

Dr. Mary Carrington Delivers Prestigious CPELLINI Lecture



Dr. Mary Carrington

Dr. Mary Carrington, Director of the Basic Science Program and Principal Investigator in the Laboratory of Genomic Diversity-HLA (Human Leukocyte

Antigens) Immunogenetics Section, Basic Research Program, at the

National Cancer Institute at Frederick, delivered the CPELLINI Lecture at the 19th European Immunogenetics and Histocompatibility Conference April 23, 2005, in Istanbul, Turkey.

Dr. Carrington was honored for her 20 years of research in immunogenetics, namely her descriptions of the role of the highly variable immune response gene clusters, HLA and KIR (killer immunoglobulin-like receptors), in a number of diseases, including HIV/AIDS, hepatitis C virus infection, psoriatic arthritis, cervical cancer, and pre-eclampsia. She

was also honored for defining high-resolution patterns of meiotic recombination across the human MHC (Major Histocompatibility Complex), using sperm typing, a tool for determining which of the tightly packed genes of the MHC are involved in a given disease.

Dr. Carrington's selection was also cited in the May 17, 2005, *NCI Cancer Bulletin*.

http://www.nci.nih.gov/ncicancerbulletin/NCI_Cancer_Bulletin_051705.pdf ↻

Molecular Imaging Program Initiates Research in Targeted Imaging

SAIC-Frederick, Inc., is assisting the National Cancer Institute in building a new program in the molecular imaging of cancer. Marcelino Bernardo serves as Associate Director of Imaging Physics for the laboratory, which provides support to NCI's Molecular Imaging Program (MIP; Dr. Peter Choyke, chief).

The lab will develop novel instrumentation to be used by the MIP and "will develop imaging methods and test molecular imaging agents for testing and monitoring cancer," said Mr. Bernardo. Current research activities include a clinical protocol on a 3.0T MRI study of prostate cancer, and



Marcelino Bernardo

a number of preclinical projects in the development of targeted MRI and optical agents. Current imaging modalities include MRI, in vivo optical imaging, and positron emission tomography (PET), with plans to include single photon emission computed tomography (SPECT) later on.

Already, Mr. Bernardo has developed some collaborations, working with Dr. Scott MacNeil's Nanotechnology Characterization Laboratory (NCL). "We are helping the NCL develop their in vivo imaging, while they are helping us in characterizing the dendrimer agents," Mr. Bernardo said, adding, "The dendrimers are similar to polymers, except that they branch out, somewhat like a tree, and form spherical molecules rather than chains. Dendrimers work better as a delivery platform since they mimic biomolecules better. They can be tagged with targeting agents and imaging markers for diagnostic imaging."

A new clinical MRI scanner, larger than dedicated animal scanners, is scheduled for installation in the fall. Designed for human patients or animals, the new clinical scanner is "better for

Arthur's Corner

SAIC's Future: A Strong Stock Program

Periodically I devote this column to a discussion of our parent company, SAIC, to ensure that our SAIC-Frederick, Inc., employees continue to be informed about events which affect SAIC and consequently the employees at Frederick. Recently, Ken Dahlberg, CEO of SAIC, sent a memo to all SAIC employee owners discussing the strategic vision of SAIC's future and alternatives for addressing the capital structure of the company, particularly the stock program. I've summarized the main points of the memo; however, I encourage you to read the entire memo posted on ISSAIC to get the full picture.

Mr. Dahlberg noted that in order to remain a key player in the company's industry, SAIC needs to build on its success in developing and hiring great people, creating technology, and acquiring businesses that complement and strengthen SAIC's market position. The company is examining its capital structure to ensure it can provide the resources needed to execute its strategic growth objectives.

Reviewing the Capital Structure

Mr. Dahlberg said that an imbalance has developed within the stock program during the past several years that is the result of more offers to sell stock than there are orders to purchase stock. When this has occurred, the company has elected to purchase the shares itself. Near term, the company believes

it has ample cash reserves to handle the expected continued imbalance. However, long term, the capital structure may not be able to provide enough cash to continue to buy back stock and invest in the company's business.

The company's Board of Directors is evaluating a variety of options to improve the company's capital structure, including taking on additional debt, encouraging increased purchases of stock by employees, and raising capital and providing stockholder liquidity through an initial public offering or private placement of SAIC stock. The decision was made to address this situation now because the company is in a position of strength with a very strong balance sheet and about \$3 billion in cash and cash equivalents. A long-term view and focus on critical issues are being taken early on to ensure that the company remains in a position of strength.

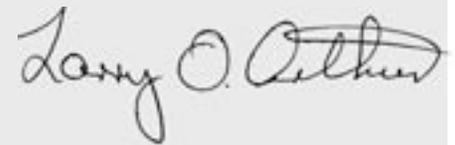
Mr. Dahlberg emphasized that "We will evaluate the possible changes to our capital structure thoughtfully and carefully, including examination of how other large, employee-owned companies have managed similar issues."

SAIC among Top 10 Pentagon Prime Contractors

Elsewhere, an article in the May 9th *Washington Technology* stated that the revenue of SAIC jumped by 23% last year, reaching \$7.3 billion. This was considered a very high rate of growth, since only 4% came from acquisitions. According to a recent study by the Center for Public Integrity, of the 10 largest Pentagon prime contractors, SAIC had the highest "win" percentages of contracts—74%, won with full and open competition from 1998 to 2003. None of the other Pentagon primes even came close to SAIC's

win percentage of competitively won contracts, including Boeing Company at 40%, the Northrop Grumman Corporation at 33%, and Lockheed Martin Corporation at 25%.

SAIC jumped up two places to No. 3 on this year's *Washington Technology* Top 100 list on the amount of contracts won, with only Lockheed Martin and Northrop Grumman ahead of SAIC. In the article, John Allen, co-director of defense and government services, investment banker BB&T, Capital Markets/Windsor Group, was quoted as saying, "Few companies are as pure play as SAIC as a service-oriented business. They have a tremendous amount of talent and financially you don't get much stronger. Their growth rate historically has been very high, and will be sustained."



Dr. Larry O. Arthur

Principal Investigator of the Operations and Technical Support Contract and Associate Director of the AIDS Vaccine Program, SAIC-Frederick, Inc.

MIP Provides Services *(continued from page 1)*

translational research, while at the same time increasing throughput by imaging multiple animals at the same time,” Mr. Bernardo said. Even though the clinical scanners are not designed for animals, the staff is able to design and construct specialized radiofrequency (RF) coils to image several at a time.

In simplified form, the MRI consists of a magnet, gradient coils, and RF coils. Among the critical parts, perhaps the magnet, which provides the signal for the image, is the most significant. The gradient coils encode spatial information, and the RF coils act like a two-way radio to detect the signals that are processed by the computer to produce the images.

The four modalities—MRI, PET, SPECT, and in vivo optical imaging—are complementary. Each of these is a different instrument and is based on different physical phenomena. PET and SPECT have the highest sensitivity but lower resolution, compared to MRI. In vivo optical imaging has a higher sensitivity than MRI but suffers from a lower resolution and poor depth penetration. In mouse models, where tumors are close to the surface, in vivo imaging provides a higher sensitivity than MRI, but doesn't require radioactive nuclei, as do PET and SPECT.

Mr. Bernardo comes to SAIC-Frederick, Inc., with a rich background, having worked in the 1980s under Prof. Paul C. Lauterbur at Stony Brook University in developing in vivo MRI, then in the petroleum industry in developing magnetic resonance techniques to characterize catalysts and fluids in porous media, before returning to in vivo imaging research. He said he is “very excited to be in this program. I am looking forward to future collaborations with researchers at both NCI-Frederick and NCI-Bethesda campuses.”

Mr. Bernardo can be reached at 301-435-4422, or by e-mail at bernardma@mail.nih.gov. ↻

BDP Staff Raises over \$1,000 for MS

To paraphrase Edward Everett Hale, chaplain of the U.S. Senate from 1903 to 1909, we may not be able to do everything, but we can do something. Recently, a group of BDP colleagues did just that in the fight against multiple sclerosis: The “Detrick Heels and Toes” participated in the Frederick MS Walk on April 10, while Robert Dellinger ran in the MS Run at Antietam Battlefield, Sharpsburg, MD, on April 16.

The MS Walk, the National Multiple Sclerosis Society's signature community event, annually brings together more than 6,000 participants and volunteers statewide and raises more than \$700,000. Teams composed of family members, friends, organizations and/or co-workers join the fight against MS

by participating in this important fundraiser.

This year, the MS Walk celebrates its 17th year in Maryland. Ten communities and sites across the state, including Annapolis, Antietam Battlefield, Baltimore, Bel Air, Columbia, Frederick, Ocean City, Salisbury, Towson, and Westminster, offered a variety of walk routes.

A big “thank you” went out to all BDP staff members for their monetary donations; the team raised \$1,040, more than double last year's donations. Most of those who walked or ran this year also plan to participate next year

to continue to help raise MS awareness and the monies that are needed for MS research.

The Detrick Heels and Toes team included several BDP staff and friends and family: Cathy Lenhart (with her friends, Earl and Brenda Main—Earl ran across the US from coast

to coast 5 years ago for Children's Hospital), Judy Duears, Sheryl Ellis, Dr. Aparna Kolhekar, Deena Wisner (and daughter, Darby), Dr. Steven Giardina (and wife, Cecily, and their son, Evan), Becky Defelice (and her brother, Billy Livengood, and her son, Nicholas), and Kate Riling (along with her husband, Mike, and her sister, Beth Wood). ↻

“I am only one, but still I am one, I cannot do everything, but still I can do something; and because I cannot do everything, I will not refuse to do the something I can do.”

-Edward Everett Hale



Back row, left to right: Billy Livengood, Judy Duears, Deena Wisner, Dr. Steven Giardina, Brenda Main, and Cathy Lenhart.

Front row, left to right: Kate Riling, Becky Defelice, Dr. Aparna Kolhekar, Darby Wisner, Cecily Giardina, and Sheryl Ellis. Holding sign: Nicholas Defelice, on left, and Evan Giardina.

3-Dimensional Modeling: Holding a Concept in Your Hand



Samples of finished products include spacefill (on left) and ribbon models. Come to SPGM to see these models for yourself!

Investigators at NCI-Frederick and elsewhere pursue understanding of chemical and molecular structures using a variety of computer-aided-drawing (CAD) applications that render three-dimensional (3D) models in virtual reality—in spatial representation on computer screens.

The computer screen can do lots of things: it can show you all sides, tops, and bottoms of an image, seeming to rotate them in space. However, there's always a bit of limitation, because, after all, no matter how visually appealing, you are really looking at only two dimensions. Now, Scientific Publications, Graphics & Media can produce tangible, 3D models—concepts that you can hold in the palm of your hand.

A recent significant printer development allows the use of fine powdered materials to build models in much the same manner that a color laser copier produces a color image—by printing successive layers of dye that are subsequently fused.

SPGM has invited several NCI-Frederick scientists both to examine the 3D products created and to act as “beta” testers as the department experiments with the technology. Dr. Thomas Schneider, Laboratory of Experimental and Computational Biology, said, “I’ve been following this

kind of technology for years ... this is a major breakthrough in simplicity, price, convenience, and versatility. It is amazing.”

How Does It Work?

With this new technology, a form of stereolithography, precise quantities of glue and colored dye are distributed across thin layers of powder via inkjets in successive passes, building the model one very thin layer—about the thickness of a human hair—at a time. Finally, a variety of substances added to the finishing process gives the model a particular texture, appearance, malleability, or toughness.

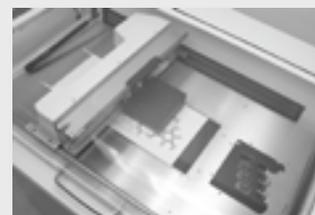
The hardware used is a Z-406 3D printer, manufactured by the Z-Corporation. It uses VRML files (Virtual Reality Markup Language) to build the models in an area that measures roughly 8” x 10” x 8”. The machine can print multiple models simultaneously—as many as can fit into the build area.

Printable VRML files can be created from a number of CAD programs and molecular model viewing programs such as Rasmol, as well as Protein Data Bank (PDB) files.

3D Modeling Offers Significant Support for Scientific Research

Dr. Arthur Olson, Molecular Graphics Laboratory, The Scripps Research Institute, pointed out in equipment literature that “To physically interact in real space with molecules provides considerable information and new insights. Leading researchers that have been working with a protein or molecule for ten years will immediately learn something new when they hold the molecule in their hand.”

A Model Is Born



The 3D printer at work, making multiple models. Each pass of the gantry distributes precise quantities of glue and colorant, building the model one very thin layer at a time.



The completed model is surrounded in the build area by excess powder. Unused powder is carefully brushed away (above); then the model is removed from the build area (below).



After excess powder is removed, the model is ready for after-treatments that strengthen the structure and enrich the coloration.

For More Information

For more information and a demonstration, contact Tammy Schroyer (301-846-1058, tschroyer@ncifcrf.gov) or Ken Michaels (301-846-1057, kvm@ncifcrf.gov), Scientific Publications, Graphics & Media. You can also e-mail threedmlab@ncifcrf.gov. ☺

Vaccine Pilot Plant: Production on a Grand Scale



Your first visit to the new Vaccine Pilot Plant is likely to be a bit over-

whelming because everything there is designed on a grand scale. The total plant is 129,600 square feet, with a 50,000 square-foot manufacturing area, which, when the plant is up and running, will have the capacity to produce 100 to 30,000 vials of injectable vaccine per lot. The facility contains four independent production suites that can be operated simultaneously. The quality control area alone is 8,000 square feet, and the warehouse is 7,000 square feet. The 10-foot-wide corridors around the perimeter of the building are each the length of a football field.

Air and Water Systems Are Super-sized

To keep the air clean, 16 air handlers using Hepa filters are capable of purifying the air to contain less than 10,000 particles per cubic foot (about the size of a hatbox) in the “clean” areas. City water is purified by reverse osmosis and electronic deionization, and is further purified to water for injection at a rate of 1,000 liters (264 gallons) per hour. This water is stored in a 10,000-liter tank and recirculated throughout the building at 80 °C (179 °F), to keep bacteria from growing. The plant will

use almost 1,000,000 gallons of water per month, or up to 12,000,000 gallons per year. Four 350-horsepower steam boilers and a 1,600-ton air conditioning system regulate the temperatures inside the plant.

Production Capacity Meets Wide Range of Needs

In the buffer production area, the buffer prep skid manufactured by HyNetics™ is only the second unit of its kind in use in the U.S., and it can produce 200 to 3,000 liters of solution at a time. Bacterial or mammalian cells are grown in one of eleven bioreactors, with capacities ranging from 15 to 2,000 liters.



employees located in the new facility; staff is expected to increase to 50 by September, and to 100 at full capacity.

Dr. Criss Tarr Provides Expert Leadership

The project has stayed on budget and on schedule, thanks to the expertise of Dr. Criss Tarr, who was brought to SAIC-Frederick, Inc., 3 years ago to direct this massive project. With a Sc.D.



in virology, Dr. Tarr has been involved in the manufacture of clinical biopharmaceuticals since 1979. This is the sixth building for which he has managed the construction, and it is his biggest. “This is the best yet. It’s a chance in a lifetime, and I love it,” he said recently. His key to success, he said, is that he doesn’t micromanage people. Instead, he keeps people focused on the end product, on how the building should look and operate. He believes in his staff, saying they are “the best in the business.”

Construction is scheduled for completion in September, and vaccine production is scheduled to be up and running in early 2006. For more information, you may contact Dr. Tarr at 301-228-4017, or tarrc@ncifcrf.gov. ↻

Over 700,000 Pages of Documentation Written

Managing this project is a staggering task. Construction, which began in March 2004, is done by 200 workers contributing 8,000 man-hours per week. In preparation for the vaccine production, staff members and contractors from the ProPharma Group will write nearly 2,000 standard operating procedures and protocols. To date over 700,000 pages of documentation have been created. Currently there are 22 staff members, plus 15 contract



Gain Control!

Try the Project Management Curriculum

Have you ever felt frustrated when working on a project because you were losing control over the process or spending countless hours on a task and getting nowhere? If you answered “yes,” perhaps you should consider completing the Project Management Curriculum through e-learning.

Check out e-learning, which offers the complete Project Management Curriculum made up of 24 courses and the Test Prep for the Project Management Professional (PMP) examination. Through these courses, you will be introduced to the standards and “best practices” to follow when working on a project. Using the best practices outlined in the 2004 revised *Project Management Body of Knowledge (PMBOK) Guide*, published by the Project Management Institute (PMI), you will gain valuable and cutting-edge information about the field of project management. Start with “Project Management Essentials” and learn the following:

- Identify the benefits of using the *PMBOK Guide* as a source of project management best practices.
- Identify the characteristics of a project.
- Differentiate between examples of projects and operational work.
- Differentiate between examples of progressive elaboration and scope creep.
- Select the best definition of project management.

Other courses include:

Project Time Management
Project Cost Management

Project Quality Management

Strategic Project Management for IT Projects

Project Procurement Planning

Visit the SkillPort site today for specifics about each of these courses. SkillPort can be used on company time for training that enhances your current job performance and is approved by your supervisor. All Skillport courses/books, and ISSAIC are available to you on your own time with your own equipment, whether they pertain to your job or not.

To take advantage of SkillPort, you must first be a registered ISSAIC user. As most of you know, ISSAIC is the SAIC Intranet Web site. Please contact Sukanya Bora at sbora@ncifcrf.gov or Etienne Marofsky at emarofsky@ncifcrf.gov for ISSAIC registration instructions. Please contact Ms. Bora at 301-846-1129 or sbora@ncifcrf.gov to register your group for a SkillPort consultation and demonstration. ☺

Daughter of Many Talents

Some people complain that pop music has too much influence on our children. But you won't hear any such complaints from Betty Clift, a secretary III in the Research Technology Program. Her daughter, Kathleen, was so affected by the haunting sounds of the oboe in the song “Kiss from a Rose,” by the artist Seal, that she begged her mother to let her take oboe lessons. That was 10 years ago, and the rest, as they say, is history.

Kathleen, or Kat, as she likes to be called, is now a 19-year-old music performance major at West Virginia University, on a full, 4-year music scholarship.

While in high school, she played oboe with both the Frederick Youth Orchestra and The Frederick Orchestra, and for the last 3 years, she has played the *Messiah* at the Weinberg Center in Frederick. She also played for 2 years with the Frederick Camerata, a local choral group.

At WVU, she is a member of the WVU Symphony Orchestra, Wind Symphony, Chamber Winds Ensemble, and the World Village Jazz Ensemble. But her interest in music doesn't stop with the oboe. Once at WVU, she became interested in drums, and she now also plays with the WVU Steel Band, which has performed at various locations in West Virginia, as well as at the Kennedy Center in Washington, DC. In early May the band competed at the PANorama Caribbean Music Fest in Virginia Beach, and came away with a “grand champion” award.

If that's not enough, Ms. Clift told us that Kat has always liked “everything Japanese,” an interest that sprang from a childhood love of anime, or Japanese animation. That interest led to her participation in Taiko (a form of Japanese ensemble drumming) and Balinese Gamelan, an intricate form of percussive music using gongs, cymbals, and metallophones.

This summer, Kat is home with her family, but Ms. Clift says they don't see her that much. She's working at the Italian Oven, Sam Goody, and taking two 5-week courses at FCC. That long-ago “Kiss from a Rose” has created a beautiful bloom. ☺



Kathleen Clift

You're in the Army Now!

From time to time, members of the NCI-Frederick community leave for overseas assignments. One of the most recent to go was SAIC-Frederick Inc.'s Human Resources member Elizabeth Borrer. *News & Views* staff caught up with her via e-mail. We asked her to update us on her current situation—as much as she was permitted!

Ms. Borrer said she wasn't too surprised when she received orders to ship out, because "reserve forces are expected to be deployed two out of every five years of enlistment." She said that she knew of at least five soldiers who are on their third overseas assignment, or deployment.

In preparation for leaving, Ms. Borrer took care that her will, power of attorney, and other necessary legal documents were current. Then she packed. She noted, "I am lucky that I do not have children and only have a husband, who is self-sufficient." Another of the things she had to "finish up before deployment" was a wedding: Ms. Borrer married SAIC-Frederick, Inc., employee Dan Logsdon on May 1.



Currently, Ms. Borrer is stationed in Atterbury, IN, where she is training in self defense and weaponry before she leaves for Iraq in early August. "The Army has learned some valuable lessons, and out of those lessons they decided that citizen soldiers need some prior training."

She said that army life is quite a change from her job in HR: "Don't take things for granted—like air conditioning and hot showers! I am outside all the time—road marches, shooting M4s/M9s, and crew service weapons... not behind a desk all day!" One of her most memorable accomplishments ("at 38 years old," she points out with pride) has been finishing a 12-mile road march with a full back pack.

One of the things that has touched her heart the most is "the fact that you have people from all areas of the country and when things get tough, everyone works together as a team...even someone you do not know... that is the Army way."

We look forward to hearing again from Liz once she's settled in "the sandbox." We wish her—and all the other soldiers serving in Iraq and elsewhere around the world—luck and look forward to their safe return. ☺

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

For the third year in a row, SAIC-Frederick, Inc., has won a "Seal of Approval" from the Maryland Work-Life Alliance. The annual award is given to employers who demonstrate a commitment "to workplace excellence by establishing a workplace culture that allows today's workforce to achieve success at work, at home and in the community," according to the Alliance's Web site <http://www.worklifecoalition.org/html/conferences/WorkLifeAlliance.htm>.



Jill Sugden and Dr. Larry Arthur

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

SPGM Garners 3 Awards in Field of over 5,000

Scientific Publications, Graphics & Media entries have won two Awards of Distinction and one Honorable Mention for the 2005 Print Media Competition in The Communicator Awards' annual international competition recognizing outstanding work in all specialties in the communications field.

This year 5,078 entries were judged in the print media competition (up from 3,734 in 2004). The Award of Distinction is given for projects that are judged to "exceed industry standards" in communicating a message or idea. About 19% of the entries submitted won this award. Honorable Mention certificates are granted to those entries that "meet the high standards of the industry," and 10% of all entries received Honorable Mention.

Honorable Mention

"Quality Science Depends upon Quality Care." This four-color tri-fold flyer was produced for the Laboratory Animal Sciences Program in autumn 2004 and won Honorable Mention in the "Recruitment" category. The design and production team included Kathy Green, Tammy Schroyer, Jon Summers and Marti Welch.

Awards of Distinction

"Today's Commitment: Promise for Tomorrow." This full-page advertisement was produced for the SAIC-Frederick, Inc., president's office and won in the "Organizational Image Promotion" category. It ran in the dinner program for the Frederick County Chamber of Commerce annual dinner, November 29, 2004. It was produced by Kathy Green and Ken Michaels, using a modification of a design by Ellen Frazier.

"Executive Summary." This 16-page, four-color publication won in the "Other-Executive Summary" category. Published in autumn 2004, the project was initiated by SAIC communication specialists Bob Anderson and Donna Bell; lead designers were Kathy Green and Allen Kane. It was, however, the combined work product of more than a dozen NCI and SAIC contributors, ranging from authors and content experts to editors, reviewers, photographers, and illustrators. ↻

SAIC-Frederick, Inc., Reaches Out to Help

SAIC-Frederick, Inc., takes pride in its contributions to the Frederick community, reaching beyond the tax base which it strengthens by being the Operations and Technical Support contractor for NCI-Frederick, the fifth largest employer in the county.

You may be familiar with the Community Outreach Program that SAIC-Frederick, Inc., supports. However, did you also realize that your company generously and regularly donates to various individuals and charitable events? Through this newsletter, each quarter we will update you on the latest contributions that SAIC-Frederick, Inc., has made.

Contributes More than \$6,700

During the past quarter, SAIC-Frederick, Inc., has contributed more than \$6,700 to worthy charitable groups. To name just a few, the company contributed \$900 for charity walks (National Multiple Sclerosis Society, March of Dimes, and American Cancer Society), over \$600 in donations to various charities, and \$1,000 for the ASI (Alstroms' Disease) marathon.

Funds Scholarship in Researcher's Memory

When gifted AIDS research scientist Michael Grimes died in 2002, SAIC-Frederick, Inc., wanted to honor him in a way that paid tribute to both his life and his career.



Michael Grimes

With the help of the Frederick Community College Foundation, the company created the Michael K. Grimes Scholarship Endowment Fund in his memory.

According to David Bufter, Director of Contracts and Administration, establishing a scholarship at FCC in Michael Grimes' memory was a natural fit. "As a research organization, SAIC-Frederick has always had a close relationship with the college," said Mr. Bufter. "Many of our employees are adjunct faculty members at FCC, and many more take courses there. We even helped develop a curriculum to train technicians in some of the special laboratory techniques we utilize at SAIC-Frederick."

Dr. Larry Arthur, president of SAIC-Frederick, Inc., said, "Many of us remember Michael very fondly. Setting up a fund to help deserving students majoring in science further their education seemed a fitting tribute to the memory of a fine researcher and an outstanding human being."

Beginning this fall, the scholarship will fund two scholarships for science majors, according to FCC Foundation executive director Marilyn Young.

To make a donation to the Michael K. Grimes Scholarship Endowment, contact executive director Marilyn Young at 301-846-2438 or by e-mail at myoung@frederick.edu. ↻

New Conference Center and Conference & Events Planning Staff

The last few months have seen some changes in the Conference Center in Building 549, and the Conference and Events Planning Services, with new leaders helping to ensure continuity of the excellent services long provided and plans being made for even greater improvements.

Conference and Events Planning



Karen Blackburn

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

campus or off, even in another state. In addition, she stays current with government guidelines and regulations, which is vital, as guidelines and procedures change frequently.

She brings to her job a great deal of experience in planning activities and working out details of travel, having worked the past six years in Washington, DC, for a tax association. "I traveled 10 times a year for a week at a time in my previous job; we always had meetings going on," she said.

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

Conference Center

Colin Celaya joined SAIC-Frederick, Inc., as manager of the Conference Center in May. He, too, has a wealth of experience for his current job: more than 22 years' experience with military and civilian agencies managing and directing audiovisual, video teleconferencing, and presentation facilities.



Colin Celaya

Recently retired from the U.S. Air Force, where he worked in audiovisual/multimedia, he began his career as a graphics illustrator and gained further experience through several multimedia management positions. In addition, he spent four years as an instructor for multimedia management at the Defense Information School, Fort Meade, Maryland, where graphic illustrators, photographers, and videographers for all the military services are trained. During his last few years of service, he was director of the conference center/presentations area at Headquarters Air Force Space Command, Peterson Air Force Base, Colorado Springs, Colorado.

Recently retired from the U.S. Air Force, where he worked in audiovisual/multimedia, he began his career as a graphics illustrator and gained further experience through several multimedia management

In addition, the Air Force has recognized Mr. Celaya's skills and in-depth experience in multimedia management: in 2003 he was named the Air Force Space Command Communication and Information senior visual information manager of the year; in 2005, he received the Air Force Meritorious Service Medal for enhancing the conference center facilities at Air Force Space Command Headquarters and for his dedicated service to the United States Air Force.

Mr. Celaya and his wife, Jennifer, have been married four years and are the parents of Hanna, almost three, and Emmalee, 15 months old.

About his new job, Mr. Celaya commented, "I am extremely excited to be working at NCI and being a part of the team."

Mr. Celaya can be reached in Building 549 at 301-846-1995; or by e-mail at celayac@ncifcrf.gov.

For more details about the Conference Center and the Conference and Events Planning Services, see the article in the June 2005 issue of our sister publication, *The Poster* <http://web.ncifcrf.gov/thePoster/> ↻



NCI-Frederick Conference Center Auditorium

POET Takes Protein Expression to the Next Level



Dr. James Hartley

Dr. James Hartley of the Protein Expression Laboratory might just be considered the Henry Ford of protein expression. His group has developed a method to express hundreds, possibly

thousands, of proteins at a time, making the one-by-one method seem downright old-fashioned.

Central to this new technology are ORFs. While this may sound like something out of the latest Star Wars movie, ORF is actually an acronym for “open reading frame,” which corresponds to that part of the gene that encodes only for proteins.

Proteins Can Be Purified in Large Groups

Dr. Hartley’s lab uses “pools” of ORFs to purify proteins in mass quantities instead of one at a time. Pooled ORF expression technology, or POET, represents a cutting-edge, efficient method that speeds up protein expression. Researchers collect hundreds of ORFs into “pools,” express and purify them in a single process, then use 2D gels to separate the individual proteins that have made it through the purification process intact. Finally, mass spectrometry identifies the different proteins, which investigators can use for further study.

A Merger of Technologies

The technology grew out of a number of other scientific events and discoveries. First came the discovery of human, and other, genomes. These discoveries made the genes available, along with their corresponding ORFs. Since

expressing proteins one at a time is so labor-intensive, interest grew in expressing proteins on a larger scale. Thus, the U.S. government has funded a number of programs to translate genes into proteins on a grand scale. Citing one from the National Institute of General Medical Sciences (NIGMS), part of the National Institutes of Health, Dr. Hartley explained that hundreds of millions of dollars have been spent with the goal of solving “the structures of perhaps 10,000 proteins from model organisms.” However, while these researchers are using robotic technology to solve the structures on a large scale, they are still solving the structures one at a time. Finally, recent advances in proteomics and mass spectrometry, along with bioinformatics technology, have made the POET method possible.

POET Uses an “Omics” Approach

POET uses an “omics” approach, which, Dr. Hartley explained, is the concept of “attacking thousands of targets at once, knowing that you’ll fail many times.” In the “omics” approach, the central tenet is to move as fast as you can with as many targets as you can, to get the most information in the least amount of time. With POET, Dr. Hartley continued, “We think that we can find hundreds of human proteins, if not thousands, that we can express and purify, starting with thousands of ORFs corresponding to human genes.”

Advantages of POET

One of the biggest advantages of using POET is its efficiency in finding proteins. As Dr. Hartley explained, “All you have to do is look at the darkest spots on the 2D gel, identify which proteins they are, and now you know which genes are going to come through this [expression] pipeline in the best shape.” This technology allows investigators to find more proteins, and find them faster. Comparing POET to the NIGMS study, Dr. Hartley pointed out

that the NIGMS approach is to process 30,000 genes, one at a time, resulting in a 5% to 10% success rate in identifying proteins. POET analyzes ORFs in pools of 500 at a time, resulting in a 500-fold time savings but producing a mixture of both usable and unusable proteins. Mass spectrometry must be used to identify which proteins are the usable ones. So, while you need more time to identify “the winners,” Dr. Hartley said, “It’s probably 10- to 100-fold more efficient than doing this one by one.”

A Collaborative Effort

POET is the result of extensive collaborations, both within the NCI-Frederick community and with outside laboratories. For example, the ORFs come from the laboratory of Dr. Marc Vidal at Harvard Medical School; Dr. Hartley’s group works with the Advanced Biomedical Computing Center (ABCC) to select subgroups of ORFs to be run through the POET analysis; the pools of proteins are sent to a laboratory at Uniformed Services University Health Sciences (USUHS) in Bethesda, to run 2D gels; the gels return to Dr. Hartley’s lab to identify concentrations of proteins (“spot picking”); the proteins are identified by mass spectrometry in the Laboratory of Proteomics and Analytical Technologies (LPAT). Dr. Hartley admits, “It’s complicated. There are lots of threads.”

Ultimate Goal: A POET Database

Ultimately, Dr. Hartley would like to build a database containing protein information human genes, accessible to investigators worldwide. “Our dream,” he said, “is that we’ll be able to try thousands, maybe most, maybe all, of the available human ORFs.”

For more information on POET technology, you may contact Dr. Hartley at 301-846-7375 or hartley@ncifcrf.gov. 

Winners of Spring Research Festival Poster Awards

Eight SAIC-Frederick, Inc., staff were selected as poster winners in the recent Spring Research Festival recognition of outstanding poster presentations. The eight were among 20 winning posters announced in mid-June and posted at <http://web.ncifcrf.gov/events/springfest/winners.asp>. Poster categories included Investigator, Postdoctoral Fellow, Student, and Technical Support. Each winner received a certificate of recognition and a small monetary award.

Investigator awards were granted to **Dr. Tom Ouellette**, Purification Development Laboratory, Biopharmaceutical Development Program, for *Chromatographic Purification of a Recombinant Poliovirus*; **Dr. Brian Luke**, Scientific Applications Support and Research, Advanced Biomedical Computing Center for *Reproducible Biomarkers in Proteomic Mass Spectra*; **Dr. Buyong**

Ma, Laboratory of Experimental and Computational Biology, for *Release Factors eRF1 and RF2: A Universal Mechanism Controls the Large Conformational Changes*; and **Dr. Fang Yuan**, AIDS Vaccine Program, for *FTC-selected M184V Variants of Simian Immunodeficiency Virus (SIV) with Modest Replication Disadvantage*

In the **Student** category, **James Cherry**, Gene Expression Laboratory, was the winner for *Profiling of Ovarian Cancer*. Other contributors to this poster included **Amanda K. Lane** and **Dr. Narayan Bhat**, Gene Expression Laboratory; and **Dr. Lisa Gangi**, **Dr. Ester Rosenblum**, and **Dr. David Munroe**, Laboratory of Molecular Technology.

Awards in the **Technical Support** category went to **Michelle Gignac**, Image Analysis Laboratory, for *Optimization of a Method for Imaging Drosophila Embryos with a Variable Pressure Scanning Electron Microscope*; **Scott Lawrence**, Histopathology Laboratory, for *Automated Image Analysis*; and **Wojciech Kasprzak**,

Laboratory of Experimental and Computational Biology, for *Computational Exploration of the Structural Polymorphism of the HIV-1 Leader Region*. ☺



Dr. Ouellette



Dr. Luke



Dr. Ma



Dr. Yuan

Bio-IT World Award Granted for ABCC and IAL Work



Dr. Jack Collins

The National Cancer Institute was recently named one of six grand prize winners in the third annual Best Practices Awards sponsored by *Bio-IT World*

magazine. The award-winning program was based on work performed by the Advanced Biomedical Computing Center (ABCC) and the Image Analysis Laboratory (IAL).

At a recent ceremony at the National Press Club in Washington, DC, Dr. Jack Collins, Manager, Scientific Computation and Program Development, ABCC, accepted the grand prize award, given in the category of "Knowledge Management." According to a Web article written by Kevin Davies of *Bio-IT World*, NCI's work represented "an exciting example of data analysis in the field of confocal microscopy, produced with the help of Silicon Graphics, resulting in novel visualization, analysis and collaboration capabilities for researchers studying the biological origins of cancer."

Entitled "Confocal Microscopy Data Analysis: A Real-Time Image Analysis and Visualization Solution," the project presented results of research conducted by the ABCC and IAL, and executed by Silicon Graphics, Inc. (SGI).

Other authors included Dr. Stephen Lockett, IAL, Dr. Dean McCullough, High Performance Technologies, Inc., and Curtis Lisle, SGI. The authors presented the Silicon Graphics Prism visualization system solution architecture, demonstrated how it facilitates efficient analysis of large datasets, and included results of several test cases on microscopy samples provided by NCI for evaluation.

The winners were selected from 33 entries prepared by organizations ranging from large pharmaceutical and biotechnology companies to academic institutions and agencies. For more information, go to <http://www.bio-itworld.com/newsitems/2005/06-05/06-29-05-news-bp-winners>. ☺

SAIC-Frederick, Inc., Featured on SAIC Today

Move over, Katie, Matt, and Al. The latest edition of *SAIC Today* features Dr. Larry Arthur, Principal Investigator of the Operations and Technical Support Contract and

Associate Director of the AIDS Vaccine Program; Dr. Jeff Lifson, Director of the AIDS Vaccine Program, and Dr. Criss Tarr, Director of the Vaccine Pilot Program.

SAIC Today is a video newsmagazine available through ISSAIC, the company's Intranet. According to the Web site, *SAIC Today* "is designed to help you understand the company, our direction,

important things that affect SAIC employees in our day-to-day jobs, as well as topics of general interest."

The feature on SAIC-Frederick, Inc., focuses on the important work that is being done here and was released June 29. Be sure to tune in, at <https://issaic.saic.com/corporate/communications/saictoday/>. ↻

Important Telephone Numbers

Ethics Hotline.	1-800-435-4234
Human Resources Department	(301) 846-1146
Benefits Questions, HR Department	(301) 846-1146
SAIC Stock Programs	1-800-785-7764
SAIC Stock Price	1-888-245-0104

SAIC Stock

The price for SAIC Class A Common stock was re-established by the SAIC Board of Directors on June 10, 2005, at \$41.80, down \$0.47 from \$42.27 in April.

Stock price set	June 10, 2005
Future trade dates (subject to change)	September 23, 2005 December 16, 2005

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