enters the California Institute of Technology in the fall.

**Becoming a student intern at NCI-Frederick was always part of their plans.** Amanda said she became interested in the program even before

she entered high school, and she selected and scheduled her courses specifically to work as an intern her senior year. Alan, too, knew early on that he would be an intern because it had become a family "tradition." "My brothers and sisters did it before me, so I just expected to be a part of the program," he explained.

**When they first arrived as interns, they were a little apprehensive.** Alan was sure he'd be in over his head, and Amanda expected to spend the summer cleaning trays in the labs. But they can't speak highly enough about their mentors and their experiences here. Amanda's enthusiasm overflows as she reflects on the past year: "I'm spoiled. This is an amazing experience. My mentor shows me everything. I'm so lucky!" And Alan echoes her feelings: "This is great. My mentor shows me everything. I didn't know any programming before, but now I use lots of different programs and operating systems, including Unix."

When they are not "doing" science, Amanda and Alan enjoy lives as typical teenagers. Both love to hang out with friends, go to movies, or just relax. Amanda also makes time to participate in sports year-round (soccer in the fall, indoor track in winter, and outdoor track in the spring), and was recently named Female Frederick County Scholar Athlete by the Frederick County Coaches Association.

**Their advice to incoming interns?** Amanda advises, "Get involved. Take advantage of everything you can." Alan says, "Be ambitious. Take on a project and make it your own."

Amanda and Alan, thank you for your excellent work here. The Poster staff joins the rest of the community in wishing you great success at college and beyond. ✦

See page 16 for a complete listing of the 2004-2005 student interns. ✦

## Outreach and Special Programs

### *Take Your Child to Work Day: One Lab's First Experience*

*[Editor's note: This is the first of a two-part series on developing and presenting a Take Your Child to Work Day program. The first part describes the planning that goes into a program, and the second part, to appear in the September issue, will focus on what actually happens on the day itself.]*

**Dr. Anne Monks' Laboratory of Functional Genomics** decided to participate in Take Your Child to Work Day for the first time this year. Dr. Monks has always believed in supporting the program because "It is developed and run by NCI-Frederick, and we should participate." But in previous years, vacation and work schedules precluded full participation. This year, however, the timing was better, and her staff are off and running.

Nikki Reifsnider, one of the lab's research technicians, has been active in the Elementary Outreach Program, so she has taken the lead on the project. Dubbed "Dilution Solutions," the program involves using food coloring to study dilutions. Each child will use a pipette to create a design from the dilutions in a 96-well plate. The plates will be read on a plate

reader, studied under a microscope, and then photographed, so the children will have something to take home with them. "We want to give the children a hands-on experience, to see what science is really like in the lab," Ms. Reifsnider said.

Once the group determined what they wanted to do, a member of the TYCTWD planning committee and a Safety representative came to the lab to review the program and inspect the space, to ensure that the children would be safe. While they haven't needed specific help from the committee so far, Dr. Monks commented, "Barbara [Birzman, member of the planning committee] is very enthusiastic, and we know the committee would help us if we needed it."

They decided to limit their program to children ages 8 to 13, and run two sessions in the morning only. Dr. Monks explained, "We only wanted to do the mornings because this is our first year, and we want to see how it goes. Also, we'll still have the afternoon to get some work done." Each session will be limited to 9 children, and they will rotate through 3 stations, with 3 children at each station. They have deliberately kept it small, so they can easily manage the children.

Planning and development time has been minimal, according to Ms. Reifsnider. One reason for this is that Dr. Monks has involved all four members of her lab, to spread out the work. All they need to do now is determine which colors will work best, and then run the experiment to see how it works and where it may need improvement.

*"Being a scientist is like being a child who never grows up."*

Dr. Monks is a firm believer in the TYCTWD program because it gives children a first-hand glimpse at what it's actually like to be a scientist in a lab. She's especially interested in reaching the girls in the program. "If we can make young girls aware that women can be scientists, if they can see women at work in the lab, maybe more of them will grow up to be scientists, too." And, she explained, "Being a scientist is like being a child who never grows up. It's the only career I know of where I can keep asking questions and then have the freedom to pursue the answers." She hopes that in some small way she will inspire a new generation of scientists, who will keep asking questions and pursuing the answers. ♦

### *2005 Student Interns*

There are 37 sponsors for this year's Werner H. Kirsten Student Intern Program (SIP) on the NCI-Frederick campus. Thanks to all the 2005 interns for your hard work, and best wishes for success in your future studies!

Kevin Anthony  
James Benjamin  
Alysia Birkholz  
Ellen Bodine  
Sarah Breen  
Bethany Buzzell  
Jessica Castelow  
Maia Chisholm  
Jihee Choe  
Erika Chow  
Jason Collins

Salvatore Cremona  
Christopher DeForce  
Bridget Dixon  
Samantha Draper  
Livia Ehardt  
Mennie Eldridge  
Rachel Gardner  
Alan Gee  
Meredith Healy  
Kelsey Holmes  
Emily Howe

Kaitlin Jacobson  
Eloise Jean-Bart  
Grace Kim  
Jason Koontz  
Tyler Koontz  
Amanda Leatherman  
Scott Long  
Andrea Luquette  
Krysten Mesner  
Stanley Mordensky  
Kathy Mou

Rachael Murphy-Ryan  
Kyle Myers  
Catherine O'Connor  
Chelsea Powell  
Monique Roberts  
Sara Rosendale  
Justine Ross  
Samantha Sadtler  
Savita Sathya  
Kathryn Schumacher  
Joshua Spurrier

Kristie Stultz  
Justin Taylor  
Sara White  
Yuze Yang  
Christina Zimmerman

For information about all the NCI-Frederick internships, visit the Web site: [http://web.ncifcrf.gov/careers/student\\_programs/internships/](http://web.ncifcrf.gov/careers/student_programs/internships/). ♦



## Outreach and Special Programs

### *Annual EOP Picnic Well Attended*

Fresh air, good company....couldn't think of a better event to attend. The Elementary Outreach Program held its third Annual Picnic on Wednesday, June 8th, at noon at the Nallin Pond.

Julie Hartman, the EOP director, says that "The picnic is a time for all of the programs' volunteers to share classroom stories from the year, 'drum up' new ideas for the next year, and share good food. Everyone brings a dish of their choice to share, which as one can figure, leads to recipes shared!"



EOP staff invite the Frederick County Public Schools' (FCPS) math and science facilitators to attend, as well, creating a two-way opportunity to show appreciation: that of the EOP for the FCPS support, and that of FCPS for EOP volunteers who bring science to the children in the county. ✦

### *MTDP Hosts Science Teachers*

The **Molecular Targets Development Program (MTDP)**, directed by Dr. James McMahon, recently hosted eight Washington County science teachers for a day-long experience. The tours were arranged by the Office of Scientific Operations, Outreach and Special Programs Department, which often hosts tours to diverse community groups.

Dr. Kirk Gustafson, Senior Investigator, Natural Products Chemistry, presented an overview of the MTDP. Kathy Turk, WCPS chemistry teacher, commented, "I did not

realize the extent to which chemistry separations, spectrophotometric methods, and NMR were employed. As a chemistry teacher I was glad to see that chemists have a large role in some very current research."

Natural Products Repository manager Dan Danner described the two-story repository's set up and showed a few products. Dr. Thomas McCloud, Natural Products Processing Laboratory, took the teachers on a complete lab tour, starting with the "chiseling" of whole products to the bottle of just the "natural product" used in experiments.

After lunch, the teachers toured the MTDP laboratories in Building 560

and 562 to see the highly technical equipment used to perform assays on natural products. WCPS biology teacher Carl Wise said, "I was very impressed with the dedication of the employees at NCI. I could tell that they are called upon to conduct many tasks that may take away from their research. It is great to know that people are working on such an important task. Their work will benefit many in the years to come."

Tours can be very informative to our surrounding community, so please contact the Outreach and Special Programs Office if your area would like to host a tour. ✦

# Frederick Employee Diversity Team

## SEER Program Identifies Cancer Disparities

The **Surveillance, Epidemiology, and End Results (SEER) Program** of the National Cancer Institute collects data and analyzes trends on cancer incidence and survival rates. Recently, the SEER cancer registry investigated US racial, ethnic, and socioeconomic factors to determine significant differences in cancer trends across the various population groups, termed “cancer disparities.”

The SEER data have revealed a number of such interesting disparities. An NCI Fact Sheet, *Cancer Health Disparities* ([www.cancer.gov/newscenter/healthdisparities](http://www.cancer.gov/newscenter/healthdisparities)), addresses differences in cancer trends for the more than 500,000 Americans dying annually from neoplastic disease.

Some observations drawn from the SEER report are detailed below.

- For males, African-American men have both the highest incidence (new diagnosis) and fatality rates.
- For females, white women have the highest incidence, while African-American women have the highest fatality rates.
- African-American women have the highest incidence rates for several cancers, including lung/bronchus and colon.
- Similarly, African-American men have the highest incidence rates for lung/bronchus and intestinal cancers, plus prostate cancer. African-American men also have the highest fatality rates for each of these diseases.
- Although white women have the highest incidence rates for breast

cancer, African-American women have the highest fatality rate for this disease.

- Hispanics/Latinos have lower incidence and fatality rates for cancer as a whole than either African-Americans or whites, but Hispanic/Latina women have the highest incidence of cervical cancer.
- Asians/Pacific Islanders have the lowest overall cancer fatality rate, but they have the highest incidence rates of liver cancer and stomach cancer.
- Asian/Pacific Islander women have the lowest fatality rates for both breast cancer and colon cancer.
- For women, American Indian/Alaska Natives have the lowest breast cancer incidence rate.
- For men, American Indian/Alaska Natives have the lowest prostate cancer incidence rate.

### Cancer Incidence Rates (Number of new cases each year).

Statistics are for 1996-2000, are adjusted to the 2000 U.S. standard million population, and represent the number of new cases of invasive cancer per year per 100,000 of three groups: both sexes, males, and females, respectively.

Group	Both Sexes	Males	Females
African-American	521.7	696.8	406.3
White	479.8	555.9	431.8
Asian/Pacific Islander	341.7	392.0	306.9
Hispanic/Latino	352.1	419.3	312.2
Amer Ind/Alaska Nat	239.6	259.0	229.2

### Cancer Death Rates (Number of deaths each year).

Statistics are for 1996-2000, are adjusted to the 2000 U.S. standard million population, and represent the number of deaths per year per 100,000 of three groups: both sexes, males, and females, respectively.

Group	Both Sexes	Males	Females
African-American	257.1	356.2	198.6
White	199.1	249.5	166.9
Asian/Pacific Islander	124.5	154.8	102.0
Hispanic/Latino	137.9	176.7	112.4
Amer Ind/Alaska Nat	138.0	172.3	115.8

Source: <http://www.cancer.gov/newscenter/healthdisparities> ♦

# Frederick Employee Diversity Team

## *The Holocaust: A Sobering Account from One Survivor*

The Diversity Team makes special efforts to bring to the NCI-Frederick community numerous events and programs that reflect the diversity of our workforce, and perhaps will also help make all of us a little more thoughtful. Such a program was the May 2 lecture that Henry Greenbaum, Holocaust survivor, gave.

Born in Poland, the 80-year-old Greenbaum volunteers at the Holocaust Museum. An enthusiastic speaker, Mr. Greenbaum quickly had his audience identifying with him as he described his childhood with eight siblings in a small town—going to school, reading, enjoying music, playing sports—all typical of most European children in the 1930s.

All that changed with the German invasion of Poland in 1939: Jews had to wear yellow stars and live in the new 4-block-square ghetto cordoned off by barbed wire; school was forbidden; badly treated, forced-labor crews, including Mr. Greenbaum, dug deep, zig-zagged trenches outside the town.

### *Ghetto a Breeding Ground for Infectious Diseases*

By mid-winter, with no soap and little food, the crowded ghetto had become a breeding ground for infectious diseases. “Killing units”—volunteer soldiers—periodically raided the ghetto and took the sick to the trenches dug earlier in the year—and shot them. Two of Henry’s five sisters, ill with typhus, died this way.

Then, “selections” began in October 1942. Old people, pregnant women, and small children, including Mr. Greenbaum’s mother and youngest sister, were sent away to their deaths. Mr. Greenbaum was taken to Treblinka, where three men were assigned to each bunk, on the theory that one or two would be working while the other two slept.

### *Attempt at Escape*

Three years later, the prisoners attempted an escape during the blackout of an air raid. Unfortunately, the floodlights came back on before everyone got away, and many, including Mr. Greenbaum, were shot. When Mr. Greenbaum became conscious, he ran to the women’s barracks, searching for his sister. A cousin tended his wound, but his sister wasn’t there. The guards began shooting into the barracks at random, and everyone lay flat on the floor. Waiting for the floodlights to pan another area, he darted back to his own barracks. He knew he would be shot if he were caught in the women’s barracks.

In the morning, the guards called everyone out of the barracks. Then they were told to turn around, facing the fence. For the first time, Henry could see the hole and realized how close they had come to escaping. Suddenly, he saw his sister lying dead. A Polish police officer who had been helping them to escape sat beside her, badly wounded. The guards shot and killed each wounded person, forcing the prisoners to watch.

Soon Mr. Greenbaum and more than 100 others prisoners were herded into another cattle car. Traveling for three days, with no water, no food, and only one bucket for waste, they finally arrived at the infamous Auschwitz, where selections started again. They were tattooed on their forearms with numbers; their hair was shaved; they showered with disinfectants and donned striped uniforms and wooden shoes with canvas tops.

After about 3 months, Mr. Greenbaum was among a group sent to Buna Monowitz—a satellite camp—to help build roads. The Germans kept 75-gallon drums in the corners of the camp to shroud the camp with smog when

Allied bombers were overhead. But with so many air raids taking place, the Germans closed the camp and sent the prisoners to Fussenberg, where they sorted and bundled piles of clothes.

### *Liberation in 1945*

Russian bombing came ever closer. The prisoners were sent even deeper into Germany. In February 1945 Mr. Greenbaum was sent on a forced “Death March” through snow and rain to Slossenberg. Hitler Youth would see them along the roads, yell at them, and throw stones. Mr. Greenbaum said, “Don’t you think the kids who saw us, told their parents what they’d seen?” He doesn’t believe those who said they didn’t know what was going on.

In the final days of captivity, when the area was being bombed again, guards hid the prisoners in the woods. As the Americans advanced, the guards ran away. Finally, an American tank commander found the POWs, told them they were free, and to follow the tank to safety. This was April 25, 1945; Mr. Greenbaum was about 17 and weighed only 75 pounds. He told his audience that every day, he had prayed to God to keep him alive so that he would be able to come to the U.S. to tell his sister what had happened to the family.

### *The Search for His Family*

In a Displaced Persons Camp in Frankfurt, run by the United Nations Relief and Rehabilitation Administration, he found his brother, who had fought in the Polish army. They were reunited with their remaining sister, who had moved to the U.S. in 1937. There, they discovered that another brother had survived, escaping to the U.S. after 1941.

*continued on page 23*

## Off-Site Programs

### Laboratory of Molecular Technology (LMT)

[Editor's Note: This is the first in a series of articles focusing on the various off-site programs that NCI-Frederick hosts.]

Just a few blocks from the Seventh Street Ft. Detrick gate is the **Laboratory of Molecular Technology (LMT)**, a state-of-the-art facility



comprising seven sections. Headed by Dr. David Munroe, director; Dr. Ester Rozenblum, associate director; and Martin H. White, program administrator, LMT develops new genomic and proteomic technologies and makes them available to the NCI research community through collaborations, contracts or services.

*DNA Sequencing and Laboratory Automation Section*, headed by Ms. Claudia Stewart, provides standard and high-throughput DNA sequencing, BAC sequencing, bisulfite sequencing, SNP/micro-satellite genotyping, library construction/arraying, data storage/retrieval and data analysis capabilities. The DNA Sequencing and Laboratory Automation Section offers custom automation solutions to NCI, managed through LMT's Laboratory Information Management Systems (LIMS). Designed to organize and maintain collaboration, contract and service projects, it will soon be available to NCI laboratories.

In the *Genomics Section*, Dr. Shirley Tsang's staff is involved in marker association analysis of prostate, colon and cervical cancers; in genetic analysis of genomic instability and modifier loci in mouse cancer models; and is developing new technology platforms for single nucleotide polymorphism (SNP) genotyping, LOH detection, mutation detection, and clinical diagnosis. They provide standard and customized Taqman™ SNP and indel (insertion/deletion) genotyping; screening assays for genotyping of transgenic/knock-out mice using mouse tail DNAs and whole mouse LOH genome analysis in mouse tumor DNAs; and

are developing additional genomic technologies for basic research and clinical diagnosis.

The *Molecular Diagnostics Section*, headed by Ms. Kristen Pike, provides state-of-the-art clinical and research diagnostics to NCI researchers, including mutation detection under CLIA certification on various genes; SNP analysis and pathogen detection, including mycoplasma and viral testing of cell lines; highly accurate sizing and quantitation of PCR products on the Agilent Bioanalyzer and the new high-throughput Automated Lab-on-a-Chip platform; and is adapting current PCR/sequencing protocols to the Affymetrix re-sequencing chip for future research projects.

Dr. Lisa Gangi's *Microarray Technology Development Section* provides production-scale printing and scanning capabilities; data storage/retrieval, data analysis and assistance in protocol development and experimental design for both spotted and Affymetrix arrays. The

group is developing a 1,500-feature monoclonal antibody array for human and murine research applications, a 6 K virus chip for detection and identification of known and new mammalian viral pathogens, custom peptide arrays, and a self-assembling protein array.

The *Peptide Biochemistry Section* headed by Dr. Carl Saxinger is developing a high-throughput, cost-effective peptide synthesis platform to support the peptide synthesis needs of the NCI and ongoing studies of protein-protein interaction during HIV infection and disease progression.

The *Affymetrix Microarray Services Section*, headed by Ms. Nicole Lum, offers microarray hybridization, scanning, and data analysis; and whole genome analysis, using the Affymetrix Mapping 10 K and 100 K SNP array sets.

The *Oligonucleotide Synthesis Section*, headed by Dr. Leo Lee, provides high-quality standard and specialized oligonucleotide synthesis and purification services; generates "specialized" oligonucleotides, creating oligonucleotide derivatives that require a 100% base pair (bp) match for hybridization to develop microarray-based SNP genotyping; and is synthesizing oligonucleotides with spacer arms of varying lengths coupled to labeling agents (such as biotin or fluorescent dyes) for probes of increased sensitivity.

The Laboratory of Molecular Technology is located at 915 Tollhouse Avenue, Suite 211, Frederick. You can reach staff at 301-846-5676; or by fax at 301-846-6100. To access the Laboratory Information Management Systems (LIMS), please contact Ms. Stewart, 301-846-5924, or [stewart@ncifcrf.gov](mailto:stewart@ncifcrf.gov). For pricing and detailed information about each of the laboratories, refer to the LMT Web site: <http://web.ncifcrf.gov/rtp/LMT>. ♦

## Selection of Ultra-low Freezers (-80 °C)

[Editor's note: This is the first in a two-part series provided by Dr. Kathleen Groover, McKesson BioServices.]

Long-term storage and preservation of biological specimens usually require low-temperature storage devices. The storage temperature and device chosen depend on what's being stored, eventual use, and the length of time the material will be stored. One of the most common types of storage is the ultra-low freezer. NCI-Frederick Repositories, operated by McKesson BioServices, house more than 350 of these units, and many more are located around campus. With brand names like Revco, Harris, Forma, Sanyo, and So-Low, they safeguard the integrity of past, present and future research.

### Not All Freezers Are Created Equal

Many factors must be considered when you purchase an ultra-low freezer.

The first decision is which model best fits your needs: chest or upright. Chest freezers are the most energy-efficient; maintain the most stable temperature when the door is open; and are especially appropriate for active collections accessed many times daily or those which must meet strict temperature requirements, such as collections managed under current Good Manufacturing Practices. The upright option is the best choice if floor space is at a premium and collections are not often accessed.

The next decision is the configuration of the interior. Select shelf and racking systems that best fit the workflow and ergonomic considerations. Racking systems come in myriad sizes and configurations to suit every kind of ultra-low freezer and specimen container. Racks define the internal freezer space and allow assignment of sample locations, which can be tracked

in an electronic inventory system. Racks provide greater efficiencies for sample relocation in the event of freezer failure. Finally, racks help ensure that the proper amount of air space is maintained in the interior of the unit. Studies have shown that insufficient air space can lead to poor freezer function and the development of hot spots within the unit.

### Other Facility Issues to Consider

Other facility issues must also be considered prior to purchase of a freezer. There must be sufficient ventilation, because ultra-low freezers give off an enormous amount of heat. If this heat is not quickly dissipated by the facility HVAC system, the units will overheat and not function properly. Noise may also be a consideration. Although newer units are fairly quiet, the compressors do make noise. Compare different brands if your space requires silent operation. Facility voltage must match the voltage of the selected unit. Many brands are available in either a 110-volt or 208-volt option. The 208-volt option is much more energy-efficient and promotes longer compressor life; however, many facilities have only 110-volt available power and upgrading electrical outlets to accommodate the voltage requirements of the more efficient 208-volt freezer involves added one-time cost.

### Back-Up Options

Last, but in many ways the most important, is consideration of back-up options. Ultra-low freezers are machines that require power to function. Provision must be made to protect valuable specimens in case the freezer or the power fails. The simplest way to manage the risk of mechanical failure is to ensure that back-up space of the same temperature and

configuration is available nearby. The Central Repository at NCI-Frederick manages a laboratory freezer back-up program for just this purpose.

Power failure is a more difficult risk to manage. Dry ice can be used to maintain temperature within the freezer for a short time. (This is more easily accomplished with a chest freezer and may play a role in selecting an upright vs. a chest unit.) Some freezer models have integrated back-up carbon dioxide or nitrogen options, especially valuable to the investigator who has only one or two freezers. This option should be cleared with facility safety personnel prior to purchase to ensure adequate ventilation is present. Back-up emergency generator power is the choice for large-scale facilities containing many freezers. Investigators may be able to request that their ultra-low freezers be tied into the facility generator.

Communication between the scientist, building manager, facility engineers and purchasing department is key to making sure that the right selection for ultra-low storage is made. Taking the time to consider all of these issues before going with the lowest cost option will ensure the security and viability of research specimens for the long term. ♦



### *“Potential Weapons of Mass Destruction” Available at NCI-Frederick*

No, these are not the long sought-after Iraqi weapons, but instead are approximately 150,000 naturally occurring plant, marine and microbial extracts and pure compounds—potentially useful as weapons against disease, including cancer and viral targets. They can be found in the Natural Products Repository (NPR), part of NCI’s Developmental Therapeutics Program (DTP), Building 1073. Administered by the DTP-Natural Products Branch (NPB), the NPR consists of aqueous and organic extracts from 50,000 plant samples from 15,000 species, 13,000 marine animals, and 1,000 marine plants, as well as 25,000 fungal extracts; taxonomy data is also included.

Since 1986, these extracts and compounds have been obtained from materials from more than 30 tropical or sub-tropical countries. This resource can provide a lead compound through screening, whose biological activity can be further optimized through focused chemical libraries and other synthetic methodologies. These resources are available to intramural and extramural, academic or commercial collaborators and can be transferred using the NPR Material Transfer Agreement (MTA).

### *Many Cancer/Infectious Disease Drugs Have Natural Origins*

But why should NCI spend all these efforts to properly collect, categorize and screen biodiversity materials, then isolate and characterize pure compounds responsible for the biological activities? Two oft-quoted NCI reviews,<sup>1a,b</sup> indicate that 60% and 75% of cancer and infectious disease drugs, respectively, approved between

1981 and 2002 could be traced to natural origins.

In addition, 61% of all new chemical entities (NCE) introduced worldwide as drugs during that same period could be traced to or were inspired by natural products. In an era when the number of NCEs approved by the FDA or its foreign equivalents has gone from a high of 78 (69 small molecules/9 biologicals/vaccines) in 1987 to 19 (16 small molecules/3 biologicals/vaccines) in 2004, the lack of such NCEs is evident. However, with the dearth of approved small-molecule NCEs, researchers are showing more interest in combinatorial libraries now being built around selected structures, often related to natural product structures considered “privileged” because of their frequency of high biological activity. Natural products are also a potentially rich source of molecular probes, due primarily to their “privileged” nature, as evidenced by their incorporation into the NIH Roadmap acquisition programs.

### *NCI Agreements Used to Acquire/Transfer These Resources*

How did NCI acquire this treasure? The NCI Letter of Collection (LOC) forms the basis for agreements with source countries collaborating with NCI collection contractors to gather plants and marine organisms for the Natural Products Branch. The LOC dictates the terms of collaboration with source country scientists, and of benefit-sharing and use of source country resources in the event of the development and subsequent licensing of a promising drug candidate. Extracts of materials collected under the terms of the LOC, which are both active and inactive in the NCI anticancer screen, are then available for distribution to qualified investigators and collaborating

organizations (including for-profit) under the terms of the NPR-MTA, an agreement which provides for benefit-sharing to the original extract providers.

Another collaborative mechanism used by the NPB is the NCI Memorandum of Understanding (MOU) which forms the basis for agreements for collaboration in drug discovery and development with suitably qualified organizations in source countries generally not accessible to NCI collection contractors (e.g., Brazil, Mexico, South Africa). In this scenario, the drug discovery phase is performed by the source country organization at its own expense, and the NCI-DTP collaborates through provision of training and technology transfer, and through collaboration in the preclinical development of novel agents which meet the NCI selection criteria.

### *TTB Serves as Point of Contact*

The NCI Technology Transfer Branch (TTB) serves as the point-of-contact with source countries/organizations for both the LOC and the MOU, as well as with academic/commercial collaborators for the NPR-MTA. Issues uniquely addressed in these documents include:

- training of source country (SC) scientists at NCI or collaborating sites as Guest Researchers;
- patent or other intellectual property issues;
- provision of tangible benefits, e.g., royalties or other compensation, back to SC organizations and/or indigenous peoples by licensees of any technologies which arise from the materials supplied under LOC’s and MOU’s; and
- compensation to the SC for conservation measures.

In these agreements, the NCI adheres to the principles cited in the U.N. Convention on Biological Diversity (1992), a document which has yet to be ratified by the United States Congress. The MOU and LOC and the principles therein are held in high esteem by the U.S. State Department in its discussions with foreign countries regarding biodiversity issues. The agreements have also been “showcased” as positive examples of technical transfer documents in a recent textbook manual for the establishment of technology transfer offices in developing countries.<sup>2</sup>

### *NPR Bioactive Compounds Identified*

Over the years, a significant number of bioactive compounds have been identified, isolated, characterized and in some cases, developed from the NPR by NCI scientists. These compounds and their sources include the antiviral (HIV) compounds prostratin (Samoan tree), calanolides A and B (Malaysian tree), michellamines (Cameroon plant), conocurvone (Western Australian plant), and cyanovirin-N, scytovirin and griffithsin (antiviral peptides from cyanobacteria). Antitumor compounds include taxol (Pacific yew plant), halichondrin (New Zealand sponge), halomon (a Phillippine marine alga), and the vacuolar-ATPase-inhibitory compounds, salicylihalamides and chondropsins (from Australian sponges). For a complete listing, see the NCI-CCR Molecular Targets Development Program (MTDP) Web site at <http://home.ncifcrf.gov/mtdp/catalog.html>.

The NPR is currently being utilized as a CRADA resource to identify small-molecule inhibitors of HIV-cell binding; by international cooperative biodiversity groups and national cooperative drug discovery groups, which include

academic, not-for-profit and commercial components working on multiple targets; and by NPR-MTA academic signatories to identify agents against any disease of interest to the NIH.

### *Wealth of Resources Yet to Be Explored*

Have we exhausted these resources? Hardly. Much less than 0.1% of the microbial resources of the marine environment and perhaps 10 times that level of terrestrial microbial sources have even been isolated and cultured, let alone investigated in depth.<sup>3</sup> For example, of the approximately 300,000 species of vascular plants in the plant kingdom, only about 25% have been investigated from a phytochemical aspect; biological activity of derived compounds may never have been investigated. In the case of the marine environment, the numbers of marine invertebrates are effectively incalculable. When one realizes that in many cases, metabolites thought to be from the invertebrate are in fact the product of “co-metabolism” with related microbes, then “the skies are the limit.”<sup>4</sup>

In the words of the noted chemist Samuel Danishefsky (Head, Bioorganic Chemistry Laboratory, Eugene W. Kettering Chair, Memorial Sloan Kettering Institute and Columbia University), “There are major teachings in these natural products that we would do well to consider. They may be reflecting eons of wisdom and refinement.”<sup>5</sup>

For additional information on accessing and utilizing the Natural Products Repository and/or Program, contact Dr. David Newman, NCI-Frederick DTP, 301-846-5387 ([dnewman@dtpx2.ncifcrf.gov](mailto:dnewman@dtpx2.ncifcrf.gov)) or Dr. Bjarne Gabrielsen, NCI-Frederick TTB, 301-846-5465 ([bjg@nih.gov](mailto:bjg@nih.gov)).

<sup>1a</sup>Newman DJ, Cragg GM, and Snader KM. Natural products in drug discovery and development. *J Nat Prod* 60(1):52–60, 1997.

<sup>1b</sup>Newman DJ, Cragg GM, and Snader KM. Natural products as sources of new drugs over the period 1981-2002. *J Nat Prod* 66(7):1022–1037, 2003.

<sup>2</sup>Mahoney RT, ed. *Handbook of Best Practices for Management of Intellectual Property in Health Research and Development*. Oxford, United Kingdom: Centre for Management of Intellectual Property in Health Research and Development. 219–224, 2003.

<sup>3</sup>Venter JC. Unleashing the power of genomics: understanding the environment and biological diversity. *The Scientist* 17(23): 8, 2003.

<sup>4</sup>Piel et al., Exploring the chemistry of uncultivated bacterial symbionts: antitumor polyketides of the pederin family. *J Nat Prod* 68:472–479, 2005.

<sup>5</sup>Science/Technology concentrates: chemistry in medicine. *Chemical & Engineering News*, 80(2):24, 2002. ♦

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*continued from page 19*

### *How He Survived*

In a question and answer period after his talk, when asked how he got through such horrific experiences, Mr. Greenbaum said that he prayed and talked to God every day. He said that he also draws strength from his wife, whom he met soon after he arrived in the U.S., his four children, and his 10 grandchildren. With pride in his family’s accomplishments, he said, “Hitler, I defeated you. You didn’t defeat me.”

At the end of the program, Colonel James Ball presented Mr. Greenbaum with a plaque, saying that he had displayed “great personal courage—under horrific treatment—and we need to remember this.” Colonel Ball commented, “We are always one generation away from repeating these” terrible events.

Mr. Greenbaum also gently reminded everyone, “We should not fight with one another; we are in the world such a short time.” ♦

## Environment, Health, and Safety Program

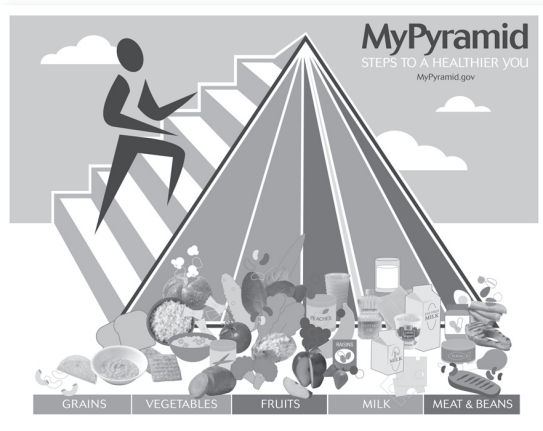
### *Eat Healthy, Stay Healthy: New USDA Food Pyramid Can Help*

Research has shown that healthy employees are more productive and have fewer injuries and illnesses. This research supports what the Occupational Health Services (OHS) staff have known from over 20 years of experience here. The OHS staff have long promoted healthy lifestyles because as health care providers, we see firsthand the benefits of getting—and staying—healthy. Both contractor and government management have supported our efforts to encourage and monitor healthy life styles.

The OHS staff now have a new tool in their healthy lifestyles toolkit: the U.S. Department of Agriculture Food Pyramid, which was introduced last April. The USDA has created a comprehensive Web site (<http://www.mypyramid.gov/index.html>) that

provides detailed information on each of the major food groups and the importance of regular physical activity.

This highly interactive Web site will generate a personal recommendation for you based on your age, gender, and the amount of physical activity you normally get. Called “My Pyramid Plan,” the recommendation



includes advice on the amounts and kinds of food in each food group that you should be eating. You can also use “My Pyramid Tracker” for a

detailed assessment of your current food intake and activity level, along with suggestions for improving in both areas.

There are also a number of links to important food- and health-related Web sites on such topics as food safety, the nutrition facts label, food composition, coronary heart disease, obesity, high blood pressure, and diabetes, to name a few. A “Tips and Resources” section gives you practical advice on how to get more whole grains, vegetables, and fruit in your diet, where to find calcium-rich foods, how to choose wisely from the protein-rich food group, and ways to increase physical activity. There’s even a discussion on important considerations for vegetarians.

The My Pyramid food guidance system provides many options to help you make healthy food choices and to be active every day. To access this helpful resource, log on to <http://www.mypyramid.gov/index.html>. For more information or assistance, please contact OHS at 301-846-1096. ♦

## Charles River Laboratories

### *Humane Care Initiative*

Commitment to animal welfare is critical to accelerating your search for healthier lives. Charles River Laboratories is committed to the humane care of the research animals produced and used in all of our activities. Our Humane Care Initiative supports this core value.

The Humane Care Initiative assures that Charles River continues as a worldwide leader in the humane care of laboratory animals, an important resource that furthers our knowledge of living systems and contributes to the discovery of life-saving drugs and procedures. At Charles River, we

work hand-in-hand with the scientific community to understand how living conditions, handling procedures and stress play important roles in the quality and efficiency of research. As animal caregivers and researchers, we are responsible to our clients and the public for the health and well-being of the animals in our care.



Our Humane Care Initiative goals include:

- Establish best practices across business units worldwide.
- Heighten internal awareness of the importance of humane care.
- Assure a culture of caring.
- Enhance orientation and training.
- Foster animal welfare worldwide through the efforts of the Charles River Laboratories.

Information taken from [www.criver.com/humane\\_care](http://www.criver.com/humane_care). ♦



# Data Management Services (DMS)

## *Data Management Services: Computers and Statistical Support*

Although perhaps most widely known for our Microcomputer Support and Web Development services, C&SS also offers many other services to the NCI-Frederick community. In this issue of *The Poster* we highlight some of these other services.

### *Statistical Consultation*

The Statistical Consultation group provides a wide array of mathematical and statistical consulting services to the NCI-Frederick scientific community. The director and consulting statisticians work in collaboration with principal investigators through all facets of the scientific process: from development and formulation of research and statistical hypotheses through design of experiments and statistical analyses, preparation of technical reports and modern graphics, to preparation of formal scientific documents and publications in peer-reviewed journals. ♦

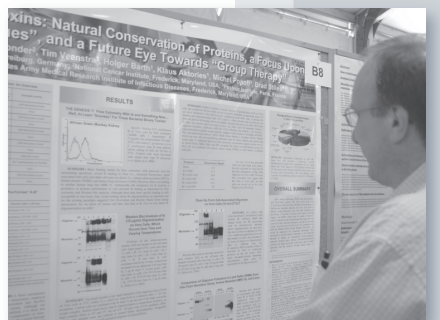
### *Custom Software Development*

Our team of analysts and developers employs the most modern methodologies and tools to create custom software solutions to meet the unique needs and requirements of NCI-Frederick. Our staff can assist you with both administrative and scientific programming needs, as well as Web design and development services. Visit the C&SS Web site at <http://css.ncifcrf.gov> or call 301-846-1060 for information about custom development services available from C&SS. ♦

### *Technology Advocacy and Consultation*

As NCI-Frederick's information technology experts, C&SS continually

explores and evaluates new technologies that could benefit the user community and further NCI-Frederick's mission. C&SS staff would be happy to meet with you to discuss your specific technology needs. ♦

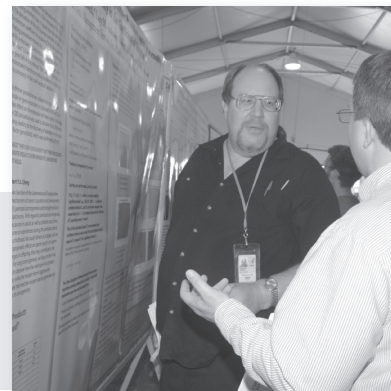


### *Computer Software Training*

The Spring '05 training session is coming to a close. The next session will begin in October; watch for postings and e-mail notifications announcing the schedule in September. Due to increased interest and registration, we will increase the number of Excel classes, as well as add Outlook to the regular schedule for the fall session. Please see the Computer Software Training Web site at <http://css.ncifcrf.gov/training> for more information or to register for classes. ♦

### *Computer Services Helpdesk*

The Computer Services Helpdesk provides the NCI-Frederick community with a single point of contact for computer assistance, information, service, and support. The Helpdesk is staffed from 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding NCI-Frederick holidays. Requests for service can also be placed via the C&SS Web site (<http://css.ncifcrf.gov/helpdesk>) 24 hours per day, seven days a week. ♦



*Doug Powell (on left), DMS discusses his Spring Research poster with an interested onlooker.*

### *Site-Licensed Software Available from the Helpdesk!*

C&SS, in conjunction with the NCI, has worked to secure site licenses for many of the programs in broad use at NCI-Frederick. To view the growing list of software available from the Helpdesk, visit the C&SS Web site at: <http://css.ncifcrf.gov/helpdesk/software.asp> or contact the Computer Services Helpdesk to borrow the software or request installation assistance. ♦

### *Contacting C&SS*

Computer Services Helpdesk  
Web: <http://css.ncifcrf.gov/helpdesk>  
E-mail: [helpdesk@css.ncifcrf.gov](mailto: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](mailto:webmaster@css.ncifcrf.gov)

Other Inquiries  
Phone: 301-846-1060

# SAIC-Frederick, Inc.

## *SAIC-Frederick, Inc., Wins Third MD Work-Life Alliance Award*



*Ms. Jill Sugden and Dr. Larry Arthur show the Maryland Work-Life Alliance award.*

SAIC-Frederick, Inc., is now a three-time winner of the “Seal of Approval” from the Maryland Work-Life Alliance. The award is given to employers who demonstrate a commitment “to workplace excellence by establishing a workplace culture that allows today’s workforce to achieve success at work, at home and in the community,” according to the Alliance’s Web site <http://www.worklifecoalition.org/html/conferences/WorkLifeAlliance.htm>.



Dr. Larry Arthur, president and CEO of SAIC-Frederick, Inc., said the company was honored to receive the Seal of Approval. “Recognition for three years in a row demonstrates our continued focus and commitment to our employees and their need to balance work and personal life. We recognize that our employees’ dedication to excellence in all aspects of cancer and AIDS research is the foundation of our success. We believe people are our greatest resource, and that philosophy has enabled us to

become one of the world’s largest and most innovative employee-owned companies.”

SAIC-Frederick, Inc., supports its employees through family-oriented policies and programs, flexible work arrangements, and competitive leave programs; and by offering training and professional development programs. “We strive to continue our focus on becoming an ‘Employer of Choice,’” Dr. Arthur said. ♦

## *New Conference Center and Conference & Events Services Staff*

SAIC-Frederick, Inc., operations and technical support contractor for the National Cancer Institute at Frederick (NCI-Frederick), announced the appointments of new leaders for the Conference Center and the Conference and Events Planning Services.

### *Colin Celaya, Manager, Conference Center*



With more than 22 years’ experience with military and civilian agencies managing and directing audiovisual, video teleconferencing, and presentation facilities, Colin Celaya joined NCI-Frederick as manager of the Conference Center, Visual Communications, in May.

Mr. Celaya began his career as a graphic illustrator; held several multimedia management positions; was an instructor for multimedia management at the Defense Information School, Fort Meade,

Maryland, where graphic illustrators, photographers, and videographers for all the military services are trained; and most recently was director of the conference center/presentations area at Headquarters Air Force Space Command, Peterson Air Force Base, Colorado Springs, Colorado.

Colin Celaya can be reached in Building 549 at 301-846-1995; or by e-mail at [celayac@ncifcrf.gov](mailto:celayac@ncifcrf.gov).

### *Karen Blackburn, Conference and Events Services Planner*



Karen Blackburn joined SAIC-Frederick, Inc., as the Conference and Events Planner in February. She can assist you in planning both scientific and general

events anywhere: on- or off-campus, or even in another state. In addition, she stays current with government guidelines and regulations, which is vital, as these change frequently.

Before coming to SAIC-Frederick, Inc., Ms. Blackburn spent six years as a conference planner for a Washington, DC-based tax association, where she traveled for a week at a time, at least 10 times a year. With this experience, she is confident that she will help the scientists “put on great meetings!”

Located off-campus at 92 Thomas Johnson Drive, Suite 250, Ms. Blackburn can be reached at 301-228-4027, or by e-mail at [kblackburn@ncifcrf.gov](mailto:kblackburn@ncifcrf.gov). ♦

## *Fish Are Good for You in More Ways than One*

Ever feel the need to “chill out” on busy days at work? You may be surprised to learn that the Scientific Library is a great place to come for a few moments each day just to wind down. No, not to hide in the stacks and catnap, but instead, to free your mind by watching—fish.

We recently installed a new scientific display—a freshwater aquarium stocked with zebrafish, *Zebra danio*. Yes, that’s right, those tiny, blue- and silver-striped creatures that zig and zag. Zebrafish are excellent models for studies in genomics, evolution, and toxicology because the fishes’ transparent embryos develop rapidly: After only two days, their common body features, such as the brain, eyes, and even internal organs like the heart, can easily be seen.

Today, the pressures of everyday life can contribute to a variety of ailments, such as heart attacks, ulcers, and insomnia. So it’s important not just to work hard at your job, but also to work at maintaining a healthy mind, body, and spirit. Some scientific studies have actually proven that watching live fish lowers blood pressure, reduces muscle tension, and increases body temperature, essentially reducing many of the telltale signs of stress.

Studies also show that this pleasant pastime can increase your grade point average and help you score higher on verbal and mathematical aptitude tests. So attention, all distance learners, postdocs, and medical students facing the GRE or M-Cats: visit the Library before taking your tests.

Research studies also show that aquariums contribute to improved employee morale and can increase motivation, creativity and productivity in the workplace. So if you are

drawing a blank when it’s time to write that paper, facing a budget cut, or pulling out all the stops to meet a deadline, a detour by the Scientific Library may be just the right prescription for you. ♦

## *“Science in the Cinema” Takes a New Twist in 2005*

Although the Scientific Library’s primary mission is to support the scientific informational needs of NCI-Frederick employees, it also has a responsibility to assist employees with other questions, such as individual or family health concerns; staff development, continuing education or college course support; or human resources and personnel issues.

One way we do this is through promotional programs designed to help people learn new things about themselves and others. For example, since 2001 the SciLib Theatre has co-sponsored the Diversity Café with the Frederick Employee Diversity Team, where employees explore different cultures through films that relate to either a scientific or medical theme. After each feature-length movie, a guest expert leads a discussion about the theme, encouraging the audience to discern fact from fiction.

During National Library Week in April, celebrating diversity took on extra meaning when *Door to Door*, starring William H. Macy, Helen Mirren, Kyra Sedgwick, and Kathy Baker, was presented. The film depicts the true story of Bill Porter, a man born with cerebral palsy, whose patience and persistence helped him to become the number one door-to-door salesman of Watkins products.

Our featured speaker for this program was the nationally acclaimed Michael Aronin, who, like Bill Porter, has cerebral palsy. Combining inspiration with a twist of humor, he lifted the

spirits of the audience and helped them see that if you believe in yourself, you can overcome any obstacle.

If you haven’t seen this program, come to the Library and check it out! Ask for AV00201 no.15, which consists of the film *Door to Door*, the video of Mr. Aronin’s presentation, and the *New York Times* bestseller *Ten Things I Learned from Bill Porter; the Inspiring True Story of a Door-to-Door Salesman Who Changed Lives*.

Look for upcoming “Science in the Cinema” programs, announced on the Web page, [www-library.ncifcrf.gov/science-cinema.asp](http://www-library.ncifcrf.gov/science-cinema.asp). ♦

## *WISCO Employees Mark Five-Year Anniversary*

Howard Wilson and Nate Wood-Wilson celebrated their five-year anniversary with WISCO in June 2005. ♦

## *Orientation Schedule*

Thursday, July 21:

2:30 p.m.–4:00 p.m.

Wednesday, August 10:

2:30 p.m.–4:00 p.m.

Wednesday, September 14:

2:30 p.m.–4:00 p.m.

Please call 301-846-5840 for student orientation times. ♦

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*Published four times a year by Scientific Publications, Graphics & Media for the National Cancer Institute at Frederick, Frederick, MD 21702.*

<http://web.ncifcrf.gov/ThePoster>

## 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.htm>

### **National Cancer Institute at Frederick**

<http://www.training.nih.gov/postdoctoral>

### **SAIC-Frederick, Inc.**

<http://saic.ncifcrf.gov>

[www.saic.com](http://www.saic.com)

### **Wilson Information Services Corporation**

<http://www-library.ncifcrf.gov>

## *Look for the Following Events Around Campus:*

**Farmers' Market** — Every Tuesday, 11:00 a.m. – 1:30 p.m. until October 25

**Take Your Child to Work Day** — Wednesday, July 13

**Campus Improvement Committee Projects**

Comments or suggestions for *The Poster* may be directed to <http://web.ncifcrf.gov/ThePoster>

The National Cancer Institute at Frederick

# Poster

Frederick, MD 21702-1201