

What is it?
Where is it?

Story on page 11.



Poster

Another Weapon for Structural Biologists in the Fight against Cancer

*New, Higher-Resolution Beamlines Created through the
NCI-Frederick FFRDC Authority*

Scientists involved in research such as structural biology are excited about the development of three new higher flux beamlines at the Advanced Photon Source (APS), Argonne National Laboratory, Argonne, IL, to perform higher resolution protein structure determination. The National

Institute for General Medical Sciences (here designated GM) and the National Cancer Institute (here designated CA), both part of the National Institutes of Health, are collaborating with the U.S. Department of Energy, SAIC Frederick, Inc., and ACCEL

Instruments GmbH to develop the beamlines. The first of the new beamlines is expected to be operational by January 2006 and will be available to the general scientific community as well as to the two NIH institutes that provided its funding.

This project was unique in that it exemplified the flexible nature of the NCI Frederick Federally Funded Research and Development Center (FFRDC) authority to carry out such a project. NCI-Frederick is the only FFRDC in the Department of Health

and Human Services (HHS) and, as such, has the authority to acquire unique and special capabilities, such as this higher-power beamline at Argonne, compared to normal government acquisition processes.

According to Janet Smith, a structural biologist (University of Michigan—Ann Arbor) and director of the GM/CA CAT facility, “This facility will help provide researchers from the NIH and other organizations the tools to discover how proteins and biomolecules work.”

By studying the three-dimensional structures of molecules to understand structure

and disease, structural biologists will be able to focus even more on translational research—moving from “bench to bedside” as they develop drugs to treat, cure or prevent diseases.

The facility can study large multi-protein complexes such as myosin, which controls muscle motion; ribosome, which reads the genetic code to produce proteins; ferritin, which controls iron storage and transport in the body; and chaperonins, which facilitate protein folding in cells.



Sample Area – This close-up of the area where the sample is placed shows the on-axis visualization lens that designers incorporated to make the beamline easier to use.

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IN THIS ISSUE

Science Today 3

LASP 4

Platinum Publications 5

Poster People Profile 9

Postgraduate Researcher 10

The Poster Puzzler 11

New Faces at NCI-Frederick 12

Outreach and Special Programs 13

Play and Learning Station has Busy Summer 16

Civil War Medicine 17

Off-Site Programs 18

Technology Transfer Branch 20

Frederick Employee Diversity Team 21

Data Management Services 22

Fisher BioServices 23

SAIC-Frederick, Inc. 24

Wilson Information Services Corporation 26

Employment Opportunities 28

Split Beamlines

continued from page 1

New Beamline Is "User Friendly"

The facility has been designed with ease of operation in mind so that the users can "focus on their samples instead of which buttons to push," said Ms. Smith. In addition, a sample-handling robot "will take the frozen samples from a liquid nitrogen storage unit and put them on the diffraction instrument, all the while keeping them cold," she explained.

machines and devices that produce, accelerate, and store a beam of electrons. The beam passes through magnetic devices called "wigglers" and "undulators" (magnetic devices that produce intense X-ray beams) that vibrate the electrons' path, causing them to emit X-ray beams which then exit the "racetrack" through ports into each of the beamlines.

The new GM/CA beamline consists of two undulators instead of one—producing two X-ray beams of equal intensity in slightly different

to the sample. Ultra-smooth mirrors tweak the beam into a position so precise that "only the crystal—not the crystal surroundings—or just the part of the crystal we wish to study" is irradiated, according to GM/CA CAT project manager Mr. Robert Fischetti. Being able to focus the beam so precisely enables the researchers to avoid interference or "noise" in the diffraction pattern. "If we can reduce the noise, we can detect weaker signals and study smaller crystals," than before, he added.



Split Beam – The two separate beamlines exit the cylinder at the right. They begin just hair-widths apart and spread to two feet apart over the 60 meters they travel together.



Ribbon Cutting – A new beamline at the Advanced Photon Source that uses dual-canted undulators to double its output was dedicated June 27. Pictured are Janet Smith, GM/CA CAT Director; Jeremy Berg, Director of the National Institute for General Medical Sciences; Murray Gibson, Associate Laboratory Director for Scientific User Facilities; Marvin Cassman, Past Director of NIGMS; Bob Fischetti, GM/CA CAT Project Manager and Dinah Singer, Director, Division of Cancer Biology, National Cancer Institute.

Beamline Big Enough to Hold a Baseball Field

Just what is a beamline? Envision an enclosed, oval racetrack. Instead of horses or cars, however, electrons are racing around the track. According to the APS Web site, the APS, with a 1,104-meter circumference (one meter equals about 39 inches; in this case, about 3,588 feet circumference), is large enough to hold a baseball park in its center. It houses a complex of

directions—just a few hair-widths apart at the source. The X-ray beams separate as they travel about 60 meters to the first experimental station, where they are about two feet apart. One beam passes through to the second experimental station, about 75 meters from the source. Experiments can be run in the two stations simultaneously.

Beam-position monitors provide feedback to keep the X-ray beam in place during its 60- to 75-meter jaunt

Our thanks to Ms. Evelyn Brown, Argonne National Laboratory's Media Center, for much of the information in this article. For more information, visit the ANL Web site at http://www.anl.gov/Media_Center/News/2005/GM-CA-CAT050819.html or contact Ms. Catherine Foster, 630-252-5580, cfoster@anl.gov

Novel Proteomic Technologies Aid Cancer Research

Editor's note: Our thanks to Drs. Timothy D. Veenstra and Thomas P. Conrads, Laboratory of Proteomics and Analytical Technologies, for the following article.

Although proteomics originally conjured images of a two-dimensional



gel and a mass spectrometer, it has now rapidly grown to encompass a wide range of technologies, enabling manifold scientific endeavors.

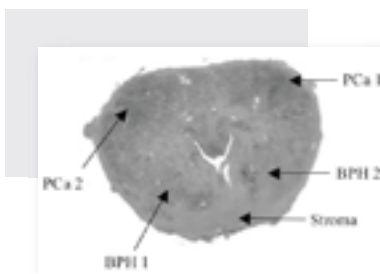
As part of the Research Technology Program (RTP), one of the main goals of the Laboratory of Proteomics and Analytical Technologies (LPAT) is to develop and implement novel proteomic technologies to benefit cancer research.

Proteins Can Now Be Extracted from FFPE Tissues

In conjunction with Expression Pathologies, Inc. (Gaithersburg, MD), LPAT has developed a method to extract proteins from formalin-fixed, paraffin-embedded (FFPE) tissue to enable proteomic analysis by mass spectrometry (MS). A vast archive of pathologically characterized FFPE tissues is available for analyses such as immunohistochemistry, but because of the highly covalently cross-linked state of the proteins, until now MS analysis has not worked on these samples. However, in LPAT's method, specific cells are captured from FFPE tissues by using a variant of laser capture microdissection (LCM) with a subsequent extraction step, where the proteins are extracted in the form of tryptic peptides. This collection of

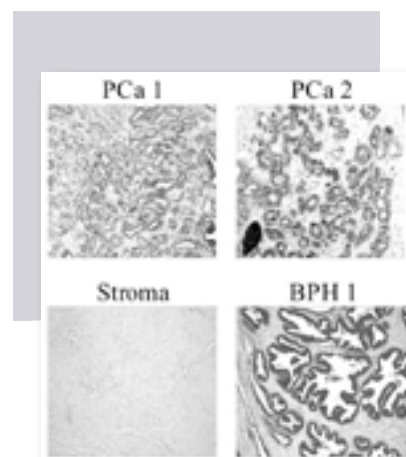
tryptic peptides can be characterized by nanoscale liquid chromatography, coupled directly on-line with tandem MS. The output from this analysis is the identities of the proteins extracted and a measure of their relative abundance in the FFPE tissue.

To develop this technology, LPAT used LCM to collect 60,000 cells from each of three pathologically distinct regions (prostate cancer, benign prostatic hyperplasia [BPH], and stroma) of an FFPE prostate. The MS analysis of the peptides extracted from each of these LCM preparations revealed several protein markers of prostate cancer; prostate-specific antigen (PSA) and prostatic acid phosphatase (PAP) could be identified in both the prostate cancer and BPH cells. In addition, growth differentiation factor (GDF)-15 was identified from BPH cells, but not within prostate cancer cells, thus confirming previous studies that this protein is associated with BPH, but not prostate cancer cells.



New Technology Has Potential to Aid in Many Retrospective Studies

Hundreds of proteins were identifiable from any of the cell types obtained from the FFPE tissue, showing the robustness of this procedure for analyzing such samples. The development of this technology allows us to use high-throughput MS on FFPE tissue samples to identify novel disease-specific biomarkers. Since large numbers of FFPE tissues are available, retrospective studies using existing cohorts of clinical samples can be conducted very efficiently, potentially helping many scientists in their research. ♦



LASP Deputy Director: "It's Not Just a Job"

For the past two years, **Dr. Bishop Curry** has quietly gone about his job of finding ways to standardize and harmonize operations between NCI-Frederick and NCI-Bethesda animal facilities.



In a recent interview, he explained that "We are located on two campuses, but our mantra is: 'One Animal Program.'" Standardizing facility operations, practices, and training procedures on the two campuses is complex, but he is extremely proud of the LASP staff and their accomplishments: "We've made great strides in the last one-and-one-half years," he said.

Standardizing Practices for Both Campuses

Standardization has included establishing electronic methods to capture and communicate information between the two campuses, and storing personnel records, job descriptions, and training matrix/expectations, Dr. Curry said.

For example, NCI investigators can now request importation and rederivation services on the LASP

Web site. Very soon investigators with animal importation or rederivation projects will be sent monthly electronic updates on their projects in the LASP Receiving and Quarantine facility. "In addition, all new LASP employees now complete an orientation module so that they immediately understand their critical role in animal-based research, our program mission, and our high expectations from LASP employees," he said.

Dr. Curry added, "Targeted training is essential because the focus of NCI research programs is quite dynamic. To meet the real-time needs of NCI and SAIC-Frederick, Inc., researchers, we must be able to monitor the core competence and skill sets of our personnel; and one can't efficiently do that without an electronic database. We're excited to have reached some early milestones, gaining efficiency, and keeping pace with the needs of our customers."

Love of Animals Leads to DVM and Diplomate Certification

With an innate love of animals, it was natural that Dr. Curry would choose a career as a veterinarian in his own "companion animal" practice—primarily dogs, cats, horses and cattle. However, his latent research and academic interests eventually spurred him into the field of research, where he completed a three-year, NIH-supported residency program in Comparative Medicine and Pathology.

A Diplomate of the American College of Laboratory Animal Medicine, Dr. Curry is one of approximately only 700 veterinarians worldwide who are board-certified as specialists in the field of Laboratory Animal Medicine and who work in support of the biomedical research community.

In several respects, Dr. Curry says, the field of veterinary medicine is much like human medicine. After

obtaining a doctoral degree in veterinary medicine, a doctor can pursue numerous postdoctoral and specialty training opportunities in areas such as pathology, surgery, laboratory animal medicine, internal medicine, and dentistry, to name a few.

Then, too, he explained, working as a veterinarian-researcher is often challenging, as the researcher balances the needs and requirements of the animal study proposal with appropriate endpoints. "The research that we support is so important and is not only beneficial for human health but, in many cases, animal health as well," he said.

Responsibilities Are Far-Ranging

As deputy director, Dr. Curry ensures that NCI-Frederick can provide the necessary resources for NCI and SAIC-Frederick, Inc., investigators. He noted that the LASP's primary mission "is to provide NCI principal investigators with the highest quality of animals, because in doing so, high-quality research data can be derived. That data can help forward the efforts of translational research, which is that area of research between 'bench,' or basic research, and the clinics. We are very serious in our efforts to provide a good, healthy, and reliable animal bioassay so that data can be as predictive as possible, thereby advancing the efforts of the NCI and maximizing the benefit to society."

Dr. Curry is responsible for all of the NCI research facilities that house animal colonies. This includes 14 animal facilities at NCI-Frederick; 5 on the main campus at NIH-Bethesda; and 1 in Rockville—20 in all.

Dr. Curry was recruited to SAIC-Frederick, Inc., from Charles River Laboratories' Discovery-Development Services, in Worcester, Massachusetts, where he directed the Laboratory

continued on page 21

Dr. Eiman Aleem, Mouse Cancer Genetics Program



Dr. Eiman Aleem earned her PhD in Molecular Biology from the University of Heidelberg and the German Cancer Research Center, Germany. In June 2002 she joined Dr. Philipp Kaldis' laboratory in the Mouse Cancer Genetics Program.

Using knockout mouse models to study the functions of cyclin-dependent kinases (Cdks), Dr. Kaldis' lab focuses on understanding the regulation of the mammalian cell cycle *in vivo*.

Dr. Aleem explained that in a recent study, "We ablated one of the Cdks (Cdk2) thought to be critical for DNA replication. Surprisingly, we found that it is not an essential gene for the mitotic cell cycle, and the question was: how can mice survive without Cdk2?"

Attempting to answer that question

formed the basis of Dr. Aleem's current project. Studying double knockout mice lacking both Cdk2 and its inhibitor p27^{kip1}, Dr. Aleem and her colleagues observed increased levels of DNA replication and mitosis in the absence of Cdk2 and p27, indicating a novel target of p27, which they identified as Cdc2.

Further, study results indicate that Cdc2 can promote the G1/S transition (DNA replication) and that it binds to cyclin E, promoting "S phase" entry.

"Understanding normal cell cycle regulation is important for a better understanding of the uncontrolled cell division characteristic of cancer cells. This study aids that understanding in that it presents a new mechanism of mammalian cell cycle regulation," Dr. Aleem concluded. ♦

Aleem E, Kiyokawa H, Kaldis P

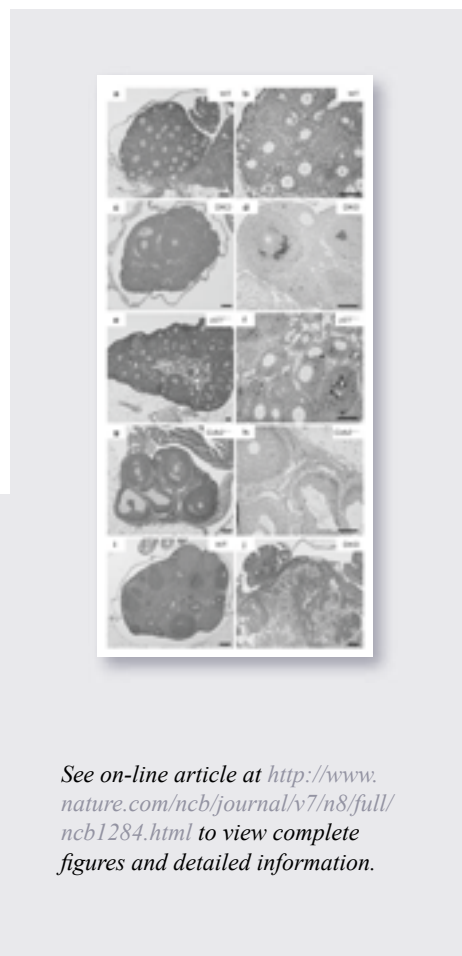
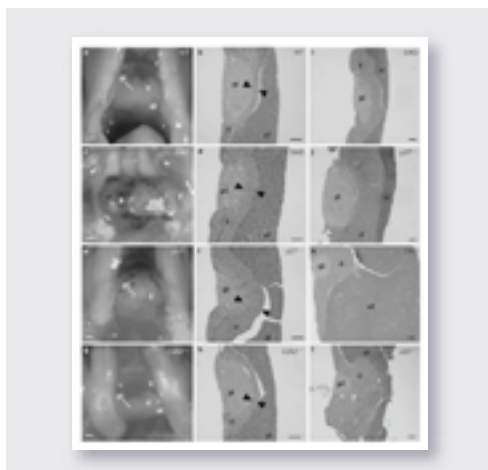
Cdc2-Cyclin E Complexes Regulate the G1/S Phase Transition

Nat Cell Biol Aug; 7(8):831-836, 2005.

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The cyclin-dependent kinase inhibitor p27^{kip1} is known as a negative regulator of cell-cycle progression and as a tumor suppressor. Cdk2 is the main target of p27 and therefore we hypothesized that loss of Cdk2 activity should modify the p27^{-/-} mouse phenotype. Here, we show that although p27^{-/-} Cdk2^{-/-} mice developed ovary tumors and tumors in the anterior lobe of the pituitary, we failed to detect any functional complementation in p27^{-/-} Cdk2^{-/-} double-knockout mice, indicating a parallel pathway regulated by p27. We observed elevated levels of S phase and mitosis in tissues of p27^{-/-} Cdk2^{-/-} mice concomitantly with elevated Cdc2 activity in p27^{-/-} Cdk2^{-/-} extracts. p27 binds to Cdc2, cyclin B1, cyclin

A2, or suc1 complexes in wild-type and Cdk2^{-/-} extracts. In addition, cyclin E binds to and activates Cdc2. Our *in vivo* results provide strong evidence that Cdc2 may compensate the loss of Cdk2 function. ♦



See on-line article at <http://www.nature.com/ncb/journal/v7/n8/full/ncb1284.html> to view complete figures and detailed information.

Editor's note: The following 59 articles have been selected from a quarterly listing of publications in 15 of the most prestigious science journals.

Biophysics

Tsai HH, Reches M, Tsai CJ, Gunasekaran K, Gazit E, Nussinov R. Energy landscape of amyloidogenic peptide oligomerization by parallel-tempering molecular dynamics simulation: Significant role of Asn ladder. *Proc Natl Acad Sci USA* 102(23):8174–8179, 2005.

Cell and Tumor Biology

Beppu Y, Nakamura K, Linehan WM, Rapisarda A, Thiele CJ. Topotecan blocks hypoxia-inducible factor-1 alpha, and vascular endothelial growth factor expression induced by insulin-like growth factor-I in neuroblastoma cells. *Cancer Res* 65(11):4775–4781, 2005.

Birger Y, Catez F, Furusawa T, Lim JH, Prymakowska-Bosak M, West KL, Postnikov YV, Haines DC, Bustin M. Increased tumorigenicity and sensitivity to ionizing radiation upon loss of chromosomal protein HMGN1. *Cancer Res* 65(15):6711–6718, 2005.

Hodge DR, Peng B, Cherry JC, Hurt EM, Fox SD, Kelley JA, Munroe DJ, Farrar WL. Interleukin 6 supports the maintenance of p53 tumor suppressor gene promoter methylation. *Cancer Res* 65(11):4673–4682, 2005.

Hodge DR, Xiao WH, Peng BJ, Cherry PC, Munroe DJ, Farrar WL. Enforced expression of superoxide dismutase 2/manganese superoxide dismutase disrupts autocrine interleukin-6 stimulation in human multiple myeloma cells and enhances dexamethasone-induced apoptosis. *Cancer Res* 65(14):6255–6263, 2005.

Zhao YF, Chaiswing L, Velez JM, Batinic-Haberle I, Colburn NH, Oberley TD, St Clair DK. p53 translocation to mitochondria precedes its nuclear translocation and targets mitochondrial oxidative defense protein-manganese superoxide dismutase. *Cancer Res* 65(9):3745–3750, 2005.

Cellular Immunology and Immune Regulation

Brehm MA, Daniels KA, Ortaldo JR, Welsh RM. Rapid conversion of effector mechanisms from NK to T cells during virus-induced lysis of allogeneic implants in vivo. *J Immunol* 174(11):6663–6671, 2005.

Brittingham KC, Ruthel G, Panchal RG, Fuller CL, Ribot WJ, Hoover TA, Young HA, Anderson AO, Bavari S. Dendritic cells endocytose *Bacillus anthracis* spores: Implications for anthrax pathogenesis. *J Immunol* 174(9):5545–5552, 2005.

Ji Q, Gondek D, Hurwitz AA. Provision of granulocyte-macrophage colony-stimulating factor converts an autoimmune response to a self-antigen into an antitumor response. *J Immunol* 175(3):1456–1463, 2005.

Leeanansaksiri W, Wang H, Gooya JM, Renn K, Abshari M, Tsai S, Keller JR. IL-3 induces inhibitor of DNA-binding protein-1 in hemopoietic progenitor cells and promotes myeloid cell development. *J Immunol* 174(11):7014–7021, 2005.

Ortaldo JR, Winkler-Pickett RT, Bere EW, Jr., Watanabe M, Murphy WJ, Wiltrout RH. In vivo hydrodynamic delivery of Cdna encoding IL-2: Rapid, sustained redistribution, activation of mouse NK cells, and therapeutic potential in the absence of NK T cells. *J Immunol* 175(2):693–699, 2005.

Chemokines

Howard OMZ, Dong HF, Su SB, Caspi RR, Chen X, Plotz P, Oppenheim JJ. Autoantigens signal through chemokine receptors: Uveitis antigens induce CXCR3- and CXCR5-expressing lymphocytes and immature dendritic cells to migrate. *Blood* 105(11):4207–4214, 2005.

Khaled AR, Bulavin DV, Kittipatarin C, Li WQ, Alvarez M, Kim K, Young HA, Fornace AJ, Durum SK. Cytokine-driven cell cycling is mediated through Cdc25A. *J Cell Biol* 169(5):755–763, 2005.

Chromosome Structure and Dynamics

Campaner S, Kaldis P, Izraeli S, Kirsch IR. Sil phosphorylation in a Pin1 binding domain affects the duration of the spindle checkpoint. *Mol Cell Biol* 25(15):6660–6672, 2005.

Clinical Immunology

Matsuyama W, Watanabe M, Shirahama Y, Oonakahara KI, Higashimoto I, Yoshimura T, Osame M, Arimura K. Activation of discoidin domain receptor 1 on CD14-positive bronchoalveolar lavage fluid cells induces chemokine production in idiopathic pulmonary fibrosis. *J Immunol* 174(10):6490–6498, 2005.

Sereti I, Imamichi H, Natarajan V, Imamichi T, Ramchandani MS, Badralmaa Y, Berg SC, Metcalf JA, Hahn BK, Shen JM, Powers A, Davey RT, Kovacs JA, Shevach EM, Lane HC. In vivo expansion of CD4(+)CD45RO-CD25(+) T cells expressing Foxp3 in IL-2-treated HIV-infected patients. *J Clin Invest* 115(7):1839–1847, 2005.

Enzyme Catalysis and Regulation

Panchal RG, Halverson KM, Ribot W, Lane D, Kenny T, Abshire TG, Ezzell JW, Hoover TA, Powell B, Little S, Kasionowicz JJ, Bavari S. Purified *Bacillus anthracis* lethal toxin complex formed in vitro and during infection exhibits functional and biological activity. *J Biol Chem* 280(11):10834–10839, 2005.

Kaldis P. The N-terminal peptide of the Kaposi's sarcoma-associated herpesvirus (KSHV)-cyclin determines substrate specificity. *J Biol Chem* 280(12):11165–11174, 2005.

Experimental Therapeutics, Molecular Targets, and Chemical Biology

Bradshaw TD, Matthews CS, Cookson J, Chew EH, Shah M, Bailey K, Monks A, Harris E, Westwell AD, Wells G, Loughton CA, Stevens MFG. Elucidation of thioredoxin as a molecular target for antitumor quinols. *Cancer Res* 65(9):3911–3919, 2005.

Dote H, Cerna D, Burgan WE, Camphausen K, Tofilon PJ. Erbb3 expression predicts tumor cell radiosensitization induced by Hsp90 inhibition. *Cancer Res* 65(15):6967–6975, 2005.

Marcus AI, Zhou J, O’Brate A, Hamel E, Wong J, Nivens N, El-Naggar A, Yao TP, Khuri FR, Giannakakou P. The synergistic combination of the farnesyl transferase inhibitor lonafarnib and paclitaxel enhances tubulin acetylation and requires a functional tubulin deacetylase. *Cancer Res* 65(9):3883–3893, 2005.

Gene Expression

Jiao XM, Zhang N, Xu XH, Oppenheim JJ, Jin T. Ligand-induced partitioning of human CXCR1 chemokine receptors with lipid raft microenvironments facilitates G-protein-dependent signaling. *Mol Cell Biol* 25(13):5752–5762, 2005.

Yamaguchi T, Sharma P, Athanasiou M, Kumar A, Yamada S, Kuehn MR. Mutation of SENP1/Supr-2 reveals an essential role for desumoylation in mouse development. *Mol Cell Biol* 25(12):5171–5182, 2005.

Yamashita M, Ying SX, Zhang GM, Li CL, Cheng SY, Deng CX, Zhang YE. Ubiquitin ligase Smurf1 controls osteoblast activity and bone homeostasis by targeting MEKK2 for degradation. *Cell* 121(1):101–113, 2005.

Genes: Structure and Regulation

Difilippantonio S, Celeste A, Fernandez-Capetillo O, Chen HT, San Martin BR, Van Laethem F, Yang YP, Petukhova GV, Eckhaus M, Feigenbaum L, Manova K, Kruhlik M, Camerini-Otero RD, Sharan S, Nussenzweig M, Nussenzweig A. Role of Nbs1 in the activation of the Atm kinase revealed in humanized mouse models. *Nat Cell Biol* 7(7):675–U56, 2005.

Dupuy AJ, Akagi K, Largaespada DA, Copeland NG, Jenkins NA. Mammalian mutagenesis using a highly mobile somatic Sleeping Beauty Transposon system. *Nature* 436(7048):221–226, 2005.

Gao ZG, Chiao P, Zhang X, Zhang XH, Lazar MA, Seto E, Young HA, Ye JP. Co-activators and corepressors of NF-Kappa B in I Kappa Beta Alpha gene promoter. *J Biol Chem* 280(22):21091–21098, 2005.

Kim HP, Korn LL, Gamero AM, Leonard WJ. Calcium-dependent activation of interleukin-21 gene expression in T cells. *J Biol Chem* 280(26):25291–25297, 2005.

Youngren KK, Coveney D, Peng XN, Bhattacharya C, Schmidt LS, Nickerson ML, Lamb BT, Deng JM, Behringer RR, Capel B, Rubin EM, Nadeau JH, Martin A. The Ter mutation in the dead end gene causes germ cell loss and testicular germ cell tumours. *Nature* 435(7040):360–364, 2005.

Genetics

Hageman GS, Anderson DH, Johnson LV, Hancox LS, Taiber AJ, Hardisty LI, Hageman JL, Stockman HA, Borchardt JD, Gehrs KM, Smith RJH, Silvestri G, Russell SR, Klaver CCW, Barbazetto I, Chang S, Yannuzzi LA, Barile GR, Merriam JC, Smith RT, Olsh AK, Bergeron J, Zernant J, Merriam JE, Gold B, Dean M, Allikmets R. A common haplotype in the complement regulatory gene factor H (HF1/CFH) predisposes individuals to age-related macular degeneration. *Proc Natl Acad Sci USA* 102(20):7227–7232, 2005.

Landi MT, Kanetsky PA, Tsang S, Gold B, Munroe D, Rebbeck T, Swoyer J, Ter-Minassian M, Hedayati M, Grossman L, Goldstein AM, Calista D, Pfeiffer RM. MC1R, ASIP, and DNA repair in sporadic and familial melanoma in a Mediterranean population. *J Natl Cancer Inst* 97(13):998–1007, 2005.

Murphy WJ, Larkin DM, Everts-van der Wind A, Bourque G, Tesler G, Auville L, Beever JE, Chowdhary BP, Galibert F, Gatzke L, Hitte C, Meyers SN, Milan D, Ostrander EA, Pape G, Parker HG, Raudsepp T, Rogatcheva MB, Schook LB, Skow LC, Welge M, Womack JE, O’Brien SJ, Pevzner PA, Lewin HA. Dynamics of mammalian chromosome evolution inferred from multispecies comparative maps. *Science* 309(5734):613–617, 2005.

Palmieri D, Halverson DO, Ouatas T, Horak CE, Salerno M, Johnson J, Figg WD, Hollingshead M, Hursting S, Berrigan D, Steinberg SM, Merino MJ, Steeg PS. Medroxyprogesterone acetate elevation of Nm23-H1 metastasis suppressor expression in hormone receptor-negative breast cancer. *J Natl Cancer Inst* 97(9):632–642, 2005.

Schumacher AJ, Nissley DV, Harris RS. APOBEC3G hypermutates genomic DNA and inhibits Ty1 retrotransposition in yeast. *Proc Natl Acad Sci USA* 102(28):9854–9859, 2005.

Vocke CD, Yang YF, Pavlovich CP, Schmidt LS, Nickerson ML, Torres-Cabala CA, Merino MJ, Walther MM, Zbar B, Linehan WM. High frequency of somatic frameshift BHD gene mutations in Birt-Hogg-Dubé-associated renal tumors. *J Natl Cancer Inst* 97(12):931–935, 2005.

Host Defense

Kurosaka K, Chen Q, Yarovinsky F, Oppenheim JJ, Yang D. Mouse cathelin-related antimicrobial peptide chemoattracts leukocytes using formyl peptide receptor-like 1/mouse formyl peptide receptor-like 2 as the receptor and acts as immune adjuvant. *J Immunol* 174(10):6257–6265, 2005.

Warfield KL, Olinger G, Deal EM, Swenson DL, Bailey M, Negley DL, Hart MK, Bavari S. Induction of humoral and CD8⁺ T-cell responses are required for protection against lethal Ebola virus infection. *J Immunol* 175(2):1184–1191, 2005.

Immunology

Carrington M, Wang S, Martin MP, Gao XJ, Schiffman M, Cheng J, Herroero R, Rodriguez AC, Kurman R, Mortel R, Schwartz P, Glass A, Hildesheim A. Hierarchy of resistance to cervical neoplasia mediated by combinations of killer immunoglobulin-like receptor and human leukocyte antigen loci. *J Exp Med* 201(7):1069–1075, 2005.

Du Y, Spence SE, Jenkins NA, Copeland NG. Cooperating cancer gene identification via oncogenic retrovirus-induced in-

continued on page 8

continued from page 7

sertional mutagenesis. E-published: *Blood* Jun 2005; 10.1182/blood-2004-12-4840.

Gao P, Wange RL, Zhang N, Oppenheim JJ, Howard OM. Negative regulation of CXCR4-mediated chemotaxis by the lipid phosphatase activity of tumor suppressor PTEN. E-published: *Blood* Jun 2005; 10.1182/blood-2004-08-3362.

Medical Sciences

Yang QF, Huang W, Jozwik C, Lin Y, Glasman M, Caohuy H, Srivastava M, Esposito D, Gillette W, Hartley J, Pollard HB. Cardiac glycosides inhibit TNF-Alpha/NF-Kappa B signaling by blocking recruitment of TNF receptor-associated death domain to the TNF receptor. *Proc Natl Acad Sci USA* 102(27):9631–9636, 2005.

Metabolism and Bioenergetics

Liu MZ, Durfee T, Cabrera JE, Zhao K, Jin DJ, Blattner FR. Global transcriptional programs reveal a carbon source foraging strategy by *Escherichia coli*. *J Biol Chem* 280(16):15921–15927, 2005.

Microbiology

Chin MPS, Rhodes TD, Chen JB, Fu W, Hu WS. Identification of a major restriction in HIV-1 intersubtype recombination. *Proc Natl Acad Sci USA* 102(25):9002–9007, 2005.

Microbiology Biology, Pathology and Genetics

Jansen AP, Camalier CE, Colburn NH. Epidermal expression of the translation inhibitor programmed Cell Death 4 suppresses tumorigenesis. *Cancer Res* 65(14):6034–6041, 2005.

Neoplasia

Kurokawa M, Ghosh SK, Ramos JC, Mian AM, Toomey NL, Cabral L, Whitby D, Barber GN, Dittmer DP, Harrington WJ. Azidothymidine inhibits NF-Kappa B and induces Epstein-Barr Virus gene expression in Burkitt lymphoma. *Blood* 106(1):235–240, 2005.

Oncogenes

Demidenko ZN, Rapisarda A, Garayoa M, Giannakakou P, Melillo G, Blagosklonny MV. Accumulation of hypoxia-inducible factor-1 alpha is limited by transcription-dependent depletion. *Oncogene* 24(30):4829–4838, 2005.

Protein Structure and Folding

Bibillo A, Lener D, Tewari A, Le Grice SF. Interaction of the Ty3 reverse transcriptase Thumb subdomain with template-primer. *J Biol Chem* 2005.

Chen B, Colgrave ML, Daly NL, Rosen-gren KJ, Gustafson KR, Craik DJ. Isolation and characterization of novel cyclotides from *Viola hederaceae*—Solution structure and anti-HIV activity of vhl-1, a leaf-specific expressed cyclotide. *J Biol Chem* 280(23):22395–22405, 2005.

Hansen AM, Gu YJ, Li M, Andrykovitch M, Waugh DS, Jin DJ, Ji XH. Structural basis for the function of stringent starvation protein A as a transcription factor. *J Biol Chem* 280(17):17380–17391, 2005.

Receptors

Ishaq M, Degray G, Natarajan V. Evidence for the involvement of tyrosine kinase ZAP 70 in nuclear retinoid receptor-dependent transactivation in T lymphocytes. E-published: *J Biol Chem* Aug 2005; 10.074/jbc.M501547200.

Medvedev AE, Thomas K, Awomoyi A, Kuhns DB, Gallin JI, Li XX, Vogel SN. Cutting-edge: Expression of IL-1 receptor-associated kinase-4 (IRAK-4) proteins with mutations identified in a patient with recurrent bacterial infections alters normal IRAK-4 interaction with components of the IL-1 receptor complex. *J Immunol* 174(11):6587–6591, 2005.

Zhou Y, Bian XW, Le YY, Gong WH, Hu JY, Zhang X, Wang LH, Iribarren P, Salcedo R, Howard OMZ, Farrar W, Wang JM. Formylpeptide receptor FPR and the rapid growth of malignant human gliomas. *J Natl Cancer Inst* 97(11):823–835, 2005.

RNA: Structure, Metabolism and Catalysis

Yi-Brunozzi HY, Le Grice SFJ. Investigating HIV-1 polypurine tract geometry via targeted insertion of abasic lesions in the (-)-DNA template and (+)-RNA primer. *J Biol Chem* 280(20):20154–20162, 2005.

Tretyakova I, Zolotukhin AS, Tan W, Bear J, Propst F, Ruthel G, Felber BK. NXF family protein participates in cytoplasmic mRNA trafficking. *J Biol Chem* 2005.

Signal Transduction

Pu YM, Perry NA, Yang DZ, Lewin NE, Keddi N, Braun DC, Choi SH, Blumberg PM, Garfield SH, Stone JC, Duan DH, Marquez VE. A novel diacylglycerol-lactone shows marked selectivity in vitro among C1 domains of protein kinase C (PKC) isoforms alpha and delta, as well as selectivity for Rasgrp, compared with PKC alpha. *J Biol Chem* 280(29):27329–27338, 2005.

Roy SK, Shuman JD, Platanias LC, Shapiro PS, Reddy SPM, Johnson PF, Kalvakolanu DV. A role for mixed lineage kinases in regulating transcription factor CCAAT/enhancer-binding protein-beta-dependent gene expression in response to interferon-gamma. *J Biol Chem* 280(26):24462–24471, 2005.

Fu Z, Schroeder MJ, Shabanowitz J, Kaldis P, Togawa K, Rustgi AK, Hunt DF, Sturgill TW. Activation of a nuclear Cdc2-related kinase within a mitogen-activated protein kinase-like TDY motif by autophosphorylation and cyclin-dependent protein kinase-activating kinase. *Mol Cell Biol* 25(14):6047–6064, 2005.

Kim JA, Yeh DC, Ver M, Li YH, Carranza A, Conrads TP, Veenstra TD, Harrington MA, Quon MJ. Phosphorylation of Ser(24) in the pleckstrin homology domain of insulin receptor substrate-1 by mouse pelle-like kinase/interleukin-1 receptor-associated kinase: Cross-talk between inflammatory signaling and insulin signaling that may contribute to insulin resistance. *J Biol Chem* 280(24):23173–23183, 2005.

Transplantation

Chen X, Murakami T, Oppenheim JJ, Howard Z. Triptolide, a constituent of immunosuppressive Chinese herbal medicine, is a potent suppressor of dendritic cell maturation and trafficking. E-published: *Blood*, June 2005; 10.1182/blood-2005-03-0854. ♦

Poster People Profile

Susan Skidmore: Technology Has Grown in Leaps and Bounds



*Susan Skidmore,
Assistant Manager,
Conference Center*

Susan Skidmore, assistant manager of the Conference Center, recently celebrated her 19th anniversary of working at NCI-Frederick. From the beginning, her job has entailed overseeing the Conference Center—scheduling room and AV equipment usage and sending out the “green sheet” calendar. Today, the job also encompasses coordinating and executing many of the video teleconferences.

“At first in 1986, it was rather lonely, sitting up here on the hill,” she said in a recent interview, “but the scientific community soon started booking rooms, requesting help with AV; and since I had one of the very few fax machines on campus, I got to know a lot of people while we waited for their faxes to go.”

She noted that “The biggest challenge used to be un-jamming a slide!” Now her job “is much more challenging and demanding. Technology has grown in leaps and bounds since I started here.”

Center staff has gone from using overhead projectors and 35mm slide projectors to using LCD projectors for PowerPoint and other types of presentations, sending information via e-mails rather than faxes, posting the “green sheet” online, and scheduling conference rooms with a computer software program.

“I think video teleconferencing [VTC] has been the biggest step forward, technologically; certainly it has had the biggest impact on how we communicate and share information. When we first started doing VTCs around 1995, there were many problems and quite a few failures when we tried to connect to other sites. Now, however, most of the bugs are

worked out and users are better trained so that video teleconferencing has become a reliable, time- and money-saving tool.”

Except for a few weeks in the summer, all Conference Center rooms are booked nearly every day, all day. Ms. Skidmore also coordinates the Distinguished Scientist Lecture series and said, “I feel privileged to have met many eminent scientists.”

*“the people... are the best
part of my job.”*

Despite all these changes, Ms. Skidmore says, like many other Poster People we’ve profiled, that “the people I’ve met and worked with here are the best part of my job. With very few exceptions, everyone has been pleasant, friendly, and helpful. In spite of the fact that the facility has grown, there is still a sense of community and camaraderie.”

The NCI-Frederick community feels the same way and appreciates her work. In 1999 the Conference Center was given the Special Science Achievement Award for the “coordination, organization and support of scientific meetings.” ♦



Postgraduate Researcher

Biotech Student Has Aimed for Science Career Since Age 4

NCI-Frederick prides itself on the diversity of excellent scientists and researchers it employs. One such researcher is a postgraduate student originally from Compton, CA, an urban area just south of Los Angeles.

Since she was four years old, Teresa Ramirez has remained steadfast in her desire to become a doctor and a scientist, and learned about biomedical research and the National Cancer Institute as a high school senior.

Immediately, she knew she wanted “to one day conduct research at the NCI,” she commented in an e-mail interview.

Although Compton is noted for its gangs, drugs, and violence, Ms. Ramirez, a postgraduate student at NCI-Frederick, believes that “a city does not determine what a student is capable of becoming.” Wounded by a stray bullet in junior high school, Ms. Ramirez has already seen friends join gangs and others die. Despite these negative aspects, she stressed that she was “very proud to be a Compton student.”

Take Advantage of Special Opportunities

Part of the reason for her pride may be that her parents and her teachers were supportive, encouraging her to enter science fairs, to take summer enrichment courses, and of course, to attend college.

This encouragement held her in good stead as she continued in college to apply for special programs that would give her resumé depth and provide her with unique experiences. Such experiences “can be a once-in-a-lifetime opportunity,” she said.

For example, she participated in programs such as the Minority Biomedical Research Support Program (summer 1999–June 2004); the

summer 2001 Minority International Research Training Program at the Royal Holloway, University of London; the summer 2002 Leadership Alliance program at Brown University (Providence, RI); and the 2003 Washington, DC, Minority and Indigenous Fellows Program of the Biotechnology Institute, sponsored by the Biotechnology Industry Organization, a major biotechnology trade association.

In addition, she spent summers doing research at California State University (CSU), Dominguez Hills. However, she said, “I never thought that I was going to get the opportunity to conduct research at the NCI.”

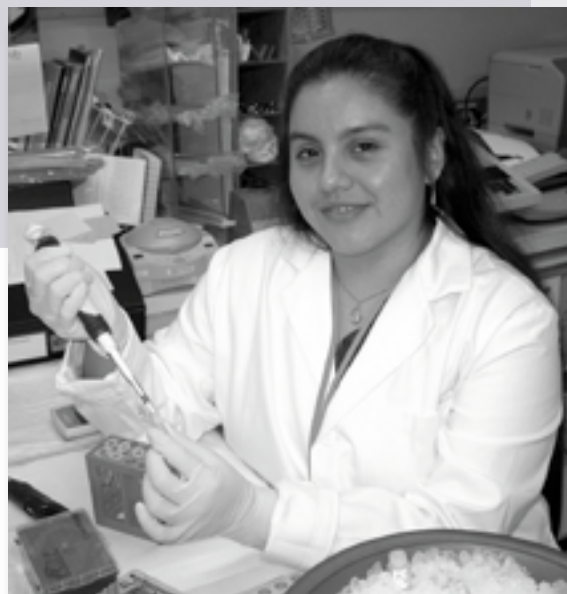
Dreams Do Come True

But never say “never.” Dreams do come true. While in Washington, DC, Ms. Ramirez applied to NCI’s Introduction to Cancer Research Careers program. After interviews with several different NIH and NCI-Frederick laboratories, she was offered a post-baccalaureate position with Dr. Thomas Sayers, Laboratory of Experimental Immunology, at NCI-Frederick.

Her current project, called “Combination of VELCADE™ and the protein TRAIL for tumor destruction,” focuses on the response of cancer cell cultures to experimental drug combinations, seeking a combination that will kill tumor cells without harming healthy cells around the tumor.

Ms. Ramirez finds Frederick a serene contrast to her urban home environment near Los Angeles. “Frederick, compared to Compton, is very different in the sense that it is very quiet and peaceful. Here in Frederick I enjoy the countryside.”

Now that she’s an “East Coaster,” Ms. Ramirez has visited a number of local tourist sites. “I have been to Boonsboro, Baltimore, the Amish



Ms. Ramirez in the Laboratory of Experimental Immunology; photo by Allen Brooks, LEI, SAIC-Frederick, Inc.

country [Lancaster, PA], Shenandoah National Park, and Luray Caverns [both in Virginia]. I enjoy going to DC, and I really enjoyed the cherry blossoms. I have also been horseback riding with my roommates of last year at Harpers Ferry [West Virginia].”

Naturally, through working at NCI-Frederick, Ms. Ramirez has learned a lot more about cancer research and about cell culturing. “I enjoy what I do here at the NCI and I enjoy learning about other scientific fields.”

In a final comment, she noted, “Now that I am here, it is sometimes hard to believe, because it still feels like a dream. Sometimes I look back and I just can’t believe that I have made one of my dreams come true in my educational career.” And she’s just 25! We look forward to some very fine research from Ms. Ramirez. ♦

Poster Puzzler

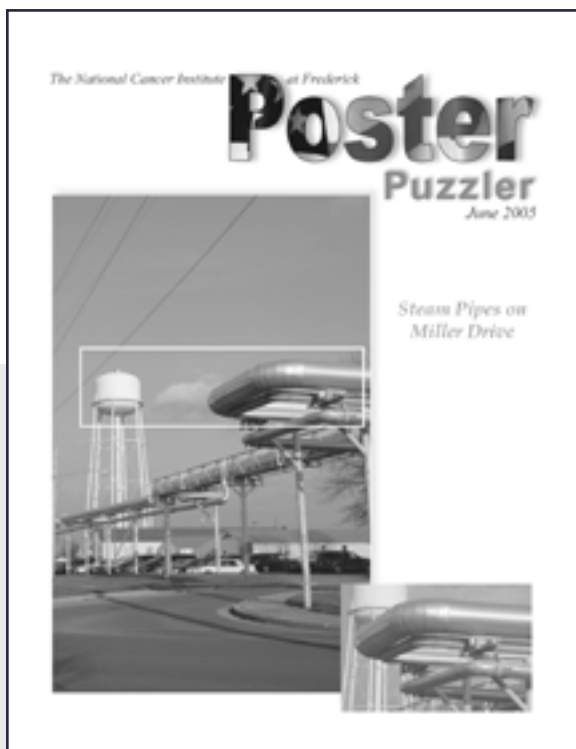
What is it?

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 right. Clue: It's somewhere at Fort Detrick/NCI-Frederick. Win a framed photograph of the Poster Puzzler by e-mailing your guess, along with your name, e-mail address, and daytime phone number, to Poster Puzzler at poster@ncifcrf.gov. Alternatively, you can send us your guess, along with your name and daytime phone number on one of *The Poster* forms found on the front of *The Poster* stands in the lobbies of Buildings 426 and 549. All entries must be received by Friday, **October 28**, and the winner will be drawn from all correct answers received by that date.



Good luck and good hunting! ♦



The Poster Puzzler:

Steam Pipes on Miller Drive

These pipes are part of a complex system of steam and condensate pipes seen throughout the campus. The large pipe at the top is used for steam supply, typically at a pressure of 100 pounds per square inch, and the smaller pipes are used to return the condensate (i.e., hot water) to the boiler plant on Miller Drive. The condensate is then boiled again and the steam reused. The odd detours that the pipes take, such as that shown in the picture, are expansion loops, which allow the piping systems to expand and contract without damaging the pipes and fittings.

Not all of the steam distribution system is above ground. The central portion of our campus has underground steam lines, which are less conspicuous but more costly to install and repair. The entire steam system is owned and operated by the Fort Detrick Army Garrison.

Thanks to all participants in the June Poster Puzzler!

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

Congratulations to our June 2005 winner:
Dan Oleyar, Advanced Biomedical
Computing Center. ♦

New Faces at NCI-Frederick

NCI-Frederick Welcomes New Staff

Forty-seven people joined our facility in March, April, and May 2005.

Charles River Labs welcomes...

Karen L. Luhn
R. Charlene Miller
Lori J. Rippeon ♦

Raphael Oguariri



Jonathan Weiss



NCI-Frederick welcomes...

Padmakumar Chellammal
Pui Yee Chung
Celeste Constantine
Hana Krizova
Wei Liu
Mansour Mohamadzadeh
Jonathan Weiss
Xiaomei Zhou ♦

Xiaomei Zhou



Pui Yee Chung



SAIC-Frederick, Inc., welcomes...

Nancy Sotolongo



Curtis Asbury
Patrick Barber
Tina Biggus
Katherine Bullock
Colin Celaya
Celene Chua
William Cross
Lori Davis
Brandie Fullmer
Tiffany Gee
Ian Grant
Prabhakar Gudla
Thawng Lian
Vina Mccauley
Rhona Mcvicker
Carmen Meeks
Mary Miller
Raphael Oguariri
Carlei O'Neal
Ralph Parchment
Michael Princiotta
Luxia Qian
Ping Ren
Leslie Shields
David Sims
Nancy Sotolongo

Myla Spencer
Lawrence Sternberg
Nicholas Stewart
Kedest Teshome
Mai Ni Thawng Tha
Mingyue Wang
Yonghong Wang
Yongping Yang
Zhiwen Yang
Jeffrey Yuenger ♦

Prabhakar Gudla



Celeste Constantine



Mai Ni Thawng Tha



Wei Liu



Outreach and Special Programs

Take Your Child To Work Day: One Lab's First Experience

Editor's note: This is the second of a two-part series on developing and presenting a Take Your Child To Work Day program. The first part, which appeared in the June issue, http://web.ncifcrf.gov/ThePoster/jun05_POSTER.pdf, focused on the planning that goes into a program. This part focuses on the event itself.

The door to the Laboratory of Functional Genomics stood wide open. Walking in, the first thing you noticed was the quiet. Was this really Take Your Child To Work Day (TYCTWD)? Where were the children?

Hard at work in two separate areas, the children in one group were learning how to use a pipette for their experiment, and the other group was working on a chromatography experiment. Dubbed "Dilution Solutions," the program simulated experiments measuring cell survival and drug toxicity, using simple laboratory equipment and food dyes to produce color patterns on 96-well microplates.

Scientists in the Making

With lab coats falling halfway to their ankles and protective gloves bagging around their little hands, two young boys watched Erik Harris, Research Associate, as he showed them how to dilute colored liquid using a pipette. The boys then carefully drew up the colored liquid into pipettes for their own dilutions. Next they placed the liquid into a 96-well plate in pre-selected wells that formed a simple design. Research Technician Nikki Reifsnider photographed their plates, and Curtis Hose, Associate Scientist, demonstrated how to use the plate reader to determine the intensity of the colors.

Meantime, the older boys had already completed their dilution and had moved on to their chromatography experiment with John Connelly, Research Associate. "The older ones

go faster, so they can do more," said Ms. Reifsnider. This was part of the well-thought-out program Dr. Anne Monks' group developed for TYCTWD on July 13.

The parents were equally interested in the experiments. Ronnie Lambert, FME, and his son Brady, 9, were both engrossed. "It's the hands-on experience that's so important," Mr. Lambert commented, adding, "And the color makes it fun. He [Brady] loves it."

Reflections

The interaction with the children was rewarding for the staff. "It's a great way to show off what we do in the lab," commented Ms. Reifsnider. And some of the questions that the children asked frequently brought a smile ("Do the cells sleep at night?").

Dr. Monks attributes the success of the program to its simplicity and careful planning. Under the direction of Ms. Reifsnider, and with considerable assistance from Mr. Harris, both the staff and activities were rehearsed and prepared in advance. Consequently, when the day arrived, they had only to set up their stations to be operational.

Acknowledging that hosting a program affected the normal work routine of the lab, Dr. Monks felt it was manageable because they participated for the morning session only and limited the number of children involved. She considers it important to participate in center-sponsored community events, adding that this event not only gave her group a sense of unity, but also led to some lighthearted moments during the planning, preparation, and execution of the activities.

Dr. Monks noted that the younger children were more openly enthusiastic about the program. "It's hard to know how to fascinate the 12- and 13-year-olds," she said. As for reaching girls, Dr. Monks said only



2 girls had signed up for the activity. However, "the two [girls] in the first session were really interested in what we were doing," she said. Short of renaming the activity for more "girl appeal," she wouldn't change the program because, as she said, "This is what we do."

The smiling faces around the lab were a good indication that Dr. Monks' group will participate in TYCTWD again next year. And we're not talking about the faces of the children; we're talking about the faces of the staff. ♦

Outreach and Special Programs

Take Your Child To Work Day



Our tenth annual **Take Your Child To Work Day (TYCTWD)** on July 13 was the biggest ever, with over 300 children registered, 27 programs, more than 15 hub activities, and over 100 volunteers.

The sessions were well attended and enthusiastically received. In spite of the heat, the hub area bustled all day with children, parents, and grandparents enjoying educational activities, “face time” with Dr. Fritz’s farm animals and Russ Hanson’s snakes, Kenny Thomas’s stock car, the Safety House from Washington County Fire and Rescue, the free ice cream and popcorn, and more.



The Kids’ Day Web site received many letters of appreciation, but one was especially meaningful: “Our sons...were brimming over with excitement as they told us (and their grandparents, friends, etc.) about all of the ‘cool’ things that they did during this special event... We’re grateful for everyone’s passion around science and everyone’s willingness to share it with our children. It truly makes a difference!” What those boys took from this event is why we continue the tradition of TYCTWD.

The planning committee would like to thank all those who took the time to develop a program for this year’s TYCTWD. The volunteers thank Judy Medicus of “Cats Paw Farm” (Farmers’ Market vendor) for the delicious muffins she made.

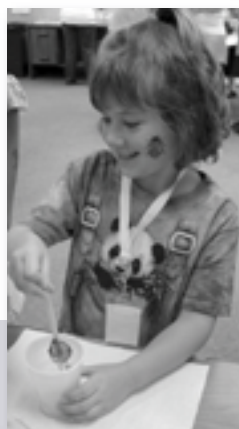
Please visit the TYCTWD photo gallery at <http://kidsday.ncifcrf.gov/>. ♦



Outreach and Special Programs



*Take Your Child
To
Work Day*



Play and Learning Station Has Busy Summer

The past few months have been busy ones for the Play and Learning Station (PALS), the Fort Detrick/NCI-Frederick on-site preschool. The staff can be justly proud of the recognition it has gained and the traditions it is building.

PALS Gains National Accreditation

PALS recently earned accreditation from the National Association for the Education of Young Children (NAEYC), the nation's leading organization of early childhood professionals.

"We're proud to be accredited by NAEYC, and recognized for our commitment to reaching the highest of professional standards," said Claudia Martin, Center Director. "NAEYC accreditation lets families in our community know that children in our program are getting the best care and early learning experiences."

In the 20 years since NAEYC accreditation was established, it has become a widely recognized sign of high quality in early childhood education programs. Currently, NAEYC accredits more than 10,000 programs—serving over 850,000 young children. Mark Ginsberg, PhD, executive director of NAEYC, said, "By earning accreditation, PALS has become a leader in a national effort to raise the quality of early childhood education, and to help give all children a better start."

NAEYC created its accreditation program in 1985 to set professional standards for early childhood education, and to help families identify high-quality child care and early education programs. To earn NAEYC's accreditation, a program first conducts a self-study to determine how well it meets the standards. After program staff make the indicated improvements, independent, professional validators then observe the program; finally, a national panel reviews and assesses the program. NAEYC accredits approved programs for a five-year period. ♦



The PALS facility, located on Beasley Drive, offers care for children ages 6 weeks to 5 years.

PALS Hosts Second Annual Art Fair

This past July, PALS held its second annual "Art Fair, Bake Sale, and Silent Auction" of children's "masterpieces." Proceeds from the bake sale and the silent auction will be used to purchase items for the childcare center.

Children in four age categories at PALS painted the "masterpieces": infants, 6 weeks–12 months; toddlers, 13–24 months; two-year-olds, 24–36 months; preschoolers, 3–5 years old.

This year's Masterpiece recipients include Gene Anderson (infants), Georgina and Tamyo Mbisa (toddlers), Debbie Householder (twos), and Sergey Plisov (preschoolers). ♦

PALS, offering care for infants, pre-toddlers, toddlers, and preschoolers, ages 6 weeks to 5 years, is located in Building 1074, Beasley Drive. Its hours are 7:00 a.m. to 6:30 p.m., Monday through Friday. If you would like to register a child for PALS, please call Ms. Martin at 301-846-5200. ♦



Some of the silent auction winners are pictured here with the artists.

Civil War Medicine: Lessons We've Learned, Part II – Caring for the Wounded

Editor's note: This is the second in a two-part series on some of the medical lessons learned during the Civil War that helped shape modern medicine. The first part, "Improving Survival Rates," was covered in our June issue, available at http://web.ncifcrf.gov/ThePoster/jun05_POSTER.pdf. If you have suggestions for other topics that have influenced modern medicine, please contact the editors at Scientific Publications, Graphics & Media, 301-846-5248/6218.

In our previous article, we discussed how surgeons discovered that daily dressing of wounds, boiling instruments, and using iodine all contributed to higher survival rates. In this article, we'll look at lessons learned about levels of care for the wounded—today, known as triage. The wounded were most often cared for first in a field dressing station, located close to the fighting; then in a field hospital, usually in a barn or tent to the rear of the fighting; and finally in a general or "fixed-bed" hospital in a nearby town or city.

In the station, medical personnel bandaged wounds and administered whiskey for shock and morphine for pain, according to Ms. Terry Reimer, Director of Research and Public Relations Coordinator for the National Museum of Civil War Medicine in downtown Frederick.

The surgeons' own version of today's Medivac unit usually consisted of a rough wagon to carry the wounded from the field dressing station to a field hospital where they were triaged: mortally wounded, slightly wounded, and surgical cases. Surgeons would operate quickly, often in a tent. In many ways, the instruments of choice for minor surgery have changed little. Visiting a July reenactment in Harper's Ferry, West Virginia, Drs. François and Catherine Trunet of Bayonne, France,

noted that a number of the Civil War surgeon's instruments they were examining were very much like those many doctors use today.

Duane Stone, a DMS employee and Civil War surgeon's assistant reenactor with the 1st Corps Medical Living History, commented that several years ago, after a battlefield "surgical" demonstration on the Fort Detrick Blue & Gray Field, USAMRIID surgeons told him even today, if no hospitals or MASH units were available, they would follow basically the same procedures for triage and care of the wounded on the battlefield. Of course, one major difference now is our heightened awareness of the need for sterile conditions and instruments and how to "make do" under less than sanitary conditions.

From the field hospital, the wounded were taken to a place of safety. Frederick maintained a general hospital throughout the war; in addition, numerous churches, schools, and private homes were commandeered for makeshift hospitals after the Battle of Antietam in September 1862.

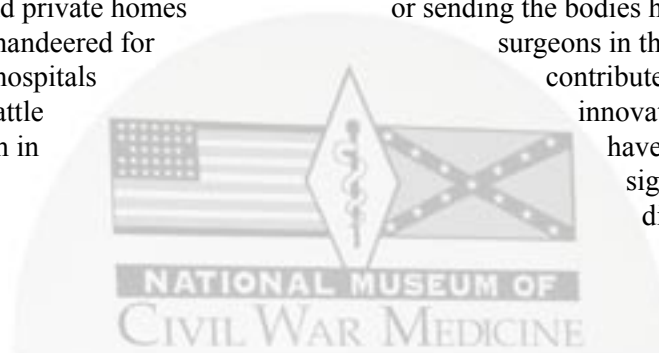
For those who didn't survive, another

innovation of the Civil War was the portable coffin—ice or holding coffins used as an alternative to embalming as a temporary way to preserve the body for viewing. Ice was placed in compartments in the lid, and a glass window above the face allowed viewing. After viewing, the body would be transferred to a regular coffin for burial. A body could thus be preserved for several days, usually long enough to ship it home. You can view medical and surgical tools, equipment, and other materials from the Civil War at the National Museum of Civil War Medicine in downtown Frederick.

The camera was just coming into its own, then, too; doctors used photographs to track patients' progress. Cameras helped in the doctors' use of scientific methods, especially after the war, when they evaluated the procedures put in place earlier.

Thus, in every area, from triage to control of infection to amputation to tracking the progress of healing or sending the bodies home,

surgeons in the Civil War contributed to medical innovations that have made a significant difference in medical practices today. ✦



Interested in learning more about American medical practices during the Civil War? Try the following Web sites or visit in person:

Library of Congress: <http://www.loc.gov>

National Archives and Records Administration: <http://www.archives.gov>

National Library of Medicine: <http://www.nlm.nih.gov>

National Museum of Civil War Medicine (Frederick, MD):
<http://www.civilwarmed.org/>

National Museum of Health and Medicine: <http://nmhm.washingtondc.museum/>

US Army Military History Institute: <http://carlisle-www.army.mil/usamhi>

Gettysburg Battlefield, Gettysburg, PA: <http://www.nps.gov/gett/home.htm>

Antietam Battlefield, Sharpsburg, MD: <http://www.nps.gov/anti/clara.htm>. ✦

Off-Site Programs

Vaccine Pilot Plant Opens Its Doors



The **Vaccine Pilot Plant** (VPP) held an Open House on August 31, 2005, to mark its official opening. Dr. Criss Tarr, Director of the Vaccine Clinical

Materials Program and manager of the construction project, was on hand to welcome visitors into the plant, located on Geoffrey Way in Frederick. "This has been four-and-a-half years in the making," he said, beaming.

Visitors were led through the major areas of the facility, from the inoculum area through the buffer preparation room to the heart of the operation: the manufacturing suites. Four such suites, or production trains, are capable of running simultaneously at scales from 100 to 2,000 liters. There is also a filling suite that will be capable of producing up to 30,000 vials of vaccine per lot at maximum capacity. Visitors also toured the warehouse, as well as the water and waste treatment areas. Last stop was the Quality Control area, where testing takes place on the purity of the raw materials coming into the plant, as well as the efficacy and stability of the final product before it goes out.

According to Dr. Tarr, "The VPP is constructed to comply with all current regulatory guidelines governing the manufacture of clinical trial materials. While the equipment and technologies are common to many large biopharmaceutical manufacturing plants, the design, layout, and scale as a multiproduct operation are unique in government-owned, contractor-operated facilities."

A Team Effort

The renovation of the facility was a team effort involving personnel from the Vaccine Research Center, Vaccine Clinical Materials Program, Facilities, Maintenance, and Engineering (FME), and many contractors skilled in the design and construction of pharmaceutical manufacturing plants. The success of the project was in large measure due to the management and oversight of the FME team assigned to the task.

The FME team was led by Bob Fitzsimmons, on loan from Bechtel, who has many years' experience in managing large-scale construction projects. He was assisted by Mitzi Guarino. The lead engineer was Rich Tucker, who was assisted by Fred Guarino, Andre Cornelius, and Wayne Appenzellar. Day-to-day work was monitored and approved by the two Contracting Officers' Technical Representatives (COTRs), Mike McMahon and Wade Schirmer. "All



Off-Site Programs



Gearing Up for Production

The 45 staff members are divided into five groups: Administration, headed by Dr. Tarr; Quality Assurance, headed by Pat Marshall; Quality Control, headed by Phillip Ramsey; Manufacturing, headed by Dr. John Madsen; and Facility Management, headed by Michael McMahon. Dr. Tarr said, "We have concentrated on hiring key people with substantial biopharmaceutical experience in order to reduce the time to achieve a functioning facility. In addition, we have endeavored to establish a quality-based infrastructure from the earliest design phases of the project such that compliance would be more efficiently built into the systems at all levels. We have tried to build a culture in which employees have the freedom to be creative and productive, yet have a firm grounding in GMP [Good Manufacturing Practice]-compliant operations."

Testing and certification of all equipment will take place between now and January 2006, when the first cell banks will be started. The first GMP production is expected to begin in April, with the Ebola vaccine, which will be an "improved version" of the vaccine currently in clinical trials through the VRC. Next will be an influenza vaccine, followed by HIV, two adenovector vaccines, and recombinant protein. With 5 to 6 months between starts, Dr. Tarr's group will be very busy well into 2007. Fully staffed, the VPP will employ approximately 110 people.

For more information, contact Dr. Criss Tarr at 301-228-4017, or tarrc@ncifcrf.gov. ♦



these personnel did an outstanding job in ensuring that the project came in on budget and on time," said Dr. Tarr.

VPP's Mission

The VPP supports the National Institute of Allergy and Infectious Diseases (NIAID) Vaccine Research Center (VRC), which is dedicated to vaccine research and production. Dr. Tarr said, "Our goal is to support the mission of the VRC to conduct research that facilitates the development of effective vaccines against human disease." As such, the VPP will manufacture the vaccines that will ultimately be used in clinical trials conducted by the VRC.

While the primary focus is on developing a vaccine for AIDS, the VPP will also be developing vaccines for other agents, including Ebola, influenza, West Nile, SARS, and Marburg.



Technology Transfer Branch (TTB)

To Patent or Not To Patent.... That Is the Question!

Editor's Note: This is the first of two articles on filing for patents.

A patent provides the patent owner the right to exclude all others from making, selling, using, or importing the invention. In order to be patentable, an invention must be new, useful, and not obvious to scientific peers (source: <http://tto.ninds.nih.gov/Patenting.asp>). This article is designed to help you understand the complex process of patent filing.

Step 1: The "Aha!" Moment

Patent filing begins when an invention is made by you, the inventor, often in the form of an "Aha!" moment. The invention does not necessarily need to be reduced to practice, nor is an actual working model necessary. However, it must be described thoroughly in writing, such that anyone "skilled in the art" can use it. So it's important that all employees in NIH labs keep accurate records of all experiments and conclusions.

Step 2: The Employee Invention Report (EIR)

The Employee Invention Report (EIR) (<http://ttb.nci.nih.gov/forms.html>), used for reporting inventions at NIH, requires a brief description of the invention, names of other contributors

to the inventive idea's conception, and identification of potential commercial partners. Please note that it is an obligation of federal and contract employees to report their inventions. The completed, signed, and witnessed EIR is submitted directly to the NCI-Technology Transfer Branch (TTB) (<http://ttb.nci.nih.gov/>) by NCI employees, and indirectly through SAIC-Frederick, Inc., management by all SAIC-Frederick, Inc., employees (<http://web.ncifcrf.gov/campus/saic/ip.asp>). Submitting the EIR at least 3 months prior to any public disclosure is strongly recommended. If a disclosure occurs prior to filing, rights in some foreign countries may be lost.

Step 3: Review by the TRG

The NCI-Technology Review Group (TRG) meets monthly to review new EIRs for patentability and commercial potential. The TRG includes scientists with experience in various fields of scientific and clinical research and members of the TTB staff. Per NIH policy, not all inventions require patent protection. For some technologies, such as research tools (e.g., cell lines, knockout mice), distribution throughout the research community is encouraged. Such wide distribution is accomplished either through Material Transfer Agreements to nonprofit entities or through nonexclusive Biological Materials Licenses to for-profits. The latter generates royalties for NCI, which are distributed to

all NCI and SAIC-Frederick, Inc., inventors according to NIH policy. Note that the licensing of such research tools requires an EIR filing, even if patenting is not anticipated.

The TRG's recommendation to file a patent application or not is forwarded to the NCI Division Director. Because filing an application can cost upwards of \$250,000 over the life of the patent, the Division Director's authorization is required to release the funds needed.

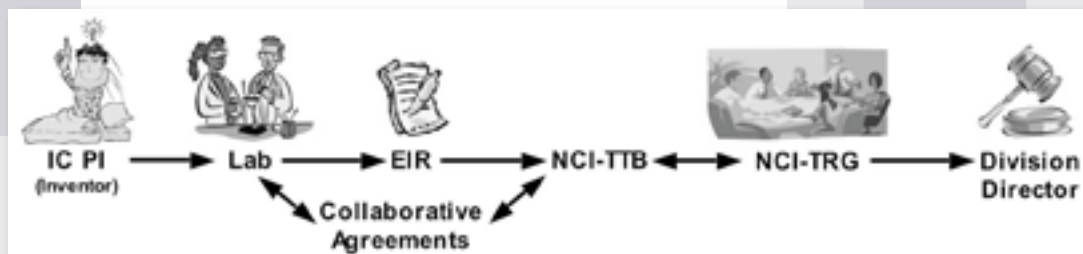
Step 4: NIH Office of Technology Transfer

The Division Director's authorization is then sent to the NIH-Office of Technology Transfer (NIH-OTT) (<http://ott.od.nih.gov/>). NIH-OTT serves as a liaison between the inventors and the NIH's 14 contract law firms. Patent agents and lawyers in these law firms work with the inventors to write the broadest possible patent. By law, all employees using government resources have assigned their ownership rights to the U.S. government. The inventor, however, gets recognition for the invention and receives a share of any royalties from licensing the patent.

Next issue: Types of patents, licenses, and royalty issues.

Our thanks to Dr. Steven Fausch, Technology Transfer Specialist, NCI-TTB, and other members of the NCI-TTB, for this article. ✦

Steps Leading to Patent Filing



Frederick Employee Diversity Team

Celebrating Hispanic Month

To help celebrate September as the Hispanic American month, the EDT invited a mariachi band to serenade the 549 cafeteria crowd September 20. The NCI-Frederick cafeteria also featured a menu that highlighted various Hispanic cuisines.

The first Frederick County Latino Festival was held Sunday, October 2, at nearby Frederick Community College (FCC) and hosted by FCC's Office of Diversity. The program included music, a dance floor, cultural exhibits, and of course, food. ✦



Communicating Across the Cultures

How well do you communicate with people of other cultures? If you attended the **Employee Diversity Team's** (EDT's) first "Lunch and Learn" session in August, you may have learned a great deal about how our own cultural conditioning and past cross-cultural experiences influence our ways of communicating.

Sukanya Bora, Manager of Training and Development for SAIC-Frederick, Inc., Human Resources, led the session on "Cross-Cultural Communication—How to Communicate Effectively with People from Other Cultures."

Ms. Bora discussed topics such as the intercultural communication model, building cultural awareness by examining cultural conditioning, reviewing past cross-cultural experiences, and modifying one's communication approach. She also highlighted the importance of non-verbal communication, particularly in a cross-cultural setting, and shared examples of specific body language from different cultures.

The audience participated by sharing their own stories, anecdotes, and experiences of cultural interactions.

The next Lunch and Learn session will be held Thursday, October 20th. Watch for more information coming your way! ✦

continued from page 4

Animal Resources Program. He said that he really enjoys the milder climate here in Maryland and views the required programmatic effort at NCI-Frederick as being very similar to his past work.

Having lost both parents to cancer within a 17-month period, Dr. Curry noted, "Advances in cancer detection

and treatment can positively impact many families. For me personally, it's more than employment. It's being part of a national effort to fight cancer. It's a mission that I take very seriously."

Dr. Curry is located on the NCI-Frederick campus in Building 244, Room 203. He can be contacted at 301-846-1542 or by e-mail at

bcurry@ncifcrf.gov. For information about the Laboratory Animal Sciences Program, go to <http://web.ncifcrf.gov/rtp/lasp/intra/lasp.asp>. ✦

Data Management Services (DMS)

Data Management Services Breaks for Its 2005 Summer Meeting

In early August, **Data Management Services (DMS)** gathered at the Nallin Pond for the annual summer meeting. The event included good food and fun, as well as the presentation of longevity awards by DMS President Larry Callahan. Ten employees were recognized at this year's meeting (see box).



Recipients of DMS Longevity Awards

Karen McNitt	30 years
Donna McDonald	25 years
Gregory Alvord	20 years
Stephanie Sheppard	10 years
Daniel Grab	10 years
David Cumblidge	5 years
Brian Hanshew	5 years
Mark Spielman	5 years
Merrell Wilson	5 years
James Wolfe	5 years

Computers and Statistical Support Services Available

Computer Software Training

The next training session will begin in October; watch for postings and e-mail notifications announcing the schedule. Due to increased interest and registration, we will increase the number of Excel classes, as well as add Outlook to the regular fall schedule. 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, 7 days a week. ♦

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
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
govwebmaster@css.ncifcrf.gov

Other Inquiries
Phone: 301-846-1060 ♦

McKesson Announces Sale to Fisher Scientific International, Inc.

We have a new name, but all the rest remains the same. On June 9, 2005, McKesson Corporation announced a definitive agreement to sell McKesson BioServices to Fisher Scientific, Inc. The employees of McKesson BioServices look forward to the continued opportunity to do business with NCI-Frederick and continuing our relationship under the Fisher name. We'll update you with more details in the December issue of *The Poster*.

Installation and Use of Ultra-low Freezers (-80°C)

Editor's note: Ultra-low freezers are crucial to the long-term preservation of biological specimens. Factors to be considered in freezer selection were addressed in the June 2005 Poster. This issue addresses installation and use of ultra-low freezers (-80°C).

Once your new freezer is uncrated and set in place, you may choose to perform a formal installation qualification (IQ) and operational qualification (OQ) of the unit, both of which are required for freezer units that will house cGMP materials. The IQ involves documenting step-by-step installation procedures according to the manufacturer's guidelines, such as using the proper voltage, installing the unit properly, and confirming that sufficient space exists around the unit. Similarly, the OQ ensures that the unit is operating according to specification and typically includes mapping internal temperatures throughout the unit to determine how quickly the temperature within the unit recovers after opening the door. When sufficient time, equipment, and expertise are not available to perform IQ and OQ, you must monitor the freezer for one to two weeks after it is installed and turned on to ensure that it functions properly.

To provide for the safety and security of specimens stored within a freezer, you must monitor the temperature

of that unit 24 hours a day, 7 days per week. You can use an external monitoring system that typically has an independent temperature monitoring probe strategically placed inside the unit. The most sophisticated systems can collect and store temperature data indefinitely, program a number of high and low alarm set points and delays, and provide more than one method of contacting emergency response personnel. A variety of systems on the market provide a wide range of capabilities and remote access. It is important to select a system that best fits your lab workflow and facility operation.

Routine Care of Your Ultra-low Freezer

Routine care of your ultra-low freezer is crucial to the freezer's longevity and worry-free function. Daily, you or your staff should check the temperature of the unit and review the temperature trace on the chart recorder or freezer monitoring system. Familiarity with the unit and its temperature "fingerprint" will help you spot trends and prevent unexpected outages. You can perform daily temperature checks with the unit's cabinet gauge, or by installing an independent thermocouple and using a hand-held fluke device. Whichever monitoring method you choose, it is important that you have

the gauges calibrated at least annually and certainly whenever a problem is suspected.

Recent studies have shown that hot spots of up to 20–30 degrees above the set point can develop within the freezer if sufficient "headspace" is not kept around specimen containers. Sufficient headspace can be maintained by using a racking system designed specifically for the freezer and by making sure that you regularly remove any ice buildup. Frequent opening, high humidity, and faulty gaskets cause ice buildup.

Finally, routine preventive maintenance, conducted once or twice annually, will keep your freezer in good working order. The technician will check the condition of the condenser and compressors, lubricate the evaporator fans, look for signs of refrigerant or oil leaks, and check electrical connections for tightness and signs of wear. A well-maintained unit will last 10 to 15 years. ♦



ABCC and IAL Work Wins Best Practices Award

The **Advanced Biomedical Computing Center (ABCC)** and the **Image Analysis Laboratory (IAL)**, both part of the Research Technology Program, were recognized in July for unique research when *Bio-IT World* magazine named the National Cancer Institute among six grand prize winners in its third annual Best Practices Awards.

The grand prize award was given in the category of “Knowledge Management” and based on an accounting of the project. Dr. Jack Collins, ABCC, accepted the award at a ceremony at the National Press Club, Washington, D.C.

The results of ABCC and IAL’s research and Silicon Graphics, Inc.’s presentation, was entitled “Confocal Microscopy Data Analysis: A Real-



Time Image Analysis and Visualization Solution.” Authors included Dr. Stephen Lockett, IAL; Dr. Dean McCullough, High Performance Technologies, Inc.; and Curtis Lisle, SGI. The authors presented

a Silicon Graphics Prism visualization system solution architecture, demonstrated how it facilitates efficient analysis of large data sets, and included results of several test cases on microscopy samples that NCI had provided for evaluation.

Kevin Davies noted in a *Bio-IT World* Web article that NCI’s work represented “an exciting example of data analysis in the field of confocal microscopy, produced with the help of Silicon Graphics, resulting in novel visualization, analysis and collaboration capabilities for researchers studying the biological origins of cancer.”

For more information, go to <http://www.bio-itworld.com/newsitems/2005/06-05/06-29-05-news-bp-winners>. ♦

SPGM Garners More Awards

Scientific Publications, Graphics & Media, a part of the Research Technology Program, received notification in July that three of its entries in the 2005 Magnum Opus Awards earned recognition. The panel of judges included representatives from the Missouri School of Journalism and leading custom publishers. The awards are sponsored by Publications Management, which received 568 entries for the 49 categories, each honoring excellence in editorial, design, and strategy of custom publications.

- “From the Asia-Pacific Region: Plants Used in Medicinal Research,” an April 2004 SAIC-Frederick, Inc., *News & Views* article, won a Bronze award in the “Best Feature Article” editorial category.
- “The Poster Puzzler,” a regular column in the *NCI-Frederick Poster*, won an honorable mention in the “Best Regularly Featured Department, Section or Column” editorial category. Four consecutive columns from the 2004 *Poster* were submitted.
- “Lee Jenkins, OHS Associate,” published in the June 2004 *Poster*, won an honorable mention in the “Best Interview/Profile” editorial category.

This is the second year for SPGM to earn Magnum Opus Awards. ♦





Protective Services Holds Open House

Protective Services opened its doors on June 23, 2005, to showcase its staff and services. Tri-fold photo displays of staff members were prominent in the lobby, to introduce the community to the people serving us 24/7.

Protective Services officers were on hand to discuss any security questions or concerns, and the NIH Emergency Command Vehicle was available for inspection. The Open House “is the culmination of a week-long event in which Protective Services–related flyers are distributed throughout the NCI-Frederick campus,” according to Tom Gannon-Miller, Manager of Protective Services. “This year’s flyers included information on the daily shuttle runs to NIH, the new facility-wide paging system, and the 3N Emergency Notification System,” he added.

A popular feature of the Open House was the demonstration given by Sgt. Rick Boyle and Rusty, the “Bomb Dog.” Sgt. Boyle explained that Rusty is part of the 10-dog canine patrol assigned to the Bethesda campus, where they inspect an average of 1,000 vehicles per day.

Visitors were treated to a delicious lunch, and they registered to win a free, 30-day reserved parking space. Robin Pickens, Industrial Hygiene Safety Officer, EHS, was the lucky winner. ♦



The March Poster Puzzler winner:
Eileen Downey, Senior Financial Analyst, Applied Developmental Directorate, pictured here with Paul Miller, Executive Editor of *The Poster*, in front of Building 469.

See page 11 for the picture of this quarter’s *Poster* challenge. ♦

Sixth Annual Book & Media Swap October 20th—

Just in time for National Medical Librarians Month!

Last year, you contributed over 1,000 items! Let's beat that record!

How:

- **Donate books, videotapes, DVDs, vinyl 45 and LP records, audiocassettes, CDs, and other media items.**
 - **Swap donated items for another item of any kind.**

Note: Please donate only items in good condition, that have been commercially produced, and that are not government property.

Donations will be accepted until 5:00 P.M., Wednesday, October 19.

Think of the Scientific Library when you do your fall housecleaning.

Who knows? You, too, may find something of interest at the Book & Media Swap. ♦

Did You Jump at the Answer?

Did you enter the Frog Trivia contest at the Scientific Library's Spring Research Festival booth? Still wondering what the answers were?

Question: The skin of the African clawed frog contains magainin, a very valuable tool in the fight against what disease?

Answer: Cancer

Q: Who wrote "The Celebrated Jumping Frog of Calaveras County"?

A: Mark Twain (aka Samuel Clemens)

Q: In Arnold Lobel's popular children's books, who is Frog's best friend?

A: Toad

Q: What famous frog loves to sing "It's Not Easy Being Green"?

A: Kermit the Frog



Q: What popular children's books feature chocolate frogs that sometimes hop away before they are eaten?

A: Harry Potter

Q: Name the famous German brothers who wrote the fable "The Frog Prince."

A: Brothers Grimm

Q: The common wood frog is studied for its "freeze tolerance," which allows the frog to turn into a kind of ice cube, if necessary, to stay alive

in cold temperatures. In what area of medicine in which time and distance are factors do scientists think "freeze tolerance" could be useful?

A: Organ transplantation

Q: Name the classic 1980s arcade game, now available online, that stars a certain amphibian.

A: Frogger

Q: What is the name of the frog featured in Beatrix Potter's popular children's books?

A: Jeremy Fisher ♦

CHI Expands



With the completion of the Scientific Library's renovation, begun in June, the CHI (Center for Health Information) collection can expand.

We now have doubled the shelving for the many books and videos on topics such as exercise, diet, heart health, depression, and consequences of aging; more, in fact, than we can list here! Many thanks to the staff of Facilities Maintenance and Engineering for seeing us through this project!

So visit the Library to see all that CHI offers. Watch for events planned this fall to increase awareness about health and wellness. ♦

Scientists of Tomorrow Surveyed

The Scientific Library frequently uses diverse resources in planning its future. Realizing that the students of today will be the scientists of tomorrow, library staff recently surveyed summer interns about their library usage.

At several Summer Student Speaker series events, the students were asked how they use libraries and librarians' services when searching for information, as well as which formats they were most comfortable using. The students who completed the survey were entered into a drawing to win one of 10 insulated lunch boxes commemorating the Spring Research Festival. Analysis of the survey results will help the library better serve scientists.



Winners included: Nell Keith, Zack Fitch, Meg Luteran, Catharine Packes, Brett Marion, George Cutsail, Puja Sood, Michelle Jose-Kampfner, Livia Ehardt, and Nick Pinkin. The Scientific Library would like to thank Dr. Howard Young, as well as all the students who participated. ♦

Outreach Events for Interns and Others

While the Scientific Library has educational programs for everyone, in the summer we focus on career development—hosting, supporting, and participating in scientific outreach events for our interns and other students.

- **Summer Student Orientations**—Designed especially for students, these orientations introduce them to the basics of research and library services. The program helps them know what support services and resources to expect when they interview for jobs after graduation.
- **Career Camp**—Held at Frederick Community College, this program allows middle school students to explore future careers. This year, at Career Camp's "Health Careers" session, two of Sci Lib's librarians treated the participants to movie clips and then explained the education, experience, and skills that a medical librarian needs.
- **National Youth Leadership Forum**—High school students from around the country visited NCI-Frederick this summer to learn about careers in medicine. The Scientific Library described the research process and the resources available on campus in medical research.
- **Summer Student Seminar Series**—To enrich the student interns' experience, speakers from all over NCI-Frederick hold weekly seminars on their specialties. Each week, the Scientific Library staff prepares a list of the current speaker's publications and a list of our materials relevant to the current topic. Since many of these students plan scientific careers, the Scientific Library also uses this forum to learn about the students' use of libraries and attendant information, thus helping us plan services for people who have been exposed to technology, often since birth. ♦

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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

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

Sixth Annual Book & Media Swap — October 20

Campus Improvement Committee projects

Reminder: When you have a change in staff, such as new staff, a promotion, retirement, loss of staff, be sure to change the information on the NCI-Frederick database. You can do this online by logging on to <http://web.ncifcrf.gov/campus/phonebook/>, or by contacting your human resources representative. For more information, you may refer to the inside front cover of the *NCI-Frederick Telephone & Services Directory*.

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

The National Cancer Institute at Frederick

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