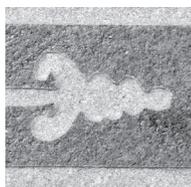


Poster

What is it?
Where is it?

Story on page 15.



NCI Director Challenges Us to Be Leaders

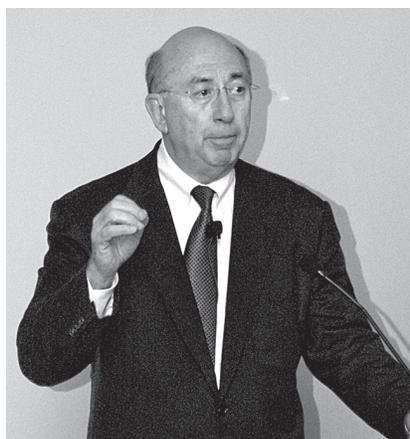
“Cancer Is a Problem of Communication and a Problem of Evolution”

By Nancy Parrish

In his keynote address at the Spring Research Festival on May 15, John Niederhuber, M.D., Director of the National Cancer Institute, described the rich dialog he had at a recent meeting with theoretical physicists, who knew nothing about cancer, but were eager to model it in mathematical terms. He was impressed with these physicists’ ability to look at the disease “with a whole different set of eyes,” and he came away thinking that “we clearly lack a field of theoretical cancer biology.” He hopes to form associations with colleagues who bring “different ways of looking at the...challenges we face, to work side by side” to understand the complexities of cancer. Over and over, he heard the comment, “Cancer is a problem of communication.” Dr. Niederhuber also believes that cancer is “a problem of evolution,” and he urged the audience to take these two thoughts away with them.

NCI represents the “connecting platform” that facilitates the communication between academia, citizens, private industry, and regulatory agencies. “We’ve got to be the drivers,” he said, because no one else can assume that responsibility. “I don’t see anyone else in government or outside of government. I only see all of you as the people who have got, in this organization, to provide the connectivity and the leadership” for these major segments.

Dr. Niederhuber also reminded the audience to consider the global impact of cancer as we work to reduce its physical and economic burden. If we don’t provide leadership, he said, “the economic burden to the rest of



At the Spring Research Festival, NCI Director John Niederhuber, M.D., urged us to look at cancer in a different way.

the world, especially the developing world, will probably come back to impact us in a variety of ways.”

Although death rates from cancer have steadily declined since 1990, we are also confronted with a “steady increase in the number of survivors living with a history of cancer...and a history of some very aggressive treatments,” he said. How these treatments affect major organ systems over time and how to manage survivors who are at risk for subsequent cancers are challenges that need to be addressed going forward.

Dr. Niederhuber stated that budget appropriations continue to be flat, and he believes that the budget will not change significantly until at least 2011.

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NCI Director Challenges Us to Be Leaders

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However, he emphasized that “it isn’t time to hunker down.” As an institute, we have to be creative in how we use our resources. “We just simply have to maintain momentum. We don’t have a choice.”

Highlighting recent research efforts at NCI, Dr. Niederhuber noted that significant progress has been made in our understanding of the cell nucleus, cell division, and subcellular interactions; whole genome scanning has led to findings related to region 8q24, which may be significant in predicting risk and prognosis of certain cancers; a pilot study with the National Human Genome Research Institute has identified two genes highly associated with glioblastoma; and significant findings have been achieved related to stem and tissue cells.

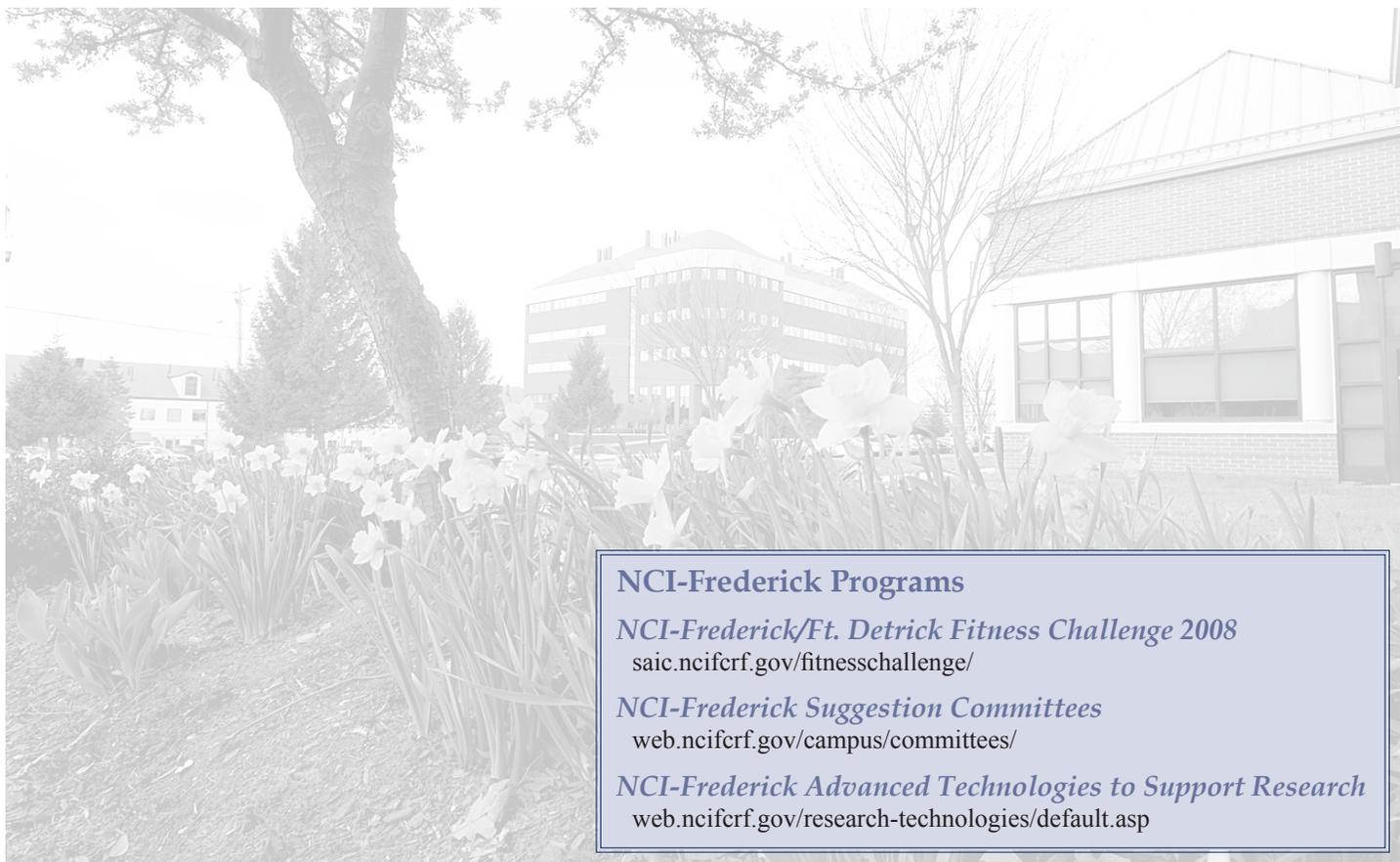
Subcellular imaging is the wave of the future, Dr. Niederhuber said, because research at this level will

lead to a “much more personalized approach to diagnosis and treatment” of cancer. Reminding the audience that, while many challenges lie ahead,

“there has never been any time... where there’s been more opportunity, more excitement, or more potential in terms of scientific discovery.” ♦



The audience listened intently during Dr. Niederhuber’s keynote address at the Spring Research Festival.



NCI-Frederick Programs
NCI-Frederick/Ft. Detrick Fitness Challenge 2008
saic.ncifcrf.gov/fitnesschallenge/
NCI-Frederick Suggestion Committees
web.ncifcrf.gov/campus/committees/
NCI-Frederick Advanced Technologies to Support Research
web.ncifcrf.gov/research-technologies/default.asp

Age-related Macular Degeneration

Stargardt Study Leads to Genetic Link with AMD

By Maritta Perry Grau

We often hear about the risk of age-related macular degeneration (AMD), but thanks to research done at the Laboratory of Genomic Diversity by the team of Mike Dean, Ph.D., Bert Gold, Ph.D., Julie Sawitzke, and college intern Sarah Schlotterbeck, these risks are better defined than in the past.

Part of defining these risks has been the group's study of variation in "complement" genes: genes that are different between certain individuals but are able to function normally in a cell. Such complement genes are an important part of what causes an innate immune response, essentially your body's first defense against pathogens.

Speaking of the group's findings, Dr. Dean said, "We've clearly shown that there's variation in those genes so that not everybody has the same set of complement genes or will respond in the same way. And because the innate immune response is thought to play an important role in inflammation and cancer, we're interested in whether these same variants, which affect your risk of AMD, also affect your risk of cancer, or other inflammatory autoimmune diseases like asthma or lupus, chronic bowel disease, and arthritis."

In a 2006 paper published in the *Annals of Medicine*, Dr. Dean and his group demonstrated that people who don't have the genes Complement Factor H-related (CFHR) *CFHR1* and *CFHR3* rarely get AMD. In more recent research, the team has not only confirmed their earlier findings



From left: Julie Sawitzke, Sarah Schlotterbeck, Bert Gold, Ph.D., and Mike Dean, Ph.D. of the Laboratory of Genomic Diversity.

but also confirmed other studies on the chromosome 10 genes, *HTRA1*, and *ARMS2*.

As so often happens in research, the group was researching something else—Stargardt disease, the most common genetic cause of blindness in children—when they saw the connection with AMD.

"We noticed in some of those families, the parents or another relative



Left: Normal vision. Right: Same view, as seen by someone with age-related macular degeneration. (<http://www.nei.nih.gov/health/examples>)

had AMD. Because Stargardt disease is recessive, meaning that both parents are carriers for a defect in *ABCA-4*, we thought that if you have one copy of a defective *ABCA-4* gene, you might be more likely to get AMD. And that turned out to be the case," Dr. Dean said.

Although AMD is the most common cause of vision loss, it rarely shows up before people are in their sixties.

Dr. Dean and his colleagues used DNA from the Age-related Eye Disease Study (AREDS), a large, ongoing study of 5,000 patients by the National Eye Institute from nine centers in the U.S.

For the earlier *PNAS* paper, they received 2,000 of the most informative subsets and managed in just one week to type and analyze all the samples.

The subsets of DNA they tested validated and confirmed a lot of their previous findings, said Ms. Sawitzke. "I think what's different about this study, too, is that we have a very well-matched case-control study," she explained.

Interestingly, the 5,000 AREDS patients continue to be followed. Dr. Dean noted that the data his group found might be useful in ways yet to be determined, particularly if some of the patients go on different therapies.

Speaking of his group's segue from Stargardt disease to AMD, Dr. Dean said, "One of the advantages of the NCI is that we have the freedom to work on what we want. So if something exciting like this comes up today, [at least a] part of the lab can work on it for a while. At universities,

you can't necessarily do that; you need to get data to get your grants to keep your funding. We're reviewed by site visits every four years, where they say 'Well, did you do something worthwhile in the last four years?' So we have to prove that the research was worthwhile, but we do have freedom in those four years to work on something different if an exciting opportunity comes up." ♦

Spring Research Festival

UMUC and Dr. Niederhuber Highlight Spring Research Festival 2008

By Ashley Hartman

Two highlights of the 2008 Spring Research Festival (SRF) were the Program Arrival Ceremony on May 14 for the University of Maryland University College (UMUC), and the keynote address by John Niederhuber, M.D., Director of the National Cancer Institute (NCI), on May 15 (see story on page 1).

The UMUC ceremony, which took place on the Blue and Gray Field, celebrated the new partnership between UMUC, NCI-Frederick, and Fort Detrick. UMUC will offer 10 evening classes at NCI-Frederick and Fort Detrick in fall 2008, including Introduction to Criminalistics, Organizational Communication, Business Ethics, and Intermediate Accounting, according to a press release from the UMUC web site.

“This really is a great day, not only for Fort Detrick and NCI-Frederick, but for Frederick County and the Frederick community,” said Craig Reynolds, Ph.D., Associate Director of NCI.

UMUC is one of 11 degree-granting campuses in Maryland with a strong commitment to the state and the military. “It’s a labor of love for us to serve our military personnel,” said Susan C. Aldridge, Ph.D., President of UMUC. Other speakers at the ceremony included Colonel Jonathan Jaffin, Deputy Commander, U.S. Army Medical Research and Materiel Command; Colonel Mary R. Deutsch, Commander, U.S. Army Garrison, Fort Detrick; and Mr. M. Richard “Ric” Adams, President and CEO, Frederick County Chamber of Commerce.

According to the SRF web site, 191 scientific posters were presented and there were 32 Health Education

and Community Services exhibitors. The Biomedical Research Equipment and Supplies Exhibit, sponsored by the Technical Sales Association, featured 169 exhibits (<http://www.gtpmgt.com/>) of state-of-the-art equipment designed to facilitate

biomedical research. These numbers are about the same as last year, said Julie Hartman, chair of the SRF.

Ms. Hartman said everything went “very smoothly, even with the messy ground we’ve had to deal with.” She also commented that there was a good variety of health and educational exhibits, and there was “a lot of good collaborating going on” among the scientists. ♦



Speakers at the UMUC Program Arrival Ceremony included, from left: Colonel Jonathan Jaffin, Colonel Mary R. Deutsch, Susan C. Aldridge, Ph.D., Mr. M. Richard “Ric” Adams, and Craig Reynolds, Ph.D.



Why We Do What We Do

“Research Made the Difference for My Kid”

By Nancy Parrish

If you went to the Spring Research Festival in May, you probably saw Rita’s Italian Ice outside the Health Education and Community Services tent. Owner Lori Rovito donated 100% of her proceeds from the event to Alex’s Lemonade Stand Foundation for Childhood Cancer. Her motivation for raising the money for this organization springs from personal experience.

Ms. Rovito’s 4-year-old daughter Dena was born with one pupil dilated and one eyelid lower than the other. When her own pediatrician and pediatric ophthalmologists could find nothing significant, Ms. Rovito sought help at Children’s Hospital of Philadelphia (CHOP).

As soon as the doctors there saw Dena, they knew what was wrong, and their tests confirmed that she had Horner’s syndrome. Dena was 5 months old. Ms. Rovito explains Horner’s syndrome as a condition of the sympathetic nerve, caused by a number of conditions, one of which is neuroblastoma.

After a series of tests, the news came that it was, in fact, neuroblastoma, and the doctors at CHOP recommended immediate surgery because of the potential lethality of this type of cancer. Surgery is one of the primary initial treatments for neuroblastoma. After surgery, the resected tumor can be analyzed so proper treatment can be started right away. Two weeks after the diagnosis, the doctors removed 66% of Dena’s tumor. Ms. Rovito was prepared to take her daughter directly

into radiation/chemotherapy, but because the histology was favorable in all markers examined, the doctors recommended CAT scans every three months to monitor the tumor. Although Ms. Rovito had her doubts about this course of action, the doctors assured her that the protocol is appropriate



Rita’s Italian Ice owner Lori Rovito’s daughter was diagnosed with neuroblastoma at 5 months of age. Inset: Today, Dena Rovito is a happy, healthy 4-year-old, thanks to advances in cancer research.

for patients under 1 year of age. “The theory is,” Ms. Rovito explained, “if you remove at least 50% of the tumor, the body will begin to convert it into benign tissue.”

The CAT scans were an ordeal: because of her age, Dena had to be sedated for the half-hour procedure, and “it took 3 or 4 nurses to hold her down so they could administer the anesthesia,” Ms. Rovito said. CAT scans continued regularly for three years and revealed that, miraculously, the remaining tumor began to shrink on its own. Today the tumor has shrunk by 20%, with no further growth. The CAT scans were discontinued last December because the doctors feel Dena is so far past her surgery and doing so well, that the radiation from the CAT scans now could do more harm than good. She’ll always have the

tumor, but the likelihood of it causing problems later is low.

Thanks to Ms. Rovito’s efforts, Rita’s became a corporate sponsor of Alex’s Lemonade Stand Foundation for Childhood Cancer in 2006. She says, “I do what I do for moms and dads, like me, whose kids may not have the positive outcome that I did, or whose kids don’t make it.” She believes that advances made in cancer research are responsible for keeping her daughter from having to endure radiation and chemotherapy. “I’m convinced that if this had happened 10 years ago, she would have had to have chemo because there was so much we didn’t know then. I know that research made the difference for my kid.”

For information about Alex’s Lemonade Stand Foundation for Childhood Cancer, go to <http://www.alexslimonade.org/>. ♦

Editor’s note: At NCI-Frederick, we focus on the research that will turn discoveries in the laboratory into new treatments for cancer and AIDS. Sometimes, however, we need to step back to remember why we are doing what we do. This new feature will help put a face on the reason we come to work every day. If you or anyone in your family has survived a life-threatening illness and you would like to share your story with the NCI-Frederick community, please contact the Poster at poster@ncifcrf.gov.

Make a Cool Donation

Rita’s will be collecting money for Alex’s Lemonade Stand Foundation for Childhood Cancer throughout June. Ms. Rovito’s goal is \$40,000. Stop by before June 30 to enjoy a cool refreshment and make a contribution to Alex’s Lemonade Stand.

Rita’s Italian Ice
538 W. South St., Frederick
11:00 a.m. to 10:00 p.m.,
7 days a week

Streamlining Data with LIMS

By Bob Stephens and Dianna Conrad

Scientists are challenged today with archiving overwhelming amounts of data, often from disparate platforms. These data, often produced in core laboratories (laboratories that provide specific services), must be not only archived, but also made accessible to collaborators.

Laboratory Information Management Systems (LIMS) provide mechanisms for data transfer between the core and the customer. LIMS improve the management of intra-laboratory data by integrating the latest in bioinformatics data and analysis tools and disseminating them to external investigators and practitioners through, for example, Cancer Biomedical Informatics Grid™-compliant interfaces (see <http://cabig.cancer.gov>).

Why Are LIMS Important?

Data collected for a given sample, such as a tumor, are now more complex than ever. Produced by various platforms, the data must be integrated into a form through which the investigator can make scientific connections between the differing results. For instance, changes in protein levels measured using mass spectrometry and expression levels derived from an expression array must be connected and correlated. Comparing such data becomes problematic because the identifiers used for each of these different but overlapping tests are different. Much data is also being deposited in public resources, meaning that the information associated with a sample, such as the source, tumor type, and method of collection, must be retrievable for longer periods.

While these considerations stress the importance of data management

from the perspective of the laboratory scientist, equally important is the core laboratory's perspective. The core is expected to operate at peak efficiency and minimize cost, requiring daily reports, generated through software tools, at each stage in a process. Thus, a list of which microarrays are ready to be processed at each stage helps technical personnel keep the robots busy. Such accounting also helps identify bottlenecks in either production or workflow.

LIMS at NCI-Frederick

Across NCI-Frederick, laboratories are implementing LIMS. For example, the Laboratory of Molecular Technology (LMT) worked with the Advanced Biomedical Computing Center (ABCC) to implement a customized LIMS for LMT's DNA sequencing services. Most recently, ABCC staff worked with the Protein Expression Laboratory (PEL) to build a LIMS that provided a mechanism to exchange and track project reports to PEL's customers. On the horizon for ABCC is working with LMT on a LIMS for array data management—this newest application will allow data integration across different laboratory domains.

“ABCC can guide you to the most appropriate LIMS solution for your situation, whether it is a new one or an adaptation of something that exists already,” said Claudia Stewart, who manages LMT's DNA sequencing.

Other laboratory groups on campus, such as the Biopharmaceutical Development Program, are customizing commercial LIMS software to meet their needs. Additionally, the Core Genotyping Facility had much success with its LIMS, which helps to manage its high-throughput genotyping laboratory at the sample, project, protocol, and reagent levels. The use of common

data elements across these systems connects them more easily.

NCI-Frederick has created a LIMS Oversight Committee to provide guidance and recommendations to the NCI-Frederick Project Office and SAIC-Frederick, Inc., management on the direction, priority, and resource allocation for LIMS development at NCI-Frederick. The committee will also act as a governing body to ensure that priorities are maintained, resources are available, and foremost, that communication channels concerning LIMS development are upheld among internal and external programs potentially impacted by LIMS technology and their reporting authorities.

LIMS Streamline Data Management

LIMS mean different things to different people, whether it's a commercial front-end attached to an in-house data warehouse or an internal system that manages the data flow in a laboratory. In either case, systems are needed that track samples, hold data, and provide reports. Most important is that the system works for the laboratory and its customers and is cost effective.

According to Craig Reynolds, Ph.D., Associate Director, NCI, and Director, Office of Scientific Operations, NCI-Frederick, “LIMS are important to streamlining data management in and between our labs. They are also crucial as a customer interface. The NCI-Frederick, particularly the ABCC, is committed to assisting labs by designing home-grown LIMS or helping them choose an appropriate commercial off-the-shelf product. The goal is to have LIMS in place in all labs that want them over the next five years.” ♦

New Assays May Help Identify Persistent Viremia in HIV-infected Persons

By Maritta Perry Grau



Sarah Palmer, Ph.D., Senior Researcher, Virology Department, Swedish Institute for Infectious Disease Control, Karolinska Institute.

Sarah Palmer, Ph.D., and her colleagues in the Virology Core Facility, HIV Drug Resistance Program, have developed several novel and innovative virological assays to further our understanding of

HIV evolution and the development of drug-resistant viral strains.

The single-copy assay (Palmer et al., *J. Clin. Microbiol.* 2003; Maldarelli et al., *PloS Path.* 2007) for HIV-1 RNA, which has a dynamic range of 106 to 1 copy/ml, is being applied to characterize the prevalence, level, and change over time of persistent viremia in patients on suppressive antiretroviral regimens with differing potency.

The second is a single-genome sequencing technique (Palmer et al., *J. Clin. Microbiol.* 2005; Kearney et al., *AIDS* 2008), to analyze HIV-1 diversity by obtaining sequences from multiple independent amplicons derived from different single HIV-1 genomes within the same sample.

The third is the allele-specific PCR assay (Palmer et al., *AIDS* 2006 and Palmer et al., *PNAS* 2006) for quantifying drug-resistant variants at RT codons 65, 103, 181, 184, and 190 at frequencies as low as 0.1%. This assay assesses the frequency of mutant alleles and their relation to virologic

response to antiretroviral treatment.

Dr. Palmer's group's findings suggest there is a constant source of viremia from long-lived HIV-infected cells and/or that low levels of viral replication persist, despite apparently effective therapy. "Assuming this is an infectious virus, it is enough to regenerate infection after interruption of therapy. These findings also reveal that new therapeutic approaches are needed to eliminate this persistent viremia," Dr. Palmer said in an e-mail from her new research station in the Virology Department of the Swedish Institute for Infectious Disease Control, Karolinska Institute, in Sweden.

Dr. Palmer hopes to identify the source of this persistent viremia. "One way to accomplish this objective is to analyze the genetic makeup of HIV in single infected cells from different cells and tissues and then to compare this to the genetic makeup of HIV in plasma. These types of studies will help us identify which cells are producing viremia during therapy," she said. ♦

Sarah Palmer, Frank Maldarelli, Ann Wiegand, Barry Bernstein, George J. Hanna, Scott C. Brun, Dale J. Kempf, John W. Mellors, John M. Coffin, and Martin S. King

Low-level viremia persists for at least 7 years in patients on suppressive antiretroviral therapy

Proceedings of the National Academy of Sciences U S A, 105(10): 3879–3884, 2008

Residual viremia can be detected in most HIV-1-infected patients on antiretroviral therapy despite suppression of plasma RNA to < 50 copies per ml, but the source and duration of this viremia is currently unknown. Therefore, we analyzed longitudinal plasma samples from 40 patients enrolled in the Abbott M97-720 trial at baseline (pretherapy) and weeks 60 to 384 by using an HIV-1 RNA assay with single-copy sensitivity. All patients were on therapy (lopinavir/ritonavir, stavudine, and lamivudine) with plasma HIV RNA < 50 copies per ml by week 96

of the study and thereafter. Single-copy assay results revealed that 77% of the patient samples had detectable low-level viremia (1 copy per ml), and all patients had at least one sample with detectable viremia. A nonlinear mixed effects model revealed a biphasic decline in plasma RNA levels occurring over weeks 60 to 384: an initial phase of decay with a half-life of 39 weeks and a subsequent phase with no perceptible decay. The level of pretherapy viremia extrapolated for each phase of decay was significantly correlated with total baseline viremia for each patient

($R^2 = 0.27$, $P = 0.001$ and $R^2 = 0.19$, $P < 0.005$, respectively), supporting a biological link between the extent of overall baseline viral infection and the infection of long-lived reservoirs. These data suggest that low-level persistent viremia appears to arise from at least two cell compartments, one in which viral production decays over time and a second in which viral production remains stable for at least 7 years.

To access the complete article, please visit <http://www.pnas.org/cgi/content/full/105/10/3879>.

Platinum Publications

The following 22 articles have been selected from 9 of the most prestigious science journals during the past quarter:

Biochemistry

Blakeley MP, Ruiz F, Cachau R, Hazemann I, Meilleur F, Mitschler A, Ginell S, Afonine P, Ventura ON, Cousido-Siah A, Haertlein M, Joachimiak A, Myles D, Podjarny A. Quantum model of catalysis based on a mobile proton revealed by subatomic x-ray and neutron diffraction studies of h-aldose reductase. *Proc Natl Acad Sci USA* 105(6): 1844–1848, 2008.

Das K, Bauman JD, Clark AD, Jr., Frenkel YV, Lewi PJ, Shatkin AJ, Hughes SH, and Arnold E. High-resolution structures of HIV-1 reverse transcriptase/TMC278 complexes: strategic flexibility explains potency against resistance mutations. *Proc Natl Acad Sci USA* 105(5): 1466–1471, 2008.

Biomolecular Networks

Röhrli J, Yang D, Oppenheim JJ, Hehlhans T. Identification and biological characterization of mouse beta-defensin 14, the orthologue of human beta-defensin 3. *J Biol Chem* 283(9): 5414–5419, 2008.

Cellular Immunology and Immune Regulation

Shembade N, Harhaj NS, Parvatiyar K, Copeland NG, Jenkins NA, Matesic LE,

Harhaj, EW. The E3 ligase Itch negatively regulates inflammatory signaling pathways by controlling the function of the ubiquitin-editing enzyme A20. *Nat Immunol* 9(3): 254–262, 2008.

Venteicher AS, Meng Z, Mason PJ, Veenstra TD, Artandi SE. Identification of ATPases pontin and reptin as telomerase components essential for holoenzyme assembly. *Cell* 132(6): 945–957, 2008.

Cell, Tumor, and Stem Cell Biology

Espada J, Varela I, Flores I, Ugalde AP, Cadiñanos J, Pendás AM, Stewart CL, Tryggvason K, Blasco MA, Freije JMP, and López-Otín C. Nuclear envelope defects cause stem cell dysfunction in premature-aging mice. *J Cell Biol* 181(1): 27–35, 2008.

Lee JH, Horak CE, Khanna C, Meng Z, Yu LR, Veenstra TD, Steeg PS. Alterations in Gemin5 expression contribute to alternative mRNA splicing patterns and tumor cell motility. *Cancer Res* 68(3): 639–644, 2008.

Clinical Sciences

Bera TK, Liu X-F, Yamada M, Gavrilova O, Mezey E, Tessarollo L, Anver M, Hahn Y, Lee B, Pastan I. A model for obesity and gigantism due to disruption

of the Ankrd26 gene. *Proc Natl Acad Sci USA* 105(1): 270–275, 2008.

Epidemiology

Wallace TA, Prueitt RL, Yi M, Howe TM, Gillespie JW, Yfantis HG, Stephens RM, Caporaso NE, Loffredo CA, Ambros S. Tumor immunobiological differences in prostate cancer between African-American and European-American men. *Cancer Res* 68(3): 927–936, 2008.

Experimental Therapeutics, Molecular Targets, and Chemical Biology

Dang DT, Chun SY, Burkitt K, Abe M, Chen S, Havre P, Mabjeesh NJ, Heath EI, Vogelzang NJ, Cruz-Correa M, Blayney DW, Ensminger WD, St. Croix B, Dang NH, Dang LH. Hypoxia-inducible factor-1 target genes as indicators of tumor vessel response to vascular endothelial growth factor inhibition. *Cancer Res* 68(6): 1872–1880, 2008.

Schmid T, Jansen AP, Baker AR, Hegamyer G, Hagan JP, Colburn NH. Translation inhibitor Pdcd4 is targeted for degradation during tumor promotion. *Cancer Res* 68(5): 1254–1260, 2008.

HIV

Arthos J, Cicala C, Martinelli E, Macleod K, Van Ryk D, Wei D, Xiao Z, Veenstra TD, Conrad TP, Lempicki RA,

continued on page 9

Web Sites of Note

By Ashley Hartman

Throughout our newsletter, you'll find web sites listed that provide you with more information than we can put in our stories. You're probably aware that there are many days, weeks, and months that are devoted to the recognition of particular health care issues. While we can't list them all, we've selected a few that seem most pertinent to NCI-Frederick. Web sites for these dates are listed below.

June:

Fireworks Safety Month, June 1–July 4: www.preventblindness.org

National Scleroderma Awareness Month: www.scleroderma.org

National HIV Testing Day, June 27: www.napwa.org

July:

UV Safety Month: www.aao.org/aaosite/eyemd/uv.cfm

Hemochromatosis Awareness Month: www.irondisorders.org

August:

Cataract Awareness Month: www.aao.org/aaosite/eyemd/cataract.cfm

Immunization Awareness Month: www.cdc.gov/vaccines/events/niam/default.htm

Platinum Publications

continued from page 8

McLaughlin S, Pascuccio M, Gopaul R, McNally J, Cruz CC, Censoplano N, Chung E, Reitano KN, Kotttilil S, Goode DJ, Fauci AS. HIV-1 envelope protein binds to and signals through integrin alpha(4)beta(7), the gut mucosal homing receptor for peripheral T cells. *Nat Immunol* 9(3): 301–309, 2008.

Host Defense

Bradfute SB, Warfield KL, Bavari S. Functional CD8+ T cell responses in lethal Ebola virus infection. *J Immunol* 180(6): 4058–4066, 2008.

Mechanisms of Signal Transduction

Vaccari T, Lu H, Kanwar R, Fortini ME, Bilder D. Endosomal entry regulates Notch receptor activation in *Drosophila melanogaster*. *J Cell Biol* 180(4): 755–762, 2008.

Medical Science

Gold B, Kirchhoff T, Stefanov S, Lautenberger J, Viale A, Garber J, Friedman E, Narod S, Olshen AB, Gregersen P, Kosarin K, Olsh A, Bergeron J, Ellis NA, Klein RJ, Clark AG, Norton L, Dean M, Boyd J, Offit K. Genome-wide association study provides evidence for a breast cancer risk locus at 6q22.33. *Proc Natl Acad Sci USA* 105(11): 4340–4345, 2008.

Palmer S, Maldarelli F, Wiegand A, Bernstein B, Hanna GJ, Brun SC, Kempf DJ, Mellors JW, Coffin JM, King MS. Low-level viremia persists for at least 7 years in patients on suppressive antiretroviral therapy. *Proc Natl Acad Sci USA* 105(10): 3879–3884, 2008.

Metabolism and Bioenergetics

Cooper SK, Pandhare J, Donald SP, Phang JM. A novel function for hydroxyproline oxidase in apoptosis through generation of reactive oxygen species. *J Biol Chem* 2008.

Microbiology, Biology, Pathology, and Genetics

Amundson SA, Do KT, Vinikoor LC, Lee RA, Koch-Paiz CA, Ahn J, Reimers M, Chen Y, Scudiero DA, Weinstein JN, Trent JM, Bittner ML, Meltzer PS, Fornace AJ, Jr. Integrating global gene expression and radiation survival parameters across the 60 cell lines of the National Cancer Institute Anticancer Drug Screen. *Cancer Res* 68(2): 415–424, 2008.

Bacolod MD, Schemmann GS, Wang S, Shattock R, Giardina SF, Zeng Z, Shia J, Stengel RF, Gerry N, Hoh J, Kirchhoff T, Gold B, Christman MF, Offit K, Gerald WL, Notterman DA, Ott J, Paty PB, Barany F. The signatures of autozygosity among patients with colorectal cancer. *Cancer Res* 68(8): 2610–2621, 2008.

Jones KS, Petrow-Sadowski C, Huang YK, Bertolette DC, Ruscetti FW. Cell-free HTLV-1 infects dendritic cells leading to transmission and transformation of CD4(+) T cells. *Nat Med* 14(4): 429–436, 2008.

Oncogenes

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New Discoveries: Henipavirus Antibody

Henipavirus Antibody Could Save Lives

By Maritta Perry Grau

Marburg, Ebola, avian flu, SARS virus—these aren't the only deadly viruses. Now we need to add henipaviruses to our lexicon.

Luckily, researchers at NCI-Frederick have developed an antibody against the high-mortality Hendra virus (HeV) and Nipah virus (NiV), known together as henipaviruses.

Antibodies are proteins found in blood or other bodily fluids and are used by the immune system to neutralize bacteria and viruses.

The research by Dimiter S. Dimitrov, Ph.D., Sc.D., senior investigator, the Protein Interactions Group, Center for Cancer Research Nanobiology Program (CCRNP); Zhongyu Zhu, Ph.D. (CCRNP and the Basic Research Program, SAIC-Frederick, Inc.); and their colleagues is especially critical since no therapeutic treatments exist for Nipah or Hendra virus infections, nor is there a vaccine to prevent the disease in human or livestock populations.

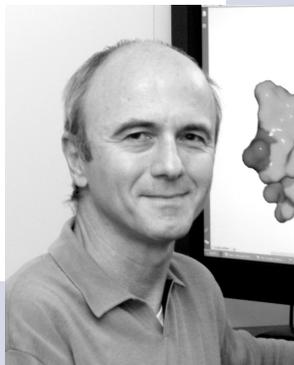
Dr. Dimitrov noted, "This antibody could save human lives, and the insights offered on how it works also could potentially provide a starting point to develop tools for targeting other diseases."

Henipaviruses have been responsible for the deaths of several hundred people and millions of livestock in Australia, India, Bangladesh, Malaysia, and Singapore since at least 1994.

"Our finding for this potent, fully human cross-reactive neutralizing antibody could be directly used for prophylaxis or treatment of humans exposed to or infected by henipaviruses. Such an antibody could also be used for improved diagnosis and as a research tool for better understanding of virus-host interaction. Fine mapping of the

hmAb-defined epitope may also provide information useful for rational development of candidate vaccines and small-molecule drugs," Dr. Zhu said.

Funded by the NIAID Intramural Biodefense Program, Dr. Dimitrov's group and their



Dr. Dimiter S. Dimitrov

collaborator, Christopher Broder, Ph.D., of Uniformed Services University of the Health Sciences, identified the antibody m102 by panning a large antibody library against a soluble form of the protein that protrudes from the HeV shell.

The researchers then created an even more potent clone of the antibody, m102.4, which could neutralize both HeV and NiV without decreasing cross-reactivity (the ability of an antibody to react with two or more viruses or virus isolates). The initial experiments with ferrets, performed in Australia by their collaborators Drs. Katharine Bossart and Lin-Fa Wang (Australian Animal Health Laboratory), showed that m102.4 was well tolerated, exhibited no adverse effects, and that the serum retained a high neutralizing activity.

Dr. Dimitrov and Dr. Zhu believe that this clone is the first fully human antibody able to neutralize both HeV and NiV, and that it has potential for clinical use.

Dr. Antony Fauci, Director of the National Institute of Allergy and Infectious Diseases, highlighted

the discovery of the m102.4 as one of the most significant achievements of the biodefense research centers of excellence in his keynote address at the Fifth National Regional Centers for Excellence Meeting for Biodefense and Emerging Infectious Diseases Research, held in Chicago in April.

As the disease has

evolved, it has gotten stronger. According to an NIH press release, recent outbreaks have resulted in acute respiratory distress syndrome, person-to-person transmission, and higher fatality rates than in the original outbreaks. Mortality rates are now about 75 percent, according to Dr. Margaret Chan, Director-General of the World Health Organization ("Climate Change and Health, Preparing for Unprecedented Challenges," 2007 David E. Barmes Global Health Lecture).

"The generation of these antibodies as therapeutics could help control outbreaks in geographical regions susceptible to henipaviruses, and could turn information from a deadly pathogen into a benefit for mankind," concluded Dr. Dimitrov.

The group's research was published in March (Zhu Z, Bossart K, Bishop KA, Grameri G, Dimitrov AS, McEachern JA, Feng Y, Middleton D, Wang L, Broder CC, Dimitrov DS. Exceptionally Potent Cross-reactive Neutralization of Nipah and Hendra Viruses by a Human Monoclonal Antibody. *J. Infect. Dis.*, 197(6):846-853, 2008, or on the web at <http://www.journals.uchicago.edu/toc/jid/current>). ♦



Dr. Zhongyu Zhu

Safety Statistics

Laboratory Injuries and Illnesses Decline by More than Half

By Scott Keimig

How many accidents occurred in your lab in 2007? If you answer “none,” you may be among the high percentage of those who have improved safety records greatly since 2000. During 2007, the incidence rate* for OSHA-recordable† injuries and illnesses in laboratory staff was an average of 2.2 people, a 58% decrease from 2000, and the lowest OSHA-recordable rate for any NCI-Frederick job classification. In comparison, the number of OSHA-recordable injury and illness cases for laboratory workers was 29, or 37% of all such cases at NCI-Frederick.

Interestingly, our largest work group, research technicians, experienced the highest number of cases (18) in 2007, while student employees experienced zero recordable cases. Scientists had the second highest number of accidents (11).

The greatest improvement was seen in overexertion cases (down 77% from 2000), such as repetitive hand/arm motions (pipetting or keyboarding). Similar injury to the upper body can occur by chronically assuming an awkward posture during lab tasks such as microscopy. Injuries from sharp objects (down 42% from 2000) and

from thermal burns (down 25% from 2000) were also significantly fewer.

Where We Can Do Better

Unfortunately, increases occurred for some injury types.

The increase in eye injuries (up 250%, or 5 people, from 2 in 2000) underscores the importance of wearing appropriate eye protection whenever working with potential eye hazards.

Injuries related to falls (up 25% from 4 in 2000) have resulted, for some people, in much time lost from work. Cumulative lost work time‡ for NCI-Frederick lab workers in 2007 totaled 185 days; all but two days were attributable to accidental falls.

Two such cases involved the use of small step-stools (one brand is sold under the name Kik-Step®) to access shelves. These stools do not have integrated hand rails, so when the people standing on these stools lost their balance, they fell. It is much safer to use a small folding utility ladder with an integral handhold.

How We Can Make Our Work Environment Safer

Be aware of where accidents are likely to happen, and implement preventive measures to make your laboratory even safer. If you believe performing certain duties in your lab could result in eye injuries or a fall, or if you would like more information

about preventing occupational injury and illness in the laboratory, please call Environment, Health, and Safety (EHS) at 301-846-1451. Additionally, if you need information on personal protective equipment, such as appropriate safety eyewear, small utility ladders, or safe laboratory practice, EHS can assess the risk and propose control mechanisms for implementation in your laboratory.

EHS congratulates the research staff of NCI-Frederick for your noteworthy efforts in decreasing accidents so dramatically during 2007. We encourage your continued diligence to address those areas that need improvement. ♦

*Incidence rate is calculated by $(N/EH) \times 200,000$, where N = number of new injuries and illnesses per year, and EH = hours worked in a year.

†OSHA-recordable cases include:

- Medical treatment beyond first aid
- Restriction of work or motion
- Loss of consciousness
- Transfer to another job

‡Lost work time: The number of workdays (consecutive or not) on which the employee would have worked but could not because of occupational injury or illness.



NIH Police

NIH Police Now Provide 24/7 Protection

By Nancy Parrish and Ashley Hartman

In an agreement reached last November, the NCI-Frederick campus now has 24/7 NIH Police protection, according to Don Wheatley, Chief, Management Operations and Support Branch, Office of Acquisition, and Law Enforcement Authority for NCI-Frederick.

“We felt this increase was necessary because of the growth of the facility and the increase in activities on this campus,” Mr. Wheatley said. A presence on the NCI-Frederick campus since 2002, the NIH Police provide all the protection of a local police force: from routine patrolling and traffic control to emergency response. Like a local police force, officers carry firearms and handcuffs, and have the ability to arrest and detain anyone found in violation of a law or creating a disturbance.

“We’re here to help protect and serve the NCI-Frederick community”

Many people think of the NIH police as “traffic cops,” who will flag you down if you don’t stop for a pedestrian or if you exceed the speed limit. But they’re much more than that. They also respond to incidents related to property damage, vehicle damage, parking issues, and complaints of harassment, assault, and disorderly conduct. “We’re here to help protect and serve the NCI-Frederick community so that it can

continue to conduct and support vital research,” said Sergeant Fredric Boyle, Supervisor in Charge, NIH Police, NCI-Frederick.

NIH police can also answer questions about traffic or signage; help with domestic actions; escort people to their



Together, Sgt. Boyle, left, and Officer Pineiro have 24 years of law enforcement experience and nearly 40 years of military experience.

cars at night; or respond to suspicious packages or behavior seen on campus. “We have 3,000 employees here,” said Officer James “J.P.” Pineiro, Master Police Officer, NIH Police, NCI-Frederick. “My job is to keep them as safe as possible so they can come back here and do what they need to do.”

Who Does What?

Four agencies are involved with security at NCI-Frederick. The NIH Police have jurisdiction over the 68 acres that make up NCI-Frederick, and they are responsible for the security of people and property. SAIC-Frederick, Inc.’s Protective Services has primary responsibility for protecting the buildings and equipment, and they are also on duty 24/7. The other protective agencies include the armed security

guards at the entrance gates (who are employed by the U.S. Army), and the Army’s Provost Marshal’s Office (PMO), whose officers have jurisdiction over more than 1,100 acres of Fort Detrick’s three parcels of land. Only NIH and PMO officers are law enforcement officers and have arresting authority.

Emergency calls received at the front desk of the SAIC-Frederick Protective Services office are either handled immediately by Protective Services officers or are referred to Occupational Health Services. NIH Police is notified of all 911 calls, and PMO is available to provide backup as needed.

Three officers report directly to NCI-Frederick, and there is an officer on campus at all times. “We take seriously having a secure working environment,” Mr. Wheatley noted. “We have

a real community here, and we spend a lot of time in this community.” The NIH Police office is in Building 426. ♦

To contact the NIH Police:

In an emergency:
dial 911

In non-emergency situations:
dial 301-846-1091

Campus Improvement Committee

SAIC-Frederick Plants Garden of Hope to Support the American Cancer Society

By Nancy Parrish and Ashley Hartman

SAIC-Frederick, Inc., purchased and planted 200 daffodil shoots in March for two purposes: the proceeds from the sale benefit the American Cancer Society, and the flowers will help beautify the NCI-Frederick campus. The daffodils were planted by the Campus Improvement Committee near the Café entrance to Building 549. According to Paul Miller, Program Analyst, NCI-Frederick, and chair of the committee, a small garden, called the Garden of Hope, includes a bench and garden stone, a walkway, and shrubbery. “Our goal was to create a quiet space on campus, for reflection or meditation,” Mr. Miller said.

Daffodils are some of the first flowers of spring and are a sign of hope. Since 1973, the American Cancer Society has held its three-month Daffodil Days fundraising campaign to symbolize the hope that one day cancer will no longer be life-threatening. Daffodil Days involves offering daffodils every spring to donors in appreciation of their contributions. Volunteer coordinators take requests for daffodils in January, February, and early March, and the flowers are delivered in March to coincide with the beginning of spring. In the past 13 years, Daffodil Days has raised more than \$200 million in gross revenue to support the American Cancer Society’s mission to eliminate cancer as a life-threatening disease.

A portion of the information for this article was taken from the American Cancer Society’s web site, http://www.cancer.org/docroot/PAR/PAR_4_Daffodil_Days.asp. ♦



FME workers helped the Campus Improvement Committee plant 200 daffodil shoots in March to benefit the American Cancer Society and to beautify the NCI-Frederick campus.

Poster Puzzler Winner



Congratulations to the March 2008 Poster Puzzler winner! Patricia Snowden, Production Technician, Pathology/Histotechnology Laboratory, Laboratory Animal Sciences Program, (left), with Paul Miller, Executive Editor of the *Poster*.

The Poster Puzzler:

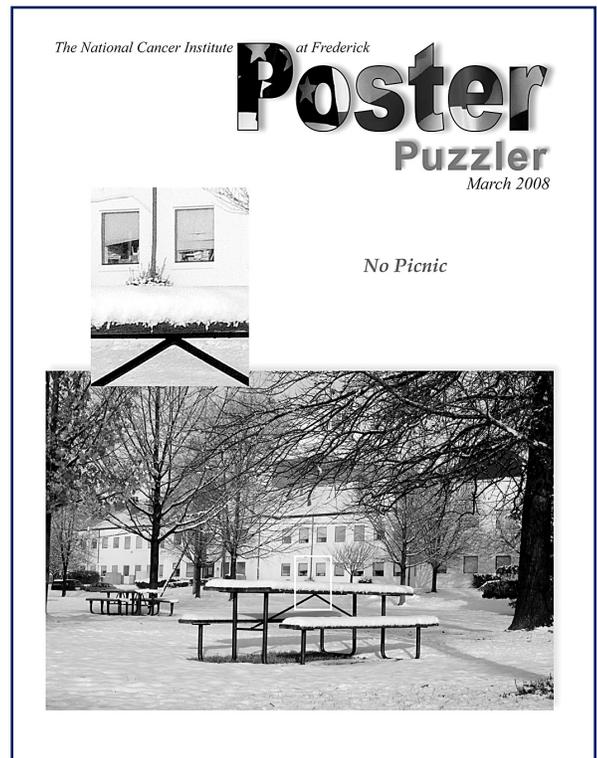
No Picnic!

By Ashley Hartman

March's Puzzler is a picture of the front of Building 538 viewed through a snow-covered picnic table. The two windows shown are part of the Metabolism and Cancer Susceptibility Section Laboratory. The building was designed by the Army Corps of Engineers in 1952 and construction was completed in 1954. With more than 79,000 gross square feet of space, Building 538 was one of the original group of "permanent" structures built for the Army's Biological Weapons Research at Fort Detrick. In the early years of NCI-Frederick, the facility's main frame computer was housed in the rear of the first floor in what is now a conference room. Many interior renovations have taken place over the 36-year history of NCI-Frederick; however, the only change to the exterior of the building was the west end Nuclear Magnetic Resonance addition in 1999.

Thanks to all the participants in the March 2008 Poster Puzzler!

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



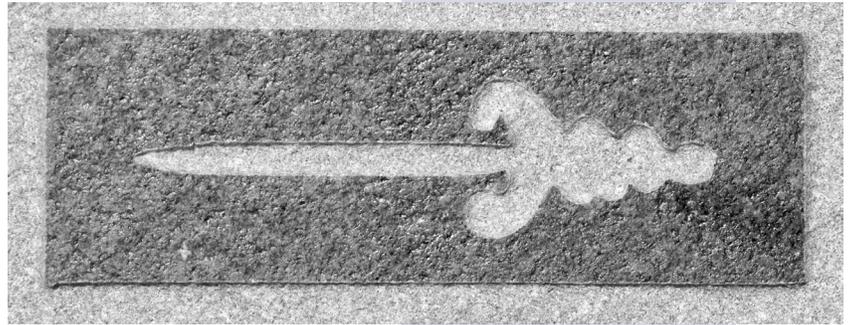
Poster Puzzler

What is it?

Where is it?

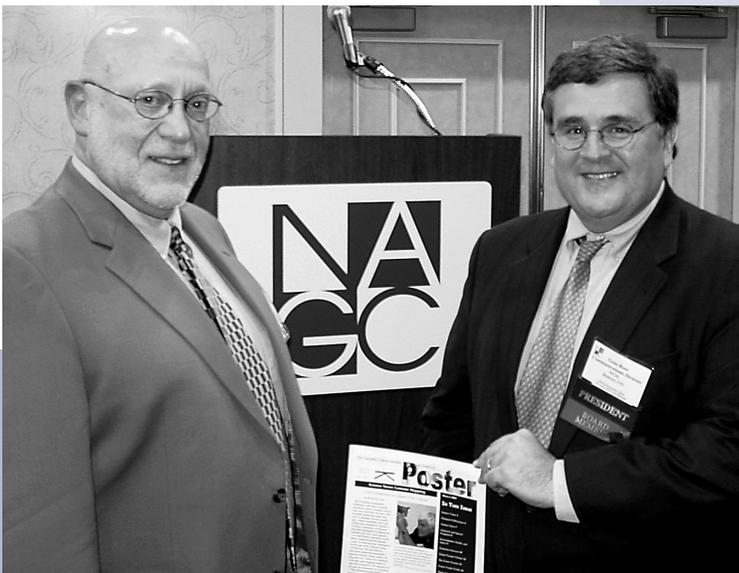
Your challenge, should you decide to accept it, is to correctly identify the item and its location from the picture to the right. Clue: It's somewhere at Fort Detrick/NCI-Frederick. Win a framed photograph of the Poster Puzzler and an NCI-Frederick tee shirt by e-mailing your guess, along with your name, 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, July 18, 2008**, and the winner will be drawn from all correct answers received by that date.

Good luck and good hunting! ♦



Have Poster – Will Travel!

The *Poster*, NCI-Frederick's newsletter, is beginning to make its way around the world, as readers grab the latest issue to take with them and read on the plane or train. Next time you're at a conference, have someone snap a digital of you with a copy of the *Poster*, and send it to us. You might just be featured in the next newsletter. ♦



Top Brass of the National Association of Government Communicators (NAGC):

Outgoing president Gene Rose (right) shares a copy of the NCI-Frederick Poster with incoming president George Selby at the Association's annual meeting in Albuquerque, New Mexico, April 30, 2008. NAGC is a national not-for-profit professional network of federal, state, and local government employees who disseminate information within and outside government.

Poster People Profile

Yolanda Goines: "Technogeek"

By Nancy Parrish

Wondering about the latest iPod? Thinking about joining Netflix? Want to know how to use your new TiVo®? Or how to download music from iTunes? Ask Yolanda Goines, a self-described "technogeek," who "loves all things electronic." And this enthusiasm for "gadgets," as she calls these high-tech products and services, has served her well.

Ms. Goines' work at the Scientific Library combines her love of technology with her love of the written word. An order clerk in the Interlibrary Loan Department, she performs computer searches to locate articles that are requested by researchers at NCI-Frederick. In addition, she finds books from the Scientific Library's collection for researchers from other facilities, including NIH and the Centers for Disease Control. These books are then loaned to the requesters for a four-week period. If the books are not returned, Ms. Goines will follow up with the requester, but, she says, "there are no fines."

"If it's a book, I'll read it."

To say she loves her job would be an understatement. "Books are my passion!" she says, adding, "I love information." Her passion didn't just start with her job at the Scientific Library ten years ago. Prior to coming to NCI-Frederick, Ms. Goines worked at the C. Burr Arts Library in Frederick for 11 years, first as a page, shelving books and periodicals, and then in the Circulation Department. "I'm such a book nut," she added. Her reading interests run the gamut of genres, although she prefers fiction to nonfiction. Favorite authors include Colson Whitehead, Dean Koontz, and

Stephenie Meyer. However, she says she'll read just about anything. "If it's a book, I'll read it."

During her tenure at the Scientific Library, Ms. Goines has taken classes that have enabled her to keep up with the technology, such as database management, and new technology



Yolanda Goines, Order Clerk, Interlibrary Loan Department, Scientific Library

trends. She has also taken classes to keep up with the science, including a course that covered DNA and genetics.

The biggest change she has witnessed over the years is the increasing use of technology. "When I started working here, I went through tons of paperwork because every article had to be mailed and faxed. Now, because of e-mail, there is less paper consumption and I'm able to do my job more efficiently," she said. She also recognizes that this increased efficiency has a positive impact on the

requesters. "I can get things to people faster, so it takes the pressure off of them," she noted.

"We have a little community here."

What she likes best about her work are the people, both on the library staff and throughout the facility. "We have a little community here. People are really nice and friendly," she observes, and it is this atmosphere that makes her job so pleasant. She also enjoys the activities both inside the library and throughout the facility. She is a member of the library's bulletin board committee, which, she says, is full of "lots of imaginative people, budding artists," who make the work of the committee a lot of fun. Other activities she has been involved in include Take Your Child to Work Day, the Farmers' Market, Spring Research Festival, Earth Day, Campus Improvement Committee, and the Employee Recreation Council.

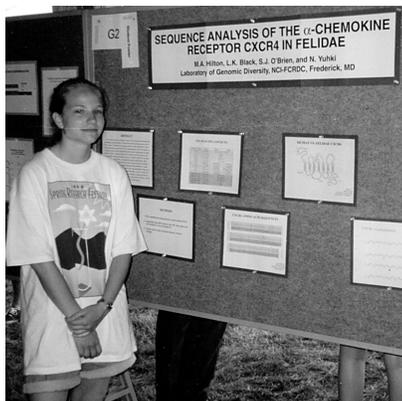
In her free time, Ms. Goines loves to "spoil" her niece and two nephews, as well as watch movies starring her favorite actor, Nicolas Cage. She is also an avid collector. Not surprisingly, she especially likes to collect writing journals, as one of her hobbies is journaling. She finds writing about personal issues satisfying, and even therapeutic. Other items she collects include poetry, photographs, bookmarks, angels, and pigs. And, of course, the "gadgets." Being a collector, however, has its downside: "I'm running out of space," Ms. Goines said with a smile. "That's the problem." ♦

Meredith Shaffer: Keeping an Open Mind

By Nancy Parrish

Keep an open mind. Stay involved in activities. This philosophy has worked well for former Werner H. Kirsten student intern Meredith (Hilton) Shaffer. She believes that “you never know what or who will be able to help you in the future,” and this belief has surely shaped her career.

Keeping an open mind introduced her to a different branch of science. Before her 1997–98 internship with Naoya Yuhki, D.D.S., Ph.D., in the Laboratory of Genomic Diversity, Ms. Shaffer said she preferred chemistry over biology. “I definitely wouldn’t have started college as a bio major”



Meredith Hilton (now Shaffer) presented her poster at the 1998 Spring Research Festival. She appreciates the value of these early experiences in her career.

or known “what it meant to be a research scientist.” Since leaving Dr. Yuhki’s laboratory, she has been involved in a variety of activities: working in prestigious research laboratories, winning awards and grants, working at a scientific journal, taking part in multiple leadership activities, participating in professional organizations, and publishing two papers, with two more in preparation.

A 1998 graduate of Governor Thomas Johnson High School, Ms. Shaffer

studied biology at St. Mary’s College of Maryland, where she graduated with honors in 2002. As an undergraduate, she worked for three summers in the Laboratory of Experimental Immunology under Dan McVicar, Ph.D. In 2001, she earned a fellowship from the Mayo Graduate School, Department of Biochemistry and Molecular Biology. During her senior year at St. Mary’s, she won an award for her discovery of a “novel genetic mutation in the β -hexosaminidase gene of a child who had Tay-Sachs disease.”

After graduation, she worked at the Carnegie Institute of Washington, Department of Embryology, where she studied RNA transport in the fruit fly and focused on what direction to take in graduate school. “I used my year as a tech to contemplate where and in what field I wanted to pursue my Ph.D.,” she said. It was a year well spent: in 2003, Ms. Shaffer published her first paper, as second author, in the *Journal of Cell Biology* (2003 Dec 22; 163(6): 1197–1204). It was also the year she entered graduate school.

Today, with support from two separate NIH training grants, Ms. Shaffer is pursuing a Ph.D. in cell and molecular biology at the University of Pennsylvania School of Medicine. She finds her research on the role of ezrin-radixin-moesin (ERM) proteins in T cells particularly satisfying because it combines her interests in both cell biology and immunology.

Also rewarding is her work as an editorial intern at the *Journal of Clinical Investigation*. “I have both been exposed to translational research, and I have been able to work on my writing skills,” she noted. In anticipation of defending her dissertation, she believes that “my defense will definitely be my greatest accomplishment to date.” Following her defense, she is considering “non-traditional careers,” possibly in public policy or science writing and editing.



Today, Ms. Shaffer’s many activities include participating in the Coalition for Life Sciences (CLS). Here she is shown in Washington, D.C., where she recently advocated on behalf of CLS for biomedical research funding.

Grateful for the Opportunities (and Protocols)

Ms. Shaffer believes her experience at NCI-Frederick had a “high impact” on her career. “I’m sure my experience so early helped to open the doors for landing other internships, and cemented my interest in pursuing research. And of course, the science I started to learn as an intern has helped me throughout my class work and future research. I still reference some of my protocols from back then!!”

Memories of her student internship days include having an enviable schedule during her senior year (“leaving school at noon every day to go play in the lab”) and having a good summer job (“no fast food, telemarketing, or painting chairs for me!”). She also presented her work in a public setting for the first time. “You only realize later how those experiences become invaluable later in [your] career,” she noted.

Reflecting on her career thus far, Ms. Shaffer offers sound advice to current student interns: “Learn as much as you can, ask questions, have fun, and keep an open mind.” Just as important, she says, “follow your bliss.” ♦

Outreach and Special Programs

Farmers' Market Opens

By Maritta Perry Grau

The annual Farmers' Market runs from Tuesday, June 17, through Tuesday, October 28, and will include a lot of familiar faces, as most of last year's vendors have returned.

Judy and Rudy Medicus of Cats' Paw Farm will have heirloom and regular tomato plants, other vegetables, and Judy's getting-famous baked goods.

Janet Madsen of Janet's Flowers will have cut flowers, flowering plants, and herbs.

Tim Miller of Imperial Chocolate Company will bring handmade truffles. "I realize that you can't plant them in the garden, but they make a nice after-gardening treat," Barbara Birnman, NCI-Frederick Public Affairs Specialist, said in an e-mail.

New this year to the market is Groff's Content Farm; the vendor will bring eggs, organic chicken, lamb, and beef.



Take Your Child to Work Day

Take Your Child to Work Day (TYCTWD), July 30, is your opportunity to share your excitement about your work at NCI-Frederick with your colleagues' children. Some programs have as few as 4 or 5 children at a time. The number of children participating increases each year, so you can see that, with such limited numbers in an individual session, your participation is critically needed.

Although the event occurs in just six weeks, don't panic. The TYCTWD Planning Committee will help you plan your activity; you can contact them by simply sending an e-mail to kidsday@ncifcrf.gov or by calling 301-846-7400. In many instances, they can also provide an area in which you can present your program if your work area/lab is not accessible to visitors.

You can register your child for sessions on June 18 at <http://kidsday.ncifcrf.gov/default.asp>. If for some reason, you must cancel, we ask that you notify us by July 25 so that the spot can be made available for another child.

Summer Student Seminar Series

Summer interns, take note: Here's a chance to ask all the questions you ever wanted to know about science. The 2008 Summer Student Seminar Series, which will feature seminars from eight NCI-Frederick and Fort Detrick scientists, begins June 17 and runs through August 15. For more information, go to <http://web.ncifcrf.gov/campus/outreach/seminar/>.

Student Poster Day

NCI-Frederick's Summer Student Poster Day will be held Thursday, July 31, in the lobby of Building 549. The event is open to all NCI-Frederick and Fort Detrick summer students and enables them "to present their research to the NCI-Frederick and Fort Detrick scientific community," according to the NCI-Frederick web site. Register at <http://web.ncifcrf.gov/campus/outreach/poster/registration.asp> by July 23. For more information, go to <http://web.ncifcrf.gov/campus/outreach/poster/>. ♦



Outreach and Special Programs

Six Werner H. Kirsten Student Interns Recognized in Science Fair

By Ashley Hartman

Six Werner H. Kirsten student interns were recognized for their research projects on March 29 during the 27th Annual Frederick County Science and Engineering Fair.

First place winners were Helya Ghaffari of Tuscarora High School and Jessica Metcalfe of Walkersville High School. Ms. Ghaffari works in the Laboratory of Genomic Diversity, NCI-Frederick, and plans to attend the University of Maryland, Baltimore County, to study biology. Ms. Metcalfe works in the Developmental Therapeutics Program (DTP) in the Screening and Technologies Branch, SAIC-Frederick, Inc., and plans to study biology at the University of Maryland, College Park.

Second place winners were Alexandra Swanson of Linganore High School and Kimberley Anderson of Tuscarora High School. Ms. Swanson works in DTP in the Screening and Technologies Branch, SAIC-Frederick, and plans to major in bioengineering in the pre-medical program at the University of Pittsburgh. Ms. Anderson works in the Laboratory of Experimental Immunology, NCI-Frederick, and plans to study exercise science at Towson University.

Honorable mention went to Emily Bowers of Catoctin High School. Ms. Bowers works in the Hematopoiesis and Stem Cell Biology section of the Laboratory of Cancer Prevention, NCI-Frederick. She plans to attend the University of Maryland, College Park and major in cellular biology and genetics.



From left: Helya Ghaffari, Jessica Metcalfe, Liv Johannessen, Alexandra Swanson, and Kimberley Anderson. (not pictured, Emily Bowers)

Liv Johannessen Wins at Local and International Science and Engineering Fairs

The Grand Prize at the Frederick County Science and Engineering Fair went to Liv Johannessen of Governor Thomas Johnson High School for her project titled “Synthetic Analogs of IGF-1 Receptor Juxtamembrane Domain: Potent Inhibitors of Cancer Cell Growth.”

At the 2008 Intel International Science and Engineering Fair on May 11–17 in Atlanta, GA, Ms. Johannessen received second place in the Biochemistry Category and \$1,500. She also received \$3,000 from the China Association for Science and Technology and \$1,000 from the Endocrine Society.

Of her project, Ms. Johannessen said, “The IGF-1 receptor plays an important part in the growth of many cancers. But its Juxtamembrane (JM) domain, in its active state, is able to inhibit that role by preventing receptor activation.” In her project, Ms. Johannessen made small peptides that mimicked the JM domain and its inhibitory properties, which shut down

the IGF-1 receptor and prevented cancer growth.

Ms. Johannessen works in the Molecular Targets Development Program, NCI-Frederick, and will continue to work there this summer. She said her sponsor, Dr. Nadya Tarasova, and her mother have been her mentors. “Dr. Tarasova

has definitely been a driving force these past months, helping me to get acclimated to lab life and teaching me so many different things,” Ms. Johannessen said. “But my mother has also played a huge role in my life before starting work here.” Ms. Johannessen’s internship has impacted her life by bringing her love of

science to the forefront. “Science has become the foremost favorite subject of my life, and I know wherever I go to school I will definitely focus on it,” she said. Ms. Johannessen plans to attend the University of Maryland, College Park, to study chemical engineering in the pre-medical program, or the Massachusetts Institute of Technology to study chemical biological engineering.

In her free time, Ms. Johannessen enjoys reading and writing. ♦



Liv Johannessen

Is Your Laboratory Refrigerator Explosion-safe?

By Timothy Rowe and Ashley Hartman

Did you know that small volumes of flammable solvents released in a refrigerator can produce an explosive atmosphere? During a March laboratory inspection in Building 538 by Environment, Health, and Safety (EHS), an ethanol-based solution was noted in an under-counter refrigerator that was not labeled “laboratory-safe” or “explosion-safe.” The inspection raised the question, what is the acceptable volume of a flammable solvent that could be kept in this refrigerator?

An analysis by EHS revealed that less than one tablespoon (or about 15 mL) of ethanol released in a typical under-counter refrigerator can produce an explosion. Therefore, even the smallest amounts of flammable liquids must be stored in tightly closed containers in refrigerators or freezers that have been designed or modified for flammable liquid storage.

To minimize the possibility of an adverse event in this situation, the National Fire Prevention Association (NFPA) recommends using the following refrigerators that protect against the ignition of flammable vapors in refrigerated equipment¹: explosion-proof, laboratory-safe (or explosion-safe), and modified home models. These refrigerators are designed to protect against the ignition of flammable vapors inside the storage compartment. Explosion-proof refrigerators also protect the outside of the refrigerator from ignition. Laboratory-safe refrigerators are based on the typical laboratory environment. They also incorporate such features as thresholds, self-closing doors, friction latches or magnetic door gaskets, and special materials for the inner shell.



An example of a laboratory refrigerator that can be used to safely store flammable solvents. This is the RLPR05042 Sparkfree Laboratory Refrigerator. From http://www.labcold.com/products/product.php?pr_id=23.

Using typical home-model refrigerators to store standard laboratory solvents is a hazard to the laboratory work area. Compressors and fan motors outside of these refrigerators can become very hot, and electrical contacts associated with the compressor and fan can produce an arc (an electrical current jumping across a gap), which can become a source of ignition. Thermostats, light switches, and heater strips are also sources

within home-model refrigerators that could cause ignition.

It is possible to modify home-model refrigerators to achieve some degree of protection, but this is not considered optimum, and can only be applied to manual-defrost refrigerators, not self-defrosting models. The minimum procedures of modification include:

- Relocating manual temperature controls to the exterior of the storage compartment and sealing all points where capillary tubing or wiring formerly entered the storage compartment.
- Removing light switches and light assemblies, and sealing all resulting openings.
- Replacing positive mechanical door latches with magnetic door gaskets.

Regardless of the refrigerator used, every laboratory refrigerator should be clearly labeled to indicate whether it is safe for storing flammable materials. ♦

¹National Fire Prevention Association, NFPA 45 Standard on Fire Protection for Laboratories Using Chemicals, 2004.

Mathematical Analysis

Relevant physical properties of Ethanol
Molecular weight = 46.07
Density = 0.7892 g/mL
Weight of 100 mL ethanol = 78.92 g or 78,920 mg

Volume of under-counter refrigerator:
5.7 ft³ (x 0.0283) or 0.161 m³

From industrial hygiene reference:⁽¹⁾
Parts per million = (mg/m³) (24.45)
Molecular weight

(78,920 mg/0.161 m³) (24.45)
46.07

~260,150 ppm or ~26%

In this scenario, concentrations of ethanol vapor up to 26% are possible if 100 mL of ethanol are released in an under-counter refrigerator with an internal volume of 5.7 cubic feet. This presents a real possibility of an explosive atmosphere if the ethanol were to vaporize in sufficient quantities and come in contact with an ignition source.

⁽¹⁾American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices, 2007.

Recycling at NCI-Frederick Is Everyone's Business

By Paul Stokely and Nancy Parrish

According to a recent article in *Science*, a typical laboratory “consumes four to five times as much energy as an equivalent-sized office or classroom, to say nothing of the huge amount of plastic, paper, and hazardous chemicals researchers go through.”¹

What sort of carbon footprint is NCI-Frederick making on the planet? The answer to this question is hard to determine because it is based on the specific amount of energy we use every day, including electricity, natural gas, oil, and a host of other factors. But just asking the question is usually enough to get people thinking.

Thanks to NCI-Frederick's Waste Management group, we have a very active recycling program. In 2007 alone, NCI-Frederick recycled more than 5,000 fluorescent and high-discharge mercury bulbs; 20,000 pounds (10 tons) of plastic from pipette tip tray boxes; \$5,000 worth of surplus chemicals; and almost 4,000 pounds (2 tons) of batteries. In addition, more than 200 pieces of surplus equipment were issued by the Property office, saving more than \$400,000 in new equipment purchases.

Recycling Helps Reduce Our Carbon Footprint

Whether you work in a lab, shop, or office environment, you should take advantage of the many opportunities we have to recycle and reuse.

Surplus Equipment: The NCI-Frederick Property office maintains a list of surplus equipment available to all NCI-Frederick and contractor employees at no charge. You can access the list at <http://web.ncifcrf.gov/campus/property/search.asp> and

search by specific item or browse lists of surplus items. Equipment can be inspected, and the warehouse staff can assist you with the necessary paperwork. Call 301-846-1156 for an appointment.

Laboratory and Office Items:

Recycling programs are in place for paper, cardboard, glass, certain types of plastics, metal, batteries, Tyvek suits, photographic film or paper, wood pallets, and ink and toner cartridges. Recycling these materials not only saves money and energy, but also reduces the amount of material in our landfills.

The web site <http://home.ncifcrf.gov/ehs/recycling/> provides information on recycling more than 20 types of items, and includes drop-off points as well as instructions on how to package your recyclables for pick-up.

Surplus Chemicals: A clearinghouse, at <http://home.ncifcrf.gov/ehs/ehs.asp?id=79>, lists surplus chemicals, and shelf-stable materials, such as solvents, acids, bases, cleaners, and reagents, that are available at no charge. You can browse the list periodically for items your laboratory or shop uses routinely. To order, call 301-846-5718, e-mail chemwaste@ncifcrf.gov, or fax 301-846-7442, and your items will be delivered to you at no charge.

For more information about recycling, contact Paul Stokely, Environmental Safety Officer, at 301-846-7381. ♦

¹Grimm, D. This man wants to green your lab. *Science* 318 (5 Oct 2007): 39–41.

E-waste: TVs and Computers

By Paul Stokely

In response to the Deficit Reduction Act of 2005, the Federal Communications Commission set a deadline of February 17, 2009, for licensed broadcasters to convert TV signals to digital. The federal government will issue coupons to help consumers purchase converters (see <https://www.dtv2009.gov/>). However, many consumers are likely to throw out their old TVs and buy new ones.

In addition, U.S. consumers replace their computers an average of once every three- and-a-half years. State and local governments are seeking ways to divert these waste streams (called “e-waste”) to save space and to keep many of the toxic components, such as lead and cadmium, out of landfills.

Procedures for disposing of e-waste vary by county, but drop-off programs are set up in Frederick and some adjacent counties, and several private recyclers will accept computers and televisions for a fee. More information can be found at these web sites:

Carroll County, MD: <http://ccgovernments.carr.org/ccg/recycle/default.asp>

Frederick County, MD: <http://www.co.frederick.md.us/index.asp?NID=1741>

Montgomery County, MD: <http://www.montgomerycountymd.gov/apps/dep/solidwaste/collectionservices/index.asp>

Washington County, MD: http://www.washco-md.net/public_works/solid_waste/solidw.htm#B

West Virginia: <http://www.state.wv.us/swmb/ECycle%20Home.htm>

Pennsylvania: <http://www.depweb.state.pa.us/landrecwaste/cwp/view.asp?a=1242&Q=464383>

Other Areas and Private Firms: <http://earth911.org/> ♦

¹<http://www.epa.gov/ecycling/docs/fact11-07.pdf>

PALS Roundup

PALS Kids Learn about Going Green

By Dianne Velazquez-Hunt

The children at the Play and Learning Station (PALS) learned all about the 3R cycle of “reduce, reuse, and recycle” through a story that told them how to follow the 3R cycle every month. As examples, they reused water bottles, making them into shaker bottles and made “sit-upon” mats with old newspapers. They also learned about items that can be recycled and what recycling symbols to look for.

On May 21, the oldest class of children graduated in ceremonies held at the NCI-Frederick Café, Building 549.

Mark your calendar for the PALS art show and bake sale on Tuesday, July 15, also in the Café. Infants and toddlers will be there between 11:40 a.m. and 12:00 p.m.; two-year-olds and preschoolers will be there between 12:00 and 12:30 p.m.

For more information about PALS, call 301-846-5200. ♦



In a recent “Go Green” activity day, families at the Play and Learning Station recycled newspapers to create “sit-upons” with Ziploc® Bags, and made a shaker bottle by filling a recycled soda bottle with water and confetti.



On Effective Communication

It's About Time!

By Ken Michaels

In the mid-twentieth century, the railroad system in Italy was notorious for the unreliability of its daily schedules. Benito Mussolini bolstered his rise to power by promising to end the country’s transportation troubles. After seizing control, he touted his authority and leadership with the claim that he made Italy’s trains run on time. (Many consider this an urban myth, finding it impossible to believe that trains in Italy have ever run on time, but he claimed it as a personal accomplishment all the same.)

Aside from trains, wouldn’t it be nice if scientific meetings and symposia, too, also ran on time, especially when concurrent sessions are involved?

Meetings that don’t run on time are annoying. In my own communications utopia, the meetings I attend begin on time, speakers stick scrupulously to their allotted time, and the event concludes on time or a little early. When that happens, I can more fully

concentrate on what I’m there for—the content.

Speakers who drone on past their allotted time show disrespect for both the audience and the other speakers. More than once I’ve heard the last speakers on the docket having to rush their presentations in order to end the session on time. In such situations, those last few speakers were shortchanged. Running over one’s allocated time slot is poor form.

Even when prompted by the emcee to finish up, the “overtime” speaker has few options available if there’s still more material. I’ve seen speakers speed talk and fast-flip through a dozen slides or more, sometimes skipping some altogether—which prompts the question: if the material was unimportant enough to skip, why was it in the talk in the first place? It mainly demonstrates to the audience that the speaker was not well prepared.

Here’s a suggestion that will endear you to your colleagues: If you’re invited to give a 30-minute presentation, do it in 25. Nobody

minds when you finish early; the worst it can do is provide a few extra minutes for Q&A. And how do you know if you can do it in 25 minutes? Practice it.

I understand that the idea of practicing a presentation is considered unnecessary by many experienced public speakers. But if there’s only one good reason, regardless of experience, it would be to ensure that you can get your important messages across in the time allotted.

The importance of being on time cannot be overemphasized. Just ask anyone who has traveled to Italy. ♦

NCI-Frederick Employee Diversity Team

LASP Manager Returns the Kindness of Others

By Maritta Perry Grau

Andrew Okoth is a man who believes in passing on the kindnesses and generosity that others have shown him over the years. Thanks to him, several Laboratory Animal Sciences Program (LASP) staff members have become competent in English and will soon take the American Association for Laboratory Animal Science (AALAS) certification examination, making them eligible for job promotions.



Mr. Okoth reviews animal health reports with fellow employee Jeanne Yimdjo. They regularly check the health reports to determine whether their “sentinel” animals picked up any diseases. Tracking the sentinels, much as miners used to keep watch on canaries in the tunnels, helps ensure that the facility is disease-free. In addition, early detection of any disease enables them to take measures to eliminate disease before it becomes widespread.

For the past 16 months, Mr. Okoth has been teaching ESOL (English for Speakers of Other Languages) onsite to Laboratory Animal Sciences Program (LASP) staff in Bethesda, where he is the facility manager for NCI’s Clinical Research Center Vivarium. Two of his original nine students became skilled enough to “take the AALAS certification exam. One person left because it was apparent that they need more help than



Mr. Okoth works with colleague Elena Kuznetsova to prepare an orientation video to first-time-user investigators who will have experiments at the facility.

I could provide; they needed a teacher who could speak their native language. And two others have yet to take the exam,” Mr. Okoth said.

He takes a quiet pride in his students’ achievements and believes that the classes have benefited the students a great deal. “The main thing I notice in members of the class is how much their level of self-confidence increases with each class; I suspect that with each class, they are experiencing a higher sense of inclusion,” he said.

As is true throughout much of NCI-Frederick, LASP-Bethesda has a diverse work force. “The most exciting change I have seen in the facility as a whole,” noted Mr. Okoth, “is the addition to our staff of people from many parts of the world. We have staff from Burma, Ghana, Liberia, the Philippines, Mali, Cameroon, Mexico, Ecuador, Colombia, the Dominican Republic, Russia, Uganda, and the U.S.A.”

Teaching English was natural for Mr. Okoth. Most Ugandans are bilingual, since English is the official language and Swahili the national language. And as if working and conducting ESOL classes weren’t enough, Mr. Okoth also teaches evening citizenship classes at his church in Reston, Virginia. He explained that the citizenship classes also seemed natural

as he “discovered that the method and some of the materials we used...were not very different from those required for ESOL classes.”

Reflecting on the ESOL and citizenship courses he has taught over the years, Mr. Okoth commented, “I have always felt it a duty to make time to help others just as so many people made time to help my family and me when we came to the U.S. as refugees from Uganda in the late 70s.” Mr. Okoth was nearly 21 when he came to the United States with his parents and siblings in 1977.

When he’s not at work or teaching classes, Mr. Okoth enjoys spending time with his family—his wife of 18 years, and their two daughters and son. He sometimes relaxes by playing the



Mr. Okoth prepares a training certificate for an employee’s record.

guitar and doing landscape projects. He’s building a koi pond that he hopes to have finished by the end of this summer. ♦

Fitness Challenge

Fitness Challenge Monthly Winners

By Ashley Hartman

As of May 13, Fitness Challenge participants lost 261 pounds; ran, walked, and biked 13,405 miles; and performed 2,732 hours of other fitness activities. NCI-Frederick and Fort Detrick employees are still working to collectively lose one ton (2,000 pounds) of weight; walk, run, or bike around the world (~25,000 miles); and perform one year (8,760 hours) of other fitness activities in 2008. ♦

February winners:

Thomas DiMaggio

Clinical Research Directorate (CRD),
SAIC-Frederick, Inc., for pounds lost

Sally Biser

Charles River Laboratories, for miles walked

Scott Schiffhauer

CRD, SAIC-Frederick, for miles run

Mike Frydl

U.S. Army Joint Medical Logistics Functional
Development Center, for miles biked

Terri McLellan

Laboratory Animal Sciences Program (LASP),
SAIC-Frederick, for hours spent doing other
fitness activities

April winners:

Lana Cross

CRD, SAIC-Frederick, for pounds lost

Tania Defibaugh

CRD, SAIC-Frederick, for miles walked

Carlton Lewis

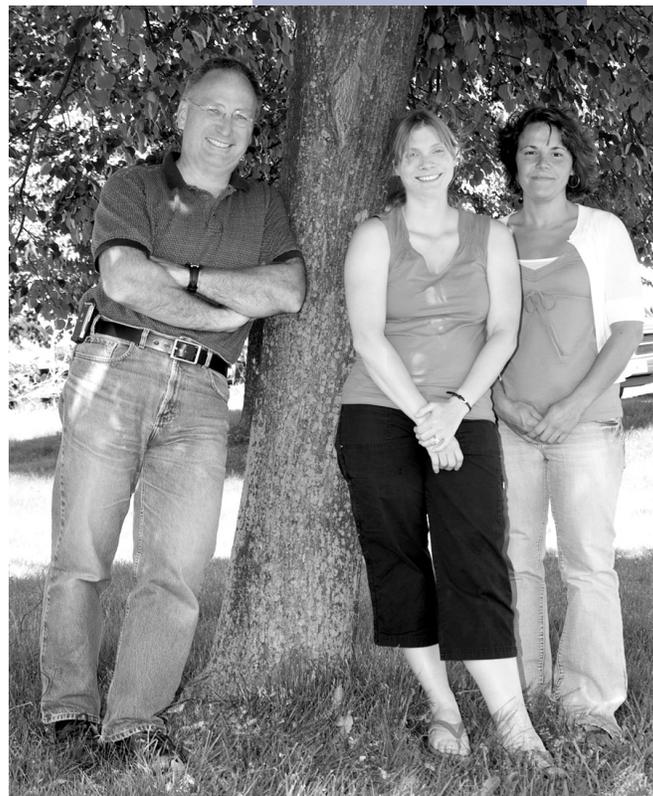
U.S. Army Medical Research Institute for
Infectious Diseases, for miles run

John Beutler

Molecular Targets Development Program,
NCI-Frederick, for miles biked

Jennifer Farrell

CRD, SAIC-Frederick, for hours spent doing other
fitness activities



March winners:

Nicole Roberts (center)

LASP, SAIC-Frederick, for pounds lost

Wayne Helm (not pictured)

Facilities Maintenance and Engineering (FME),
SAIC-Frederick, for miles walked

Bill Adkins (left)

FME, SAIC-Frederick, for miles run

Dwayne Neal (not pictured)

Vaccine Clinical Materials Program, SAIC-Frederick,
for miles biked

Stephanie Henderson (right)

LASP, SAIC-Frederick, for hours spent doing other
fitness activities

New Faces at NCI-Frederick

NCI-Frederick Welcomes New Staff

Eighty-seven people joined our facility in January, February, and March 2008.

NCI-Frederick welcomes...

Sherry Adesina
Naiche Adler
Adam Day
Batsukh Dorjbal
Christopher Huggins
Tae-Jin Kim
Balamurugan Kuppusamy
Xintian Li
Karobi Moitra
Rahul Nandurdikar
Geraldine O'Connor
Tania Lombo-Rodriguez
Lisa Smith
Young-Mee Yoon

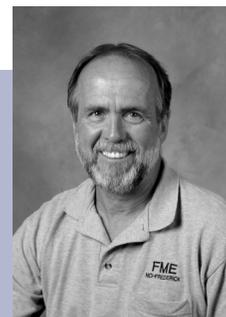
Lisa Smith



Charles River Laboratories welcomes...

Vickie Blizzard
Heather Cronin
Heather Jordan
Diann Miller
Jacquelin Miller
Bonita Sears
Kelsey Wilt

Thomas Nicol



SAIC-Frederick, Inc., welcomes...

Subbaraman Babu
Joseph Boland
Carolyn Boone
Danny Bovey, Jr.
Adriana Byrnes
Alex Cafferky
Audrey Cain
Hansraj Charaipotra
Nanda Chaw
Sudha Chudamani
Paul Cooper
Alan Covell
Dawn Crummitt
Jimi Cruz
Harikrishna Devalapally
Sharon Doerk
Sarita Doshi
Eunice Fox
Alexandra Freeman
Timothy Geisinger
Debra Gilchrist
Yvonne Gonzalez Nederstigt
Dara Greenfeld
Nancy Gustavsson
Bingnan Han
Adam Harned
Ashley Hartman
Erin Kelly
Ira Kest
Pranay Khare
Serguei Kozlov
Hyo Jung Lee
Yin Li
Timothy Line
Hong Lou
Dennis Maeder
Hoyt Matthai
Michael Matthews
Gregory McCullers
Angelena Millione
Derek Mills
Arunesh Mohandas
Cyrus Mwangi
Thomas Nicol
Francisco Nazario Perez
Katherine Perkins
Trang Phan
Sergei Pletnev
Vladimir Pletnev
Curtis Randolph, Jr.
Chi Ritchie
Nancy Roche
Rodrigo Rojas
Bryan Smith
Jessica Springer
Emily Streaker
Hmuh Thang
Awie Turay
Thomas Turbyville
Kimberly Watson
Julia Welch
Dawn White
Nathan Whye
Eric Williams, Jr.
Grace Williams
James Young

Batsukh Dorjbal



Karobi Moitra



Ashley Hartman



Xintian Li



SAIC-Frederick Honored by Tech Council of Maryland

By Nancy Parrish



SAIC-Frederick received the Technology Leadership Award at the Sixth Annual Tech Council of Maryland (TCM) Frederick County Technology Awards held on March 27. According to TCM's web site (http://www.techcouncilmd.com/News/tcmnews_080328.html), the awards "honor the achievements of the most influential and innovative technology leaders and firms in Frederick County." SAIC-Frederick was cited for its "long-standing excellence in the technology community and community service in Frederick County."

According to the *Frederick News-Post*, April 2, 2008 (http://www.fredericknewspost.com/sections/archives/display_detail.htm?StoryID=80757), in presenting the award, Laurie Boyer, Director of the Frederick County Economic Development Office, noted that SAIC-Frederick employees are active in the community and cited SAIC-Frederick employees' volunteer efforts with many community agencies, including the YMCA, Frederick County Public Schools, Frederick County Chamber of Commerce, and the Frederick County Business Roundtable on Education. In accepting the award, Larry Arthur, Ph.D., president of SAIC-Frederick, is quoted as saying, "This wonderful recognition is a tribute to the highly talented and dedicated group of people here at SAIC-Frederick. Our scientific, technical, and support professionals make progress every day against cancer and AIDS."

ABCC Staff Presents "Technology of the Future"

Jack Collins, Ph.D., Brian Luke, Ph.D., and Sarangan Ravichandran, Ph.D., of the Advanced Biomedical Computing Center (ABCC), participated in the Future Link Conference at Frederick Community College on May 29. The conference was developed by the Frederick County Business Roundtable for Education (FCBRE) to expose high school sophomores from Frederick County Public Schools to the "technology of the future." Presenters from 20 organizations representing a variety of fields, including biomedical research, defense, health care, communications, robotics, education, and even the space industry, demonstrated the advanced technology they are using in their businesses.

According to its web site, the FCBRE partners with the business community "to address the workforce needs of employers, especially in the areas of science, technology, engineering, and mathematics." Dr. Collins indicated that the ABCC was selected for this conference "because of its unique ability to meld mathematics, science, and technology in cancer research." With a presentation focused on "how mathematics, computer science, physics, and chemistry can positively contribute to the biological study of cancer," Dr. Collins hoped to "inspire students to further pursue a scientific education." Students took part in a hands-on demonstration of "how all of these fields combine to allow for



Dr. Jack Collins

the computational modeling of the interaction between a chemotherapeutic agent and its associated enzyme," Dr. Collins said.

New Program Launched to Speed Preclinical Drug Development

Only 5 percent of drugs that appear promising in animal testing actually succeed in human trials. To save time and costs associated with unsuccessful clinical trials, SAIC-Frederick, Inc., recently launched the Center for Advanced Preclinical Research (CAPR), part of the Basic Science Directorate. The new program will use genetically engineered mouse models (GEMs) and gene expression profiling to more accurately recommend candidate drugs for human clinical trials.

Terry Van Dyke, Ph.D., an internationally renowned expert in the biology of cancer, is the director of the new program. CAPR scientists will work with a number of projects Dr. Van Dyke brought from her previous appointment at the University



Dr. Terry Van Dyke

of North Carolina. One project involves mouse models of two highly aggressive forms of central nervous system tumors. Another will study prostate cancer using animal models from Dr. Van Dyke's recent research. (See related article in *News & Views*, Vol. 14, April 2008, page 1.) ♦

New Requirements for Public Access to NIH-supported Research

By Susan Wilson

On December 26, 2007, The Consolidated Appropriations Act of 2007 [H.R. 2764] was signed into law, requiring NIH to make public the results of any research it supports.

Submission to PubMed Central Now Required

In response to the new law, NIH released new guidance on the *Revised Policy on Enhancing Public Access to Archived Publications Resulting from NIH-Funded Research* (<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-08-033.html>). The new guidance stipulates that, effective April 7, 2008, investigators who publish journal articles reporting on research that used NIH funding are now required to submit to PubMed Central (PMC) (<http://www.pubmedcentral.nih.gov>), upon acceptance for publication, an electronic version of their final, peer-reviewed manuscripts, to be made publicly available no later than 12 months after the official date of publication.

New Citing Requirements for NIH-funded Research

In addition, new citing requirements stipulate that, as of May 25, 2008, when citing an article in NIH applications, proposals, and progress reports that falls under the policy, and was authored or co-authored by you or arose from your NIH award, you must include the PubMed Central reference number (PMCID). If a PMCID is not yet available, include the NIH Manuscript Submission System reference number (NIHMS ID) instead. This policy includes applications submitted to the NIH for the May 25, 2008, due date and subsequent due dates.

Common Concerns Identified

The Scientific Library sponsored an informational program in early April to acquaint NCI-Frederick scientists and staff with the three basic steps involved in complying with the Public Access requirements: (1) article copyright, (2) article submission, and (3) article citation. (A videotape of this program is available for check-out from the Scientific Library.) The library also held hands-on training sessions to provide practical guidance for uploading articles to the NIH Manuscript Submission System (NIHMS System). Each session revealed common concerns:

What constitutes “acceptance”? Since copyright management is the first step, do we wait until we have the galley proofs and publisher agreements in hand? What if, at that late stage, the publisher refuses? Could that be risky? Protecting your chain of intellectual property is extremely important. We suggest that you contact your intellectual property department before making a decision. There are several options, including using a form letter that can be sent to either the publisher or co-authors to notify them that the article is subject to the NIH Public Access Policy, or including a note to this effect in the “Acknowledgments” section of the article itself.

How do we handle manuscripts that have multiple funding sources, including grants, project numbers, and contract numbers? This presents stumbling blocks, which are usually the result of your having used the incorrect login option. It’s a good idea to check the Scientific Library’s web site periodically to find out the latest news about this issue. The NIHMS System Help Desk also recommends that you contact them if you cannot

locate your project or contract numbers in the system; ask them to walk you through the process of selecting the correct login button.

Sometimes, when I provide a service or a sample, the lead author acknowledges me as a co-author out of courtesy, but I don’t always know this has happened. How can I ensure that I am compliant in cases like these? The NIHMS System is not searchable, so instead, we suggest that you search PubMed Central periodically to see if you have been listed as an author (<http://www.ncbi.nlm.nih.gov/sites/entrez?db=pmc>). The Library can assist you by setting up regular alerts for this purpose.

The Scientific Library staff is eager to help you cope with this additional responsibility. We can go through the submission process with you, either in the Library or at your desk; also, we would be happy to make a presentation at one of your staff meetings. All you have to do is call us at 301-846-1093. ♦

Web Sites That Can Help

Scientific Library NIH Public Access Page—linked from our home page:

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

NIHMS System Slide Shows—offer screen shots for various situations:

<http://www.nihms.nih.gov/web-help/index.html>

NIHMS Help Desk:

<http://www.nihms.nih.gov/faq.html#q20>

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web.ncifcrf.gov/ThePoster

41979

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

www.criver.com

Data Management Services

css.ncifcrf.gov/services

National Cancer Institute at Frederick

www.training.nih.gov/postdoctoral

SAIC-Frederick, Inc.

saic.ncifcrf.gov
www.saic.com

Wilson Information Services Corporation

www-library.ncifcrf.gov

Upcoming Events and Dates to Note

June 17: Farmers' Market opens; continues every Tuesday through October 28, 11 a.m.–1:30 p.m.

July 4: Independence Day–NCI-Frederick closed

July 18: Poster Puzzler entries due

July 30: Take Your Child to Work Day

July 31: Student Poster Day

September 1: Labor Day–NCI-Frederick closed

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

Reminder: When you have a change in staff, be sure to change the information in the NCI-Frederick database. You can do this online by logging on to 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 poster@ncifcrf.gov.

The National Cancer Institute at Frederick

Poster

Frederick, MD 21702-1201