

The NIH Record

Single Cell Sensitivity

New Modes of Cancer Detection Discussed At Writers Seminar

By Bobbi Bennett

Metastasis—the spread of cancer to other places in the body—is what kills most cancer patients. Each year 800,000 Americans are newly diagnosed as having solid tumors; almost 500,000 of them already have metastases. However, half of this group have micro-metastases that cannot be detected by today's methods and consequently may not receive at the time of diagnosis the aggressive treatment that could prolong their lives.

New tests to predict whether a patient's tumor is likely to metastasize and to detect even one cancer cell that may have spread were discussed by intramural scientists at a recent NIH Science Writers Seminar.

The seminar's moderator, Dr. Lance Liotta, chief of NCI's Laboratory of Pathology, described the explosion of information on the proteins—many of which were discovered at NIH—that play a role in the various steps of tumor invasion and metastasis. "Because tumors must make these factors to become metastatic, understanding the genes responsible for producing them could lead to ways to

(See **CANCER**, Page 4)

Rabson To Fill In

DeVita Leaves NCI For Memorial Hospital

After nearly 9 years as director of the National Cancer Institute, Dr. Vincent T. DeVita, Jr., resigned Sept. 1 to become physician-in-chief of Memorial Hospital at Memorial Sloan-Kettering Cancer Center in Manhattan.

Until a new director is appointed, acting director Dr. Alan S. Rabson, who has been director of NCI's Division of Cancer Biology and Diagnosis since 1975, will manage the institute.

The National Cancer Act of 1971 provided, as a way of lending the position more prestige, that the NCI director be appointed by the president. NCI directors are chosen on the basis of their scientific and managerial accomplishments.

Dr. Paul A. Marks, president and chief executive officer of Memorial Sloan-Kettering, said "we are very pleased that Dr. DeVita, one of the country's most outstanding oncologists, clinical investigators, and academic admin-

(See **DEVITA**, Page 2)



Gossip columnist Rhiannon Roberts (l) of the Camp Fantastic daily newspaper, The Fantastic Times, enjoys the company of her friend Teresa Canary at the sixth and largest Camp Fantastic, held last month in Front Royal, Va.

Most Ever Enjoy Sixth Camp Fantastic

By Rich McManus

It was Tuesday morning, the third day of Camp Fantastic, and the staff was feeling anxious. Things were going just a tad too smoothly for comfort.

Suddenly, the worst news of the day arrived on a gust of wind blowing out of neighboring Blue Ridge mountaintops: cool temperatures had prompted camp director John Dooley to close the swimming pool for the afternoon.

Big deal.

The 84 children enjoying the sixth annual week-long summer camp for kids with cancer were not about to let leaden skies and chilly breezes dampen their afternoon. So instead of splashing in the pool they resorted to indoor activities—target shooting, computer games, crafts and "creepy critters," a menagerie of creek dwelling creatures loosely arranged into an indoor zoo.

"I'm real delighted with how things are going so far in camp," said Dooley, the bearer of bad tidings and the bear-sized director of the Northern Virginia 4-H Educational Center in Front Royal, Va., which has been home to the camp since it started.

His only complaint was that some counselors were looking slightly frayed around the edges and should get more rest—hardly an easy prospect considering that, before night fell, they would: eat an international gourmet feast prepared by the citizens of neighboring Rappahannock County, listen to a folk duo play music and tell stories, attend a campfire ceremony and, lastly, dance until bedtime to the music of a rock n' roll band.

Organized under the auspices of Special Love Inc., a nonprofit group created by Tom and Sheila Baker of Winchester, Va., Camp Fantastic is something unique to anyone who has a hand in it, including more than two dozen NIH'ers who comprise, largely, the medical staff.

For campers Robin Perkins of Kentucky and Debbie Van Coverden of Virginia, it is a chance to prove that, in softball anyway, cooperation conquers all. Robin, who is missing an arm to cancer but has two good legs, did the baserunning when Debbie, who has two arms but is missing a leg, came up to bat.

"Between the two of them you get one

(See **CAMP**, Page 6)

DEVITA*(Continued from Page 1)*

istrators has accepted this key position."

He added that "Dr. DeVita comes to Memorial at a very important time, when advances in several areas of cancer research are providing important new approaches for cancer diagnosis and treatment."

As physician-in-chief, DeVita will "provide direction for Memorial Sloan-Kettering's continuing efforts to achieve the control and cure of cancer in a most effective and productive manner—to yield the best in patient care, investigation and training."

Bennó C. Schmidt, chairman of the boards of overseers and managers of Memorial Sloan-Kettering Cancer Center, is enthusiastic about DeVita's appointment. "I worked closely with Dr. DeVita for 10 years during my service as chairman of the President's Cancer Panel and I saw firsthand what an enormously capable and creative doctor and scientist he is. He brings to our institution very important and unique assets."

DeVita called Memorial Hospital "the finest resource of its kind in the world," and said that he is "proud to be a part of its rich tradition. I look forward to the challenge we all face to transfer modern technology from the bench to the bedside for the benefit of cancer patients."

Except for a 2-year period of advanced training at Yale, DeVita has worked since 1963 at NCI. In the 1960's and early 1970's, he served in NCI's medicine branch, rising to become its chief. Alumni of medicine branch service now constitute a "who's who" of American medical oncology.

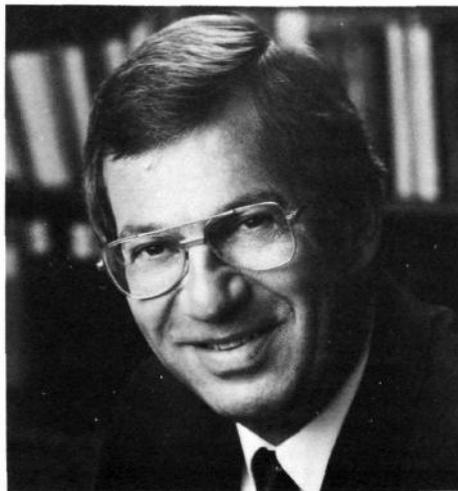
In 1974, he succeeded Dr. Gordon Zubrod as director of NCI's division of cancer treatment. He became director of NCI in 1980, following Dr. Arthur C. Upton.

DeVita is most often cited for his accomplishments in the development of curative chemotherapy for Hodgkin's disease. He and his colleagues were also the first to develop curative combination chemotherapy for the common non-Hodgkin's lymphoma called diffuse histiocytic lymphoma, and they played a major role in developing similar treatments for cancers of the ovary and breast.

DeVita also is frequently cited for his managerial accomplishments, both as director of the treatment division and as NCI director.

His many awards include the Albert and Mary Lasker Medical Research Award, the Griffuel Prize by the French Association for the Development of Research on Cancer, and the Medal of Honor from the American Cancer Society. On Sept. 10, he will receive the Pezcoller Award in Trento, Italy.

DeVita is author and coauthor of more than 300 scientific articles and currently serves on



Dr. Vincent T. DeVita, Jr.

the editorial boards of many scientific journals. He is one of the editors of *Cancer: Principles and Practice of Oncology*, a comprehensive textbook in the field of cancer medicine.

In addition, DeVita is a member of the Institute of Medicine at the National Academy of Sciences. □

Infant Twins Needed for Study

The Laboratory of Psychology and Psychopathology, National Institute of Mental Health, is seeking identical and fraternal twins (same sex) from birth to 6 months of age, to participate in research.

For further information, call 496-7672. □

Journals Slated for Cancellation

The NIH Library is continuing its intensive review of journal subscriptions. The July 26, 1988, *NIH Record* contained a list of journals tentatively slated for cancellation because photocopy records show no usage from 1985 through 1987.

A much fuller list of journals tentatively slated for cancellation appears in the two most recent issues (June and July) of "New Additions to the NIH Library," available at the circulation desk. As the usage review continues, additional journals will be identified, and notice will be given so that the library clientele can comment before action is taken.

The NIH Library advisory committee has approved this review and pruning because the increasing costs make it imperative.

Any comments should be made to Elsie Cerutti, chief, reference and bibliographic services (Bldg. 10/1L21, 496-1156).

To ensure receiving notice of future journal cancellation plans, library clientele may subscribe to the monthly "New Additions to the NIH Library" by calling the library's technical services section, 496-2398. □

Child Health Symposium

To commemorate Child Health Day 1988, the National Institute of Child Health and Human Development will sponsor a symposium: "It's 1988: Who is Taking Care of Our Kids?" on Monday, Oct. 3, in Lipsett Auditorium, Bldg. 10, beginning at 9:30 a.m. and ending at 3:30 p.m.

Participants in this sixth annual observance will cover a broad range of topics; from the historical perspective to the medical, psychological, and policy issues associated with child care.

Nine speakers will discuss and answer questions, not only on the supply and demand for child care, but also on pertinent issues such as facility standards, the effect of cost on child care options, legislative policies, the impact on children and their families, and future concerns and possible solutions.

Dr. Duane Alexander, director of NICHD and Dr. Vince Hutchins, associate director of the bureau of maternal and child health and resources development, Health Resources and Services Administration, will moderate the program.

The symposium is free of charge and no preregistration is required. For more information, contact the NICHD Office of Research Reporting, 496-5133. □

The NIH Record

Published biweekly at Bethesda, Md., by the Editorial Operations Branch, Division of Public Information, for the information of employees of the National Institutes of Health, Department of Health and Human Services, and circulated to nonemployees by subscription only through the Government Printing Office. The content is reprintable without permission. Pictures may be available on request. Use of funds for printing this periodical has been approved by the director of the Office of Management and Budget through September 30, 1988.

NIH Record Office
Bldg. 31, Room 2B-03
Phone 496-2125

Editor
Richard McManus

Staff Writers
Anne Barber
Carla Garnett

Editorial Assistant
Marilyn Berman

Staff Correspondents:
CC, Elynn Pollack
DCRT, Christine Pennella
DRG, Sue Meadows
DRR, Michael Fluharty
DRS, Jim Doherty
FIC, Elizabeth Gillette
NCI, Patricia A. Newman
NEI, Claudia Feldman
NHLBI, Blair Gately
NIA, Claire McCullough
NIAID, Jeanne Winnick
NIAMS, Barbara Weldon
NIDDK, Eileen Corrigan
NICHD, James Hadley
NIDR, Mary Daum
NIEHS, Hugh J. Lee
NIGMS, Wanda Wardell
NCNR, Gerry Pollen
NINCDS, Carol Rowan
NLM, Roger L. Gilkeson

The NIH Record reserves the right to make corrections, changes, or deletions in submitted copy in conformity with the policies of the paper and HHS.

STEP Announces 1988-89 Program

For its 1988-89 season, the Staff Training in Extramural Programs (STEP) committee will offer a diverse program of five training modules, six forums, and four current health and science topics sessions in the highly acclaimed *Science for All* series.

For the past quarter-century, STEP, which was developed primarily for extramural staff, has been part of a continuing education program sponsored by NIH. STEP activities are a function of the Office of Extramural Research under the auspices of the NIH associate director for extramural affairs, Dr. George J. Galasso, and A. Robert Polcari, director, Extramural Staff Training Office. Arlene M. Bowles of OER is the STEP program director. The STEP program is formulated each year by a committee of NIH staff members who, along with other volunteers, plan and conduct the training sessions.

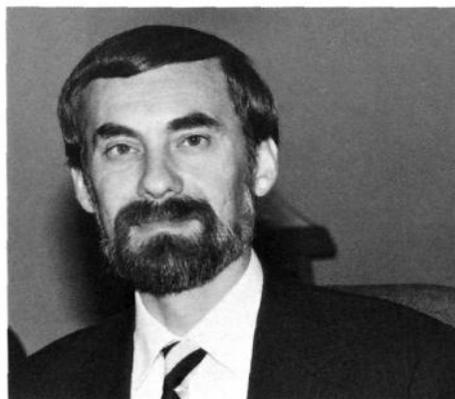
Dr. Anthony Demsey, chief, Review Branch, and deputy director, Division of Extramural Activities, NIDDK, has been appointed chairman of the STEP committee for 1988-89. Dr. John Zimbrick, executive secretary of the radiation study section, Division of Research Grants, is vice chairman.

Initiated last year, the *Science for All* series will be continued this year with four timely and interesting topics that provide an opportunity for the general NIH community to learn about contemporary health and science issues. The first session will be on Alzheimer disease and is scheduled for Nov. 10. Subsequent sessions will deal with viruses, artificial intelligence and biological clocks.

The popular afternoon Forum series will again present topics that range from those of immediate operational concern to those of broad policy interests and implications. The first forum, on misconduct in science, is scheduled for Sept. 28 and will be held from 1:30 to 4 p.m. in Wilson Hall, Shannon Bldg. Subsequent forums will deal with AIDS policy, sequencing the human genome, current studies on peer review, the federal demonstration project, and issues arising from the NIH director's regional meetings.

Module 1 presents a new concept in module design. For the first time, a module will be presented as a series of discussions, revolving around the general topic of "Current Issues In Research Funding." Individual sessions will be held over several months and will address such questions as "How Much Can One Investigator Do?"; "What Can We Do To Deal With Increased Application Load?"; and "How Can The NIH Dollar Be Stretched To Maximize Its Research Impact?"

Module 2, "Biotechnology: The Strategic Alliance Of Government, University and



Dr. Anthony Demsey, STEP Chairman 1988-89

Industry," will explore the roles of universities, industry and government (including NIH) in supporting biotechnology research and development, and will address the factors needed to foster a continued high level of biotechnology research. This module is scheduled for Dec. 13.

Module 3, "The (Mis)conduct of Science," is scheduled for Jan. 12-13, 1989, and is designed to be an in-depth followup to one of this year's forums. The module will examine issues affecting the integrity of science, both within and outside of NIH, ranging from misjudgment to misconduct.

Module 4, "Striving And Thriving At NIH," will be held Mar. 28-29, 1989. Participants in this module will be introduced to tools and techniques that will enable them to recognize the symptoms of work overload and to develop ways of preventing and treating job dissatisfaction.

Module 5, "The Future Of Peer Review: Issues And Options," will be held Apr. 25-26, 1989, and will provide participants with an understanding of the bases and consequences of changes in the peer review system; it will increase knowledge of the issues and options in the peer review of the future.

No application is needed for module 1, the *Science for All* series, or the Forum series. Applications for all other modules must be submitted on form NIH-2245. Application deadline for modules 2 and 3 is Oct. 14, and for modules 4 and 5 is Dec. 16.

Application forms and brochures are available from BID personnel offices and from Dr. Bettie Graham (Lister Hill), Dr. John Cooper (Executive Plaza North), Dr. Carol Letendre (Federal), and Dr. Anthony Demsey (Westwood). Applications and brochures can also be obtained from the STEP program office, Bldg. 31, Rm. 1B63, 496-1493. □

Nirenberg's Genetic Code Studies Featured In Exhibit, Science Writers Seminar

On Sept. 20 the DeWitt Stetten, Jr. Museum of Medical Research will open an exhibit, "Breaking the Genetic Code." It will feature instruments used by Dr. Marshall W. Nirenberg, now chief of NHLBI's Laboratory of Biochemical Genetics, in the research for which he received a Nobel prize in 1968. The exhibit will be located in the first floor elevator lobby of the Clinical Center.

Opening ceremonies for the exhibit are scheduled for 1:30 p.m. in the Lipsett Auditorium, with remarks by Nirenberg; Dr. DeWitt Stetten, Jr., NIH deputy director for science emeritus; and Dr. Joseph E. Rall, NIH deputy director for intramural research. Stetten and Rall were scientific directors of what was then the National Institute of Arthritis and Metabolic Diseases when Nirenberg started his NIH career. His work on the genetic code began in NIAMD and came to fruition when he moved to the National Heart Institute as it was then called.

Following a tour of the exhibit and reception, there will be an NIH Science Writers Seminar entitled "Molecular Genetics and Medicine Twenty-Five Years After Breaking the Genetic Code" from 3 to 5 p.m. in the Lipsett Auditorium.

Nirenberg will give an historical perspective on his research, describing where his work on the genetic code has gone. Dr. George F. Cahill, vice president of scientific training and development at the Howard Hughes Medical Institute, will discuss the prospects for mapping and sequencing the human genome. The use of molecular genetics to diagnose and treat cancer will be presented by Dr. John D. Minna, chief of the NCI-Navy Medical Oncology Branch. The moderator of the seminar, Dr. Alan N. Schechter, chief of NIDDK's Laboratory of Chemical Biology, will discuss how molecular genetics has been used to diagnose and treat genetic diseases.

Science Writers Seminars, sponsored by the intramural scientists of NIH and the Division of Public Information, OD, are designed to provide reporters with background information on the various areas of research conducted at NIH.

NIH employees and members of the press are welcome to attend the opening ceremonies and the Science Writers Seminar. For additional information about the exhibit, contact Dr. Victoria A. Harden, curator, DeWitt Stetten, Jr. Museum of Medical Research, 496-6610. For more information on the Science Writers Seminar, call Bobbi Bennett, special assistant for scientific information, OD, 496-1766. □

CANCER*(Continued from Page 1)*

interfere with or reverse metastases," said Liotta.

The first step in tumor cell invasion involves the attachment of tumor cells to laminin—one of the major proteins of the basement membrane—by specific receptors. (The basement membrane is the sheet-like barrier that separates cells in one tissue from another.) Once this happens, the tumor cells produce factors—such as the enzyme collagenase IV—that degrade the basement membrane so they can penetrate it. Dr. William Stetler-Stevenson in Liotta's lab has discovered the mechanism by which type IV collagenase is activated and mapped the active site of this enzyme. A recently discovered motility factor—studied by Dr. Elliot Schiffmann's group in the same lab—then causes tumor cells to extend "feet" that enable them to migrate through the basement membrane to other parts of the body.

Dr. Jeffrey Cossman, senior investigator in NCI's Laboratory of Pathology, described how he has used genetic changes in cancer cells to diagnose leukemias and lymphomas earlier, to evaluate the spread of disease, and to monitor its course after therapy. (Lymphomas are solid tumors that originate, like leukemias, from white blood cells.)

The genetic changes, which can be due to a mutation, chromosomal breakage, or gene rearrangement, are common in cancer cells but not in normal ones. By identifying the specific oncogene that has been rearranged, one can now determine which type of leukemia or lymphoma a patient has, knowledge critical for selecting the optimum treatment.

Cossman's approach uses several standard methods of molecular genetics. DNA is extracted from any blood or tissue sample of a patient and cleaved into small fragments by special enzymes (restriction endonucleases) that cut DNA at specific places. The fragments are then separated; those in which there has been a genetic alteration will be either shorter or longer than normal fragments of the same chromosomes. These variants can be detected by DNA probes (radioactively labeled DNA segments of known sizes). The unusual DNA size serves as a tumor marker since it is found only in the leukemic cells.

But DNA probes could not detect an altered DNA fragment when a patient had only a few malignant cells. Therefore, Cossman and his colleagues Drs. Mark Raffeld and Mary Alice Stetler-Stevenson used a very powerful technique known as polymerase chain reaction (PCR) to make millions of copies of DNA from a patient's sample. Now, even if a patient has only one cancer cell left after

chemotherapy, the probes can detect it.

Clinical trials are now being conducted to measure the test's ability to predict relapse in cancer patients. Cossman believes PCR could be used for many types of cancer in which the chromosomal abnormality is known. "This technique also provides a new measuring stick to evaluate a treatment's effectiveness. We can now see tumor cells years before we would have otherwise," Cossman said.

DNA probes have also been used by Dr. Robert Callahan, chief of the oncogenetics section, Laboratory of Tumor Immunology and Biology, NCI, to identify two genetic alterations that may indicate whether a patient's breast cancer has a high probability of metastasizing. His collaborators on this work were Drs. Iqbal Ali, NCI, and Rosette Lidereau, Centre Rene Huguenin in St. Cloud, France. He expects that in the near future these markers will be used in determining the postsurgical treatment of breast cancer patients.

The first marker is the deletion of an area of DNA on chromosome 11. This region was missing in 20 percent of the 110 breast tumors Callahan and his team examined but not in DNA from normal tissue of the same patients. The deletion correlated with poor prognosis, poor response to hormonal therapy, and the development of metastasis.

The researchers found a second marker: multiple copies of the oncogene *int-2* on another part of chromosome 11. Its presence in 16 percent of the breast cancer patients correlated with the development of a local recurrence or a metastasis.

"Because the markers did not show any association with the patients' lymph node status, they could be used to determine which women with negative lymph nodes should be treated aggressively," said Callahan. "Our results, however, are from pilot studies. Larger trials must be conducted before any definitive conclusions can be reached."

Dr. Patricia Steeg, a senior investigator in NCI's Laboratory of Pathology, discovered another marker that may be useful in predicting the spread of breast cancer and in identifying at an early stage those patients in need of aggressive treatment. The marker—a new gene that she named NM23—may suppress tumor metastasis.

According to the current theory, genes that predispose people to cancer are either inherited or acquired through a mutation. However, we are protected from their effects by suppressor genes. When a suppressor gene is either lost (by deletion of the region of the chromosome where it sits) or loses its effectiveness (by downregulation or a mutation in its DNA sequence), then a tumor-predisposing gene can exert its effect.

In four rodent models of cancer, Steeg

found that levels of NM23 messenger RNA (mRNA)—the nucleic acid that directs the production of the protein for which the gene codes—were low in highly metastatic tumor cells and highest in the least metastatic ones.

The same pattern was seen when Steeg tested 17 human breast tumors: Those known to be highly metastatic had low levels of the NM23 mRNA whereas tumors from most of the women with 0 to 3 positive lymph nodes—the group that presents the biggest problem for physicians in deciding on treatment—had higher levels. Importantly, 30 percent of this latter group had low levels of the NM23 mRNA and, over a short followup period, one of these patients has since developed metastasis. Thus, NM23 mRNA levels may be a predictor of metastatic potential.

"At this point, we have a correlation of NM23 levels with metastasis. To prove that NM23 is a suppressor gene, we need to show a cause and effect relationship," stated Steeg. She and her colleagues are conducting the requisite experiments: putting the gene into a tumor cell to make it either nonmetastatic or normal. She also said that large scale clinical trials will be needed to confirm the usefulness of these findings, and that easier tests to detect gene products must be developed for clinical labs.

Dr. George Martin, chief of NIDR's Laboratory of Developmental Biology and Anomalies, described the compounds he has found that block the invasiveness of tumor cells in a test developed by his laboratory and in mice. These compounds may serve as prototypes for drugs that could be used in combination with surgery, radiation or chemotherapy.

The test measures the ability of cells to attach, degrade and migrate through an artificial basement membrane reconstituted from its three major proteins, laminin, collagen IV, and proteoglycan. This rapid and quantitative test has shown that the ability of cells to invade the basement membrane is a good indicator of their metastatic activity.

Martin and his colleagues identified in laminin the sequence of five amino acids—known as YIGSR—to which tumor cells bind. They synthesized peptides (segments of the laminin protein) and added them to tumor cells in the test system. Only the peptides containing YIGSR blocked the tumor cells from binding to and invading the basement membrane. When the YIGSR-containing peptides were injected along with melanoma tumor cells into mice, the peptides dramatically reduced the formation of lung tumor metastases.

"We think that YIGSR competes with laminin for its receptor on the tumor cell, thus

(Continued on Page 5)

(Continued from Page 4)

blocking the binding of the cell to the basement membrane," Martin stated. His team is trying to develop more potent peptides with a longer half-life. One use for such peptides could be during surgery to prevent mechanically liberated tumor cells from creating metastases.

The researchers have also found inhibitors of the chemical pathways that produce collagenase IV. These compounds can make malignant cells assume a dormant status in animal models and are being tested for their long-term toxicity.

As Martin pointed out, "All the steps of invasion and metastases are necessary so if we can block one step, we should be able to block metastases." □



NIDDK's deputy director Dr. Pierre Renault (l), and EEO Program Manager Joe Ager (r), welcome MARC summer interns at their orientation early this summer.

15 MARC Students Trained in NIDDK Laboratories

The National Institute of Diabetes and Digestive and Kidney Diseases, through a cooperative agreement with the National Institute of General Medical Sciences' MARC (Minority Access to Research Careers) Program, employed 15 undergraduate students in its intramural laboratories this summer.

The goal of the MARC Honors Undergraduate Research Training Program is to strengthen the undergraduate science teaching and research training in biomedical sciences at minority institutions. The program also aims to increase the number of well-prepared minority students who will enter Ph.D. or combined M.D.-Ph.D. degree programs.

Commenting on the program, Dr. Pierre F. Renault, NIDDK's deputy director, said, "We hope that as students return home, their experience and knowledge of the NIH will help build bridges to these minority institutions."

One student, LaBaron Washington, who attends St. Mary's University in San Antonio, Tex., has been working in NIDDK's Molecular, Cellular, and Nutritional Endocrinology Branch. "It's been a great experience," he said. "I feel that I am lucky to be working in this lab." LaBaron added that his training has given him the opportunity to work independently, not only designing his own experiments but conducting and interpreting them as well. "This experience has turned me on to research," he said.

Another student, Jocelyn Joseph, attends Xavier University in New Orleans, La. She said of her experience in the Laboratory of Biochemistry and Metabolism, "I've developed so many technical skills that I'll be able to apply in my studies." Jocelyn found everyone "really caring and willing to help me learn

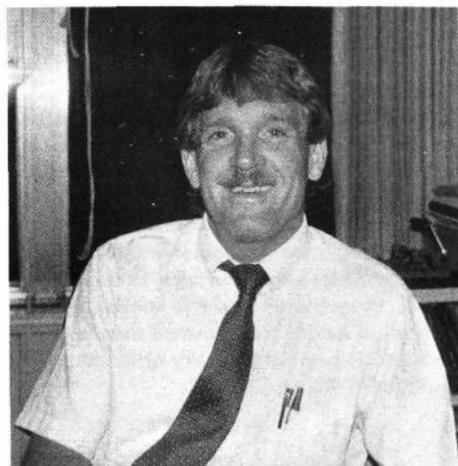
laboratory routine." She is considering a combined M.D.-Ph.D. degree and would like to come back to work at NIH one day.

At a reception given in their honor, Renault told the students that "acquiring first-hand knowledge of the people and structure of the NIH is an important part of your preparation for a career in biomedical research."

This is the third summer that NIDDK has trained undergraduate students in the MARC program. Students are selected on the basis of their academic achievements and their commitment to obtain the doctoral degree in a biomedical science. As part of the program, qualified institutions receive support to provide science courses and research training for honors students who are in their third or fourth year of college. "This program brings NIH closer to meeting the dual goals of encouraging young people to choose careers in the biomedical sciences and of hiring more underrepresented minorities as scientists," said Joe Ager, NIDDK's EEO program manager.—Eileen Corrigan □

Volunteers Needed

The Laboratory of Neurosciences, NIA, is seeking healthy volunteers for studies investigating the effects of aging on cerebral metabolism and cognitive functions. Participants must be over 18, drug free during the study, and can receive a stipend of up to \$300 depending on the time involved. Call the laboratory, 496-4754, between 9 a.m. and 5 p.m., Monday through Friday, for more information. □



Jerry Moore, management analyst, Division of Management Policy, and graduate student at the University of Southern California's Washington Public Affairs Center, recently won a \$1,000 scholarship from the Public Employees Roundtable, a nonprofit, nonpartisan coalition of professional associations representing more than 800,000 federal, state and local government employees. His winning application, which included a two-page essay on his choice to pursue a career in government, was one of nearly 850 entries nationwide. Moore plans to use the money to complete his doctoral degree studies in public affairs.

Fall Exercise Classes

The NIH Fitness Center is offering a variety of exercise classes for the fall. With coed, low-impact, beginner's and advanced, as well as special classes for abdominals and back, there is sure to be a class perfect for you.

Classes begin the week of Sept. 12 and run through Oct. 30. A full schedule of classes and registration information is available at the new NIH Fitness Center on the B4 level of Bldg. 31A (496-TRIM). □



Counselor Trey McFerren holds camper Cameron Wheeler in his lap during an impromptu counseling session.

CAMP

(Continued from Page 1)



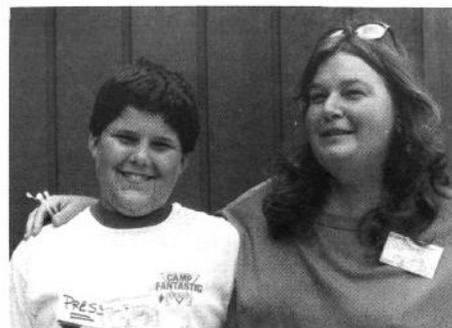
When it came time to play softball, Debbie Van Coverden (l) of Virginia did the batting while Robin Perkins of Kentucky did the baserunning for her.



Mansur Rabim, a native of Afghanistan, likes jogging, photography and drawing. He speaks English, Afghan, German "and a little Urdu."



Nicole Hill, 10, of Fairfax, Va., is a first-year camper who enjoys making friendship bracelets in crafts class.



Tom Flinn of Lusby, Md., humor editor of The Fantastic Times, meets with Times editor Daphne Hutchinson, whose son is a camp counselor.

Sixth Annual Camp Fant

whole ballplayer," mused Charles Butler, camp recreation director and supervisor of children's recreation at the Clinical Center.

Butler himself is an extraordinary story. He commuted the 80 miles between Front Royal and Washington every day so that he could be with the campers and also attend to the needs of a quadriplegic son at home. In addition, he videotaped each day's activities with a hand-held camcorder so that CC patients unable to make the trip could see what was going on. By 3:30 every afternoon, the NIH shuttle would deliver the previous day's film to an anxious audience on 13 West.

"It's a popular program, mostly with the kids at camp who want to see themselves," said Butler, who got the idea to make videotapes during last year's camp.

For Todd Stockslager of Potomac Edison Co., the camp is a chance to enjoy a week in the woods with his family as well as teach daily computer class using the 30 Apple IIGS personal computers lent to camp by his company.

"It's a tough job but someone's got to do it," he grinned, explaining that Potomac Edison has sponsored a mobile computer classroom in its service area for more than a year, hoping to improve the quality of local education.



Among the NIH medical staff at camp were Karen Mont O'Brien, Stephanie Entrup, Kathy Magnino, Trish O'Connell, Luke Whitesell, Sheila Santacrose, Liesl Bevington and L...

fantastic Called 'Best Ever'

"They're the utility with a heart," laughed Daphne Hutchinson, who used the computers to create *The Fantastic Times*, a daily newspaper documenting the lives and loves of Camp Fantastic 1988.

Hutchinson also honchoed the International Night gourmet feast, a tradition in camp for the past 3 years.

"All the restaurants in the county helped out," she said, including The Inn at Little Washington, which was recently voted best restaurant in America by a prominent food critic; the inn donated quiche and kitchen help. Hutchinson herself fixed 250 eggrolls for the dinner. She attributes her zeal to help the camp to her son, Jim McCullough, who has been a counselor at Camp Fantastic for the past 5 years.

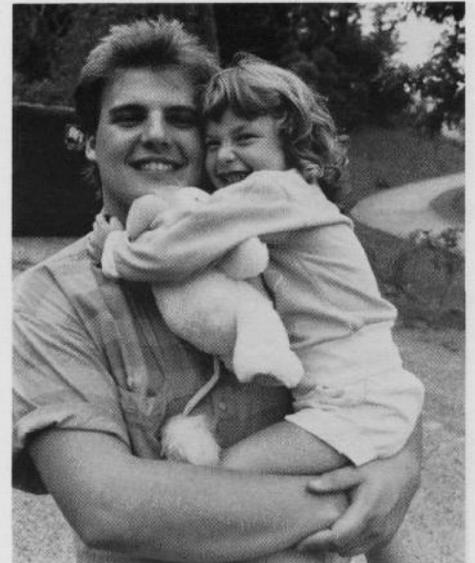
"He came back charged and different from being up here a week that first year," she said.

Among similarly inspired NIH'ers was Lyn Mickley, a cancer researcher in NCI's Medicine Branch and a former CC medical technologist. Enjoying her sixth Camp Fantastic, she divided her time between analyzing blood samples from the dozen or so children who needed it each day and acting as a counselor.

(Continued on Page 8)



Devere Shipley of Baltimore dressed as an Arab sheik for the International Night feast at camp.

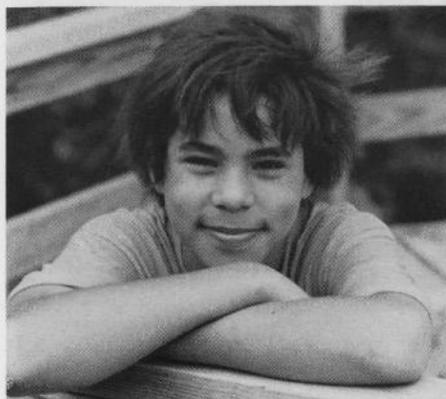


Jim McCullough has been a popular counselor for five camps. His enthusiasm even got his mother involved.

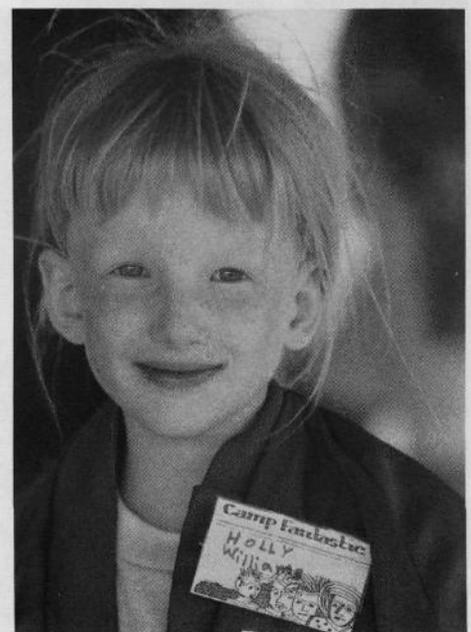
Photos: R. McManus



en Montrella (seated, c) and (seated from l) Sharon
ish O'Connor. Standing are (from l) Lisa LaVita, Dr.
on and Dr. Phil Pizzo.



Shawne Glover, 14, of Finksburg, Md., says borseback riding is his favorite activity at his fourth camp.



Holly Williams of Roanoke, Va., is "8½" and enjoyed her first camp.

(Continued from Page 7)



Katie McCann of Centreville, Va., a rising sophomore at Chantilly High School, has been at all six Camp Fantastics.

"It's more fun to be with the kids than in the lab," she admitted.

Mickley originally sought to be a counselor at the camp but was recruited instead to do blood work. For 3 hours every morning during camp, she evaluated blood drawn from fingersticks using a Coulter counter, a portable cell-counting machine donated by Coulter Electronics. For the rest of the day, however, she was free to give her attention to the children.

Contact with caring adults has begun to reap palpable dividends in campers both past and present, says Randy Schools, dean of men at the camp and general manager of NIH's R&W Association.

"One of the joys is seeing kids get older," he said. "Many of them are choosing careers in medicine-related fields. And many end up in

service fields. One former camp counselor is now a dance therapist. Another one changed her college major to counseling. There is a lot of spiritual growth."

One current counselor, Jeff Derflinger, who lost a leg to cancer, recently graduated from Duke University and has chosen to enter pastoral counseling at a university hospital in North Carolina.

The careers and futures of campers have become the focus of an extensive followup to Camp Fantastic that has evolved in recent years. While kids ages 6 to 18 can go to camp for as long as they are being treated for their illness, youngsters no longer eligible may join YAC—Young Adults with Cancer, also a Special Love Inc. project. Alumni of camp may join YAC or participate in a variety of activities including: ski trips for both kids and families, two parents' weekends each year, a Christmas holiday party, a reunion weekend, and a BRASS (Brothers and Sisters) weekend for siblings of cancer patients.

"A lot of anger can develop in families because of the special attention given to an ill child," explained Winnie Peele, assistant dean of women at the camp. "Every year we hold a counseling weekend for families to deal with issues like fear of losing a sibling or fear of death."

"There's something (related to Camp Fantastic) to do every week," joked Schools.

As a chilly Tuesday night at Camp Fantastic drew to a close, a poignant moment occurred. Visiting camp that day had been a former camper named Tripp Pollard, a brain cancer patient at the Medical College of Virginia whose prognosis is poor. Accompanied by a minister from the college, Pollard ambled

(Continued on Page 9)



Jason Hudson of Connelly Springs, N.C., enjoys his first camp.



Camper Wes Hall studies a painting that he is trying to copy in art class. That night he would set a camp record for hopping on crutches without letting his foot touch the ground—he stayed aloft for 47.2 seconds.



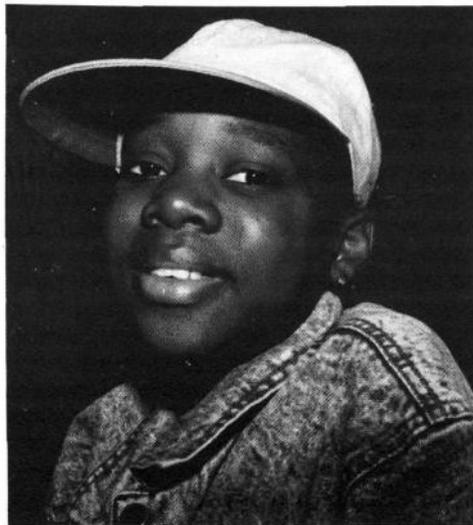
Carmen Allen is all smiles about her fifth year at camp.



Terry Hillery, a third-year man from College Park, Md., found a five-leaf clover prior to canoeing class one morning.



Shannon Milliken practices sulking in a performing arts class. This was her fifth visit to camp.



Akara Forsythe, 11, a first-year camper from Lanham, Md., says playing in the pool is her favorite activity.



Praveen Idiculla, 12, a student at Rockville's Tilden Junior High, says his third Camp Fantastic is "sort of" the best yet.

(Continued from Page 8)

as best he could around the camp on his cane, reacquainting himself with old friends in the glib and witty style that had originally endeared him to staff and kids alike. Before the evening campfire ceremony ended, John Dooley asked all campers to give Pollard the traditional Camp Fantastic salute, a loud "How How." As Pollard accepted hugs from friends, the camp responded with a reverberant roar. It was a sound that would settle on the surrounding hills along with the evening's soft rain and, later, the sound of happy kids dancing to the music of a rock n' roll band. □

"One of the joys is seeing kids get older. There is a lot of spiritual growth."

—Randy Schools



Alexia Fino enjoys performing arts class.



Kerri Rollins (c, holding child) has plenty of company when it comes to showing compassion to a fellow camper.

Dr. Peter Condliffe Retires; Scholars-in-Residence Chief

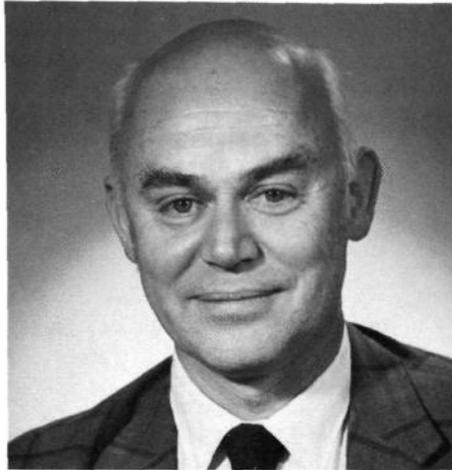
Dr. Peter Condliffe retired on Aug. 3 as chief of the Scholars-in-Residence program of the Fogarty International Center, after a 37-year career with the federal government. He joined NIH in 1954 as a biochemist in the endocrinology section of the former National Institute of Arthritis and Metabolic Diseases. His career blended bench science with science management, both in Bethesda and abroad.

After receiving his Ph.D. in chemistry from the University of California at Berkeley with the late Professor C.H. Li, Condliffe spent a postdoctoral fellowship at Cornell University Medical School with Dr. Vincent du Vigneaud. Following this, he joined NIAMD in 1954.

There, he and Dr. Robert Bates teamed up to purify and study thyroid stimulating hormones. Condliffe was one of the first to achieve homogeneous preparations of TSH and the first to purify human TSH and study its action in man. These preparations became the basis for widely used tests to determine how the thyroid functions.

In 1959-60, Condliffe spent a sabbatical year at the Carlsberg Laboratory in Copenhagen, famous for its work in physical chemistry. From 1966 to 1968, he headed the NIH European Office at the U.S. embassy in Paris.

Condliffe joined the Fogarty International Center when it was established in 1968. He helped develop the Advanced Studies program, and among its first activities was a major conference series on the technological, legislative and ethical issues involving modern genetics in medicine. He returned to the laboratories of NIAMD in 1972. In 1974, he was a visiting



Dr. Peter Condliffe

professor in Japan.

Condliffe undertook a revival of the international fellowship programs of the FIC in 1975. He supervised the international education program to select WHO Medical Fellows, and administered the Scholars Program as well.

In 1980, he was named chief of the Scholars-in-Residence program, a position "where I was able to continue learning about the latest work in active fields of biomedical research from excellent teachers—the scholars," he says.

As for retirement plans, Condliffe will travel and then "get organized at home. Like all retiring scientists," he says, "I'll buy a computer." □

HLA Lab Needs Blood Samples

The Department of Transfusion Medicine HLA Laboratory needs blood samples from healthy men and women to be typed for HLA antigens. The HLA Laboratory uses these samples to screen tissue typing trays that are necessary for patient care.

A small amount of blood (three small tubes) is needed for which the donor would be paid. Blood from all ethnic groups is needed, but the laboratory is particularly interested in obtaining samples from Asian and black persons. This is because the distribution of HLA antigens varies among ethnic groups and the Clinical Center has patients from many different ethnic groups. Donor identity is kept confidential.

If you are interested in donating, please call the HLA Laboratory, 496-8852, between 8 a.m. and 4 p.m. Monday through Friday to schedule an appointment. □

Peer Review Book Available

A new edition of the statistical chartbook "DRG Peer Review Trends" is available for distribution. This issue focuses on the characteristics of members of DRG study sections, institute review groups and NIH advisory councils and boards from 1977 to 1986 (FY87).

It contains a series of charts and accompanying commentary concerning changes in workload, education, age and other demographic characteristics, representation of women and minorities, various institutional aspects of membership, the success of members as NIH grant applicants and other topics.

Copies can be obtained from the Information Systems Branch, DRG, Westwood Bldg., Rm. 157, (301) 496-7401. □

GRC Lab Chief Dies at Age 66

Dr. Bertram Sacktor, chief of the Laboratory of Biological Chemistry at the NIA's Gerontology Research Center in Baltimore for the past 20 years, died of an apparent heart attack July 8 in North Solomon, Me. He was 66 years old.

Sacktor was an acknowledged leader in the field of biochemical endocrinology. His expertise focused on the mechanisms of hormonal regulation of cellular pH and mineral metabolism in the kidney, and alterations of these mechanisms with aging. He was the author or coauthor of more than 200 publications dating back to 1947.

"The scientific community as well as his close personal friends deeply mourn his passing. He will be missed very much by all of us," said Dr. Jeffrey Froehlich, chief of the membrane biology section, part of the laboratory headed by Sacktor.

Born in New York in 1922, Sacktor took his undergraduate training in biology at Cornell University. He earned both a master's degree and doctorate from Rutgers University in 1947 and 1949, respectively.

Prior to his years at the GRC, Sacktor was



Dr. Bertram Sacktor

chief of the Experimental Zoology Branch's Medical Research Laboratory, Department of Defense, at the Edgewood Arsenal in Edgewood, Md. (1949-1967). From 1963 to 1965, he was also a professor of biochemistry at the University of Maryland's University College at the arsenal. He held a concurrent post as a research associate with the Department of Pathobiology at Johns Hopkins University between 1964 and 1973.

Sacktor earned a number of honors during his distinguished career, including a U.S. Army Sustained Superior Service Award and a Senior Executive Service Award from DHHS.

He is survived by his wife June Charlton Sacktor and their sons Dr. Todd Sacktor of New York City and Dr. Ned Sacktor of Philadelphia.



TRAINING TIPS

The NIH Training Center of the Division of Personnel Management offers the following:

<i>Courses and Programs</i>	<i>Dates</i>
<i>Management and Supervisory</i> 496-6371	
Report Writing	9/13
Conducting Effective Meetings	9/22
Working With Personal Differences: Advanced MBTI	9/27
Managing Behavior in the Work Environment	10/26
Working with Personal Differences: MBTI I for Technical & Support	10/12
Working With Personal Differences: MBTI I for GS-12 and above	10/19
 <i>Office Operations Training</i> 496-6211	
Time Management and Organization for Secretaries, Clerks, and Administrative Assistants	10/3
Medical Terminology	10/11

Adult Education 496-6211

Training and Development Services
496-6211

Personal Computer training is available through User Resource Center (URC) self study courses. There is no cost to NIH employees for these hands-on sessions.

The URC hours are:

Monday-Thursday	8:30 a.m.—9:00 p.m.
Friday	8:30 a.m.—4:30 p.m.
Saturday	9:00 a.m.—3:00 p.m.

NOW AVAILABLE ON SHARE TRAINING
FY 88 Training Center courses

Access Wylbur and enter SHARE
TRAINING.

First time users only, enter:
x fr &ags2ugL.@@ share (setup) on file37

Tennis Open Tournament Scheduled

The R&W Tennis Club is sponsoring an open tournament for all NIH personnel, spouses, patients, and associate R&W members. Tennis club membership is not required. The fees are \$2 per person for singles, and \$2 per team for doubles. The deadline for receipt of entry form and fees is Sept. 22. Forms are available at the R&W activities desk, Bldg. 31, Rm. B1W30.

There are several categories of singles and doubles being offered. Copies of the draw and detailed rules will be sent to all entrants. About 5 days will be allowed for each round, with the exact time and place of each match being decided by the players. The semifinals and finals will be played on the weekends of Oct. 29-30 and Nov. 5-6.

For more information, call Dr. Raymond Chen, 496-4073. □



Dr. Charles Coulter has been named director of the newly created Research Facilities Improvement Program (RFIP), a congressionally mandated effort within the Division of Research Resources. The program's mission is to use its nearly \$24 million appropriation to support the repair, renovation, modernization, and expansion of existing AIDS research facilities and to purchase associated equipment. Prior to his recent appointment, Coulter was in DRR's Biomedical Research Technology Program where he managed grants in biophysics and molecular biology, a position he held since leaving the University of Chicago in 1976.



Dr. Boris Tabakoff, director, Division of Intramural Clinical and Biological Research, NIAAA, recently received the 1988 Jellinek Memorial Award given in Oslo, Norway for "major and continuing contributions to our understanding of the neurochemistry of neurotransmitters, receptors, cell membrane response systems and neuropeptide modulators, and their role in alcohol tolerance and dependence." Earlier this summer, Tabakoff won the 1988 Research Society on Alcoholism's Distinguished Research Award at RSA's annual meeting held in Charleston, S.C.

Jean Gilbert Dies; Was Deputy's Secretary

Jean Gilbert, secretary to the NIH deputy director, passed away on Aug. 18. She had worked at NIH and in Bldg. 1 for more than 19 years.

Joining NIH in 1969, she worked in the Office of Program Planning and Evaluation as a part-time employee. In 1971, she joined the Office of Extramural Research and Training as secretary to the training officer. She later became secretary to the special assistant to the associate director, OERT. Still later, she worked for Dr. George J. Galasso, who served as deputy director for OERT and as NIH associate director for extramural affairs.

She became secretary to then NIH deputy director Dr. Thomas E. Malone in February 1985 and most recently for Dr. William Raub, who replaced Malone upon his retirement.

"Jean Gilbert loved the NIH," said Raub. "Whatever the assignment, she worked tirelessly to make that particular job count. Her 'can do' attitude consistently elicited admiration and affection. Those of us who worked with her are richer in spirit because her life touched ours."

Gilbert was the recipient of several quality service increases, a Superior Performance Award, a cash award, and in 1988, the NIH Director's Award.

Contributions may be made in her memory to the NIH Patient Emergency Fund, c/o Social Work Department, Bldg. 10, Rm. 1C144 or to the American Cancer Society, 1825 Connecticut Ave. NW, Suite 315, Washington, DC 20009.

Annual 10-Mile Run Scheduled

The NIH Health's Angels annual 10-mile run will be held Sunday, Sept. 18, at 9:45 a.m. at the Ken-Gar Palisades Park in Kensington. Cosponsored by the D.C. Road Runners Club, the race will award medals to the first three finishers in each of six age groups for men and women. Two shorter races, a 1-mile fun run for children 10 and under and a 2-mile "Run For Your Life" will precede the 10-miler. Registration for the long run is \$2 on the day of the event; the shorter runs are free. □

How a Little Sole Repels the Sharks

By Doris Brody

For more than 100 years, scientists have known that a flat fish living in the Red Sea, called the Moses sole, produces an odd milky substance. In studies conducted in the 1970's, marine biologists were amazed to find that the "milk" made hungry sharks jerk away in mid-lunge, leaving the sole unharmed. Today, we know precisely what component of that milk repels the sharks. National Institute of General Medical Sciences grantee Dr. Leslie M. Loew of the University of Connecticut Health Center in Farmington, Conn., and his colleagues have purified two peptides (substances composed of small amino acid chains), pardaxin I and II, that are the active repellents.

Parachirus marmoratus—the name scientists have given to the Moses sole—looks like an ordinary flounder and is, in fact, quite often eaten. Cooking destroys the poison that the fish secretes from more than 200 glands along its anal and dorsal fins. In addition to repelling sharks, the sole's poison is highly toxic to small fish, sea urchins, starfish and many other species of land and sea creatures.

Loew is especially interested in the Moses sole secretion because it is known to produce pores in membranes. His main research interest is the design of more efficient and faster probes with which to study the physical chemistry of cell membranes. This work may eventually find clinical applications in the study and treatment of neurological diseases. It may also aid the development of techniques to monitor the physiological response of cells—for instance, to monitor heart tissue during surgery—that would not be destructive to the cells themselves.

Loew developed a method for analyzing and detecting pore-forming materials that enabled him to isolate the pardaxins from the crude milk. The new procedure should assist in the often complicated task of purifying other pore-forming substances as well. The purification method employs a combination of separation techniques based on column chromatography. This is a process by which a solution is passed through a matrix, often contained in a glass column. Because of their different molecular weights and other characteristics, the molecules of the various chemicals contained in the solution interact differently with the matrix and move through the column at different rates. This allows a researcher to collect the molecules separately.

What about the newly isolated peptides? Will divers someday carry pardaxin-loaded guns to ward off sharks? Since the chemical would be toxic to humans if it got through

the skin via a cut or sore, it won't make a good skin cream. Will swimmers in shark-infested waters rub it on their wet suits? Because sharks cause a tremendous amount of damage each year to sensitive electronic equipment, could some pardaxin-releasing device protect the equipment and be cost-effective? Further research will help answer these and other questions. The isolation of pardaxins, however, should lead to their synthesis, and production in commercial quantities may follow.

In addition, knowing the precise chemical component responsible for the poison's toxicity will enable scientists to study its effects under well-controlled conditions. Already, researchers have observed that the activity of the pardaxins is similar to that of melittin, the active ingredient in bee venom. Although the amino acid sequences of melittin and pardaxins are completely different, their three-dimensional folded shapes may be similar—hence the similarity of action. Studies of the three-dimensional structure of the two toxins may thus shed light on some important questions regarding the relationship of a protein's amino acid sequence to its final, folded structure. □



Amber, a 4-year-old Clinical Center patient, meets with CFC coordinator Philip Amoruso, NCI director of administrative management (r), John Mahoney, NIH associate director for administration (l), Art Fried, race-walk coordinator for NIH Health's Angels, and Kelly Goka, R&W. This year, patients like Amber can once again be helped through your CFC contributions. Friends of the Clinical Center is just one of the many organizations that will gladly accept your donation. Money given to this organization will help build the Children's Inn, the new residence to be built on the NIH campus so that Amber's parents can stay close by while she undergoes treatment in the Clinical Center.

CFC Kickoff Set for Oct. 4 With Walk/Run, Parade

"Someone is waiting . . . for you to make a difference" is the 1989 theme of the Combined Federal Campaign (CFC). More than 800 voluntary agencies will participate this year, allowing NIH employees to contribute to services provided to millions of people who suffer the ravages of illness and disease here in our community and throughout the world.

The NIH Health's Angels will lead the pack at the Oct. 4 Walk/Run, a 3-mile run and 1-mile walk commencing at 11:30 a.m. in front of Bldg. 1. Organized through a joint effort with the NIH R&W Association and the CFC, the Walk/Run marks the kickoff of the CFC, scheduled to run through Nov. 15. Registration forms for the race will be available at the R&W after Sept. 12. First and second place awards will be presented to winners in four different divisions: male, 39 and under; female, 39 and under; male, 40 and over, and female, 40 and over. The Walk/Run is open to all who run or walk for fun, fitness or competition.

Preceding the Walk/Run will be the CFC kickoff parade. All NIH employees who enjoy celebrities, children, clowns, fire engines and marching bands are invited to participate.

Philip D. Amoruso, director of the Office of Administrative Management, NCI, will serve as NIH's CFC coordinator. Dr. William F. Raub, NIH deputy director, will serve as vice-chairman. BID directors will be providing a message through this year's promotional video, featuring film star Cliff Robertson.

In addition to hotdogs, raffles, promotional prizes and awards for the race, certificates will be presented to all participants. But the CFC donor who pledges a minimum of \$52, or provides a cash contribution, may well be the true winner. A special R&W drawing, to be announced at the close of the campaign, will present the victor with two free round-trip tickets to anywhere in the continental U.S., courtesy of US Air.

The CFC goal for 1989 is \$25 million. NIH's goal is \$542,000. Four dollars provides glaucoma screening for 14 people. Thirty dollars feeds 50 children overseas a daily nutritious lunch for 1 month. Whether by cash contribution or payroll deduction, the combined effort of all of us does more than any one of us can do alone.

Someone is waiting . . . for you. □