

# The NIH Record

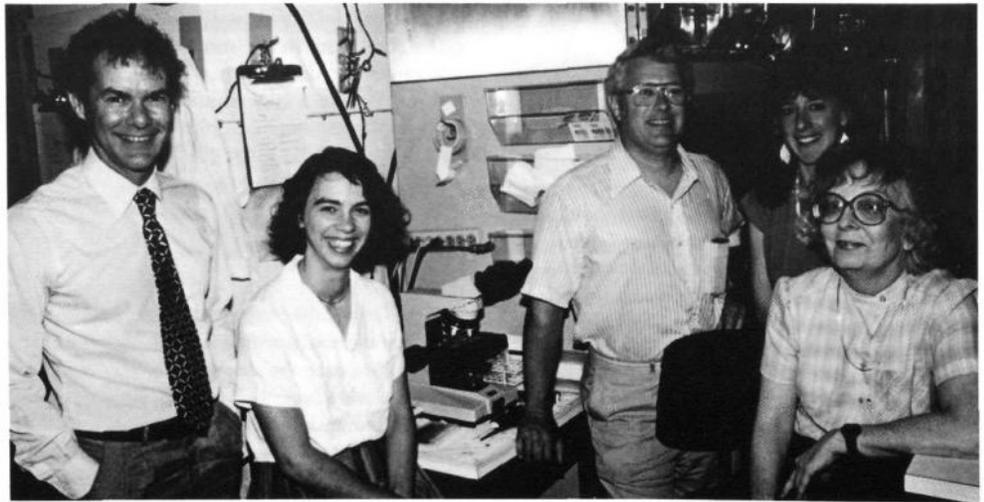
## Implants or Dentures: NIDR Study Examines Patients' Preferences

By Susan Johnson

"Every tooth in a man's head is more valuable to him than a diamond," wrote Cervantes in *Don Quixote*. Apparently many Americans agree, at least if the diamond is worth no more than \$309,300. That is the least amount of money, on average, Americans would take for one of their healthy front teeth, according to a recent survey. Scientists say the actual value of a tooth based on its chemical composition is about 12 cents.

The tremendous value people place on their natural teeth points up the shortcomings of replacement teeth. While removable dentures—worn by an estimated 40 million Americans—go far to restore appearance and function, they are at best a compromise. A study at the National Institute of Dental Research is helping some people replace their

(See **IMPLANTS**, Page 2)



Responsible for merging TIL cells and viruses for use in the first gene transfer experiment in humans are (from l) Dr. Paul Aebersold, Katy Ottaway, Kenny Hines, Susie Johnson and Neal Hyatt.

## Many Hands Make History

## Gene Transfer Ushers in New Era in Medicine

By Rich McManus

When the history of gene transfer therapy in humans is written some decades from now, Neal Hyatt may be able to borrow words originally used by Neil Armstrong, the first man on the moon:

"That's one small step for man, one giant leap for mankind."

Hyatt is one of a small group of highly trained laboratory technicians without whom gene transfer therapy could not be attempted in humans. She happens to work in Dr. Steven A. Rosenberg's Surgery Branch at NCI, a laboratory that, since 1985, has been changing the way medicine attacks cancer.

On Monday, May 22, at approximately 10:47 a.m., the first approved transfer of an experimentally altered gene took place at the Clinical Center as part of a collaborative study headed by Rosenberg and colleagues Dr. R. Michael Blaese of NCI and Dr. W. French Anderson of NHLBI.

The patient was at NIH for treatment of malignant melanoma, a cancer that, while deadly, attracts a specific kind of tumor-killing cell that can be grown in culture.

Some 6 weeks before the historic experiment occurred, Hyatt and her colleagues, led by Dr. Paul Aebersold, began the slow, methodical process of growing cells harvested from pieces of the patient's tumor. Their intention? To use the patient's own immune system weapons—augmented by special proteins called lymphokines—to mount an aggressive new attack on the tumor.

Such selective cell-growing and subsequent supercharging of a patient's immune system is

at the heart of a new kind of medicine called adoptive immunotherapy.

"A whole new era has begun in developing ways to treat cancer," said Rosenberg, who quickly cautions, "we are very much in the infancy of this therapy."

Historically, cancer therapy has followed three traditional treatments to the body—drugs, radiation and the scalpel. Immunotherapy, by contrast, utilizes the patient's own built-in immune system and is, on the face of it, quite rational.

"The three standard modalities are effective in treating about 50 percent of cancers," Rosenberg said. "But the incidence of cancer is so enormous—485,000 Americans died of cancer last year, or more than one a minute—that we are desperately trying new therapies. So far we have established that it is possible to use a patient's immune system to cause tumor regression in some patients."

Why does immunotherapy help some patients but not others? That is the reason for the current protocol, involving 10 patients with cancer that has not responded to any of the traditional therapies.

"There are two aspects to gene therapy," Rosenberg explains. "We can either correct a genetic error or we can confer a new property on a cell." Either outcome can be clinically useful.

Of the experiments that began this spring, Rosenberg said safety and efficacy of the therapy were of paramount importance. Genet-

(See **GENE TRANSFER**, Page 6)

## Director To Hold Farewell Chat

Dr. James B. Wyngaarden, director of NIH since Apr. 29, 1982, will hold an informal conversation with NIH employees on Tuesday, July 25, from 4 to 5 p.m. in Masur Auditorium, Bldg. 10.

All employees are invited to attend and join in a farewell chat with the director. Microphones in the audience will enable attendees to participate.

Wyngaarden will be leaving NIH on July 31.

## NIDR Urges Dental Treatment For Cancer Patients

By Jody Dove

Among the 1 million Americans who are diagnosed with cancer each year, some 400,000 will develop oral complications from their cancer treatments. These painful and debilitating oral side effects, often severe enough to interfere with a patient's treatment and recovery, were the subject of an NIH consensus development conference held recently on "The Oral Complications of Cancer Therapies: Diagnosis, Prevention, and Treatment."

The panel of experts convened by NIH to review current scientific evidence on the subject heard presentations by specialists in oral medicine, oral surgery, oncology, radiotherapy, surgery and pathology, and nursing. In their draft consensus statement, the panel stressed the importance of the entire medical

(See **TREATMENT**, Page 10)

## IMPLANTS

(Continued from Page 1)

conventional dentures with dental implants. The goal is to determine if implants improve the quality of life for denture wearers.

The biggest shortcoming of conventional dentures is their lack of anchorage to the supporting bone. Without a firm stronghold, the dentures can move around and cause sore spots. Bone loss further complicates denture wear. "When natural teeth are lost, the bone that used to support them atrophies, leaving less bone to support and stabilize a denture," said Dr. Albert Guckes, an investigator in the NIDR study.

Dental implants are designed to mimic tooth roots. Made of biocompatible metals or ceramics, they are surgically placed into or over the jawbone to provide permanent support for replacement teeth. Several types of implant systems are available. The type used in the NIDR study, called an endosseous root form implant, was developed by a Swedish orthopedic surgeon. It relies on titanium cylinders embedded in the jawbone to support replacement teeth.

A team headed by Dr. Jaime Brahim, an



*The implant system used in the NIDR study relies on titanium cylinders embedded in the jawbone to support a bridge of replacement teeth. The metal posts are hidden from view by the patient's soft tissues.*

oral and maxillofacial surgeon, and Guckes, a prosthodontist, installs the implants in two phases. First, the gums are surgically retracted to uncover the jawbone, and four to six holes are carefully drilled in the bone. Titanium cylinders are placed in the holes, and the gums are sutured back in place. The implants are left to heal for 3-4 months, allowing time for them to integrate into the surrounding bone. The patient wears a removable denture with a soft lining during the healing period.

The next step is to connect the implants to a bridge or replacement teeth. The dentist cuts openings in the gums over the implanted cylinders to uncover them. He inserts into each cylinder a metal post that protrudes through the gums into the mouth. Following a 2-week healing period, a bridge of replacement teeth is attached to the posts with screws. The fixed bridge can be removed only by a dentist.

The implant-supported bridge does not cause sore spots in the mouth, because it does not move and does not put pressure on gum tissues. Unlike a conventional denture, the implants arrest bone atrophy in the jaw, and may even promote bone growth.

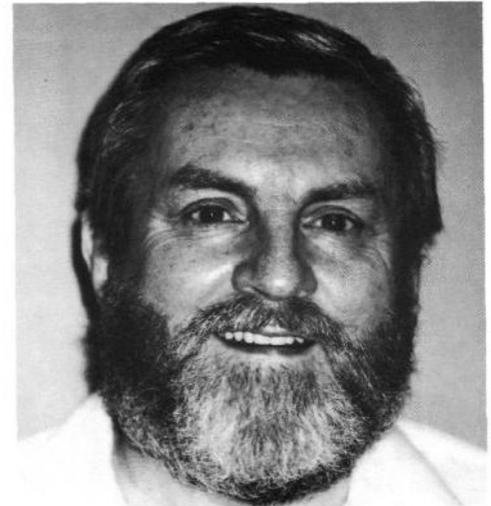
The NIDR team plans to recruit a total of 120 patients. Half will receive implants, and half will serve as a control group, wearing conventional dentures. The implants are placed in the lower jaw only, where most problems with conventional dentures occur.

Researchers will follow up all patients for 5 years to evaluate the implants' effects on diet and nutrition, bone loss in the jaw, oral muscle function and jaw movement, and self-image. They will determine whether patients with implants are more satisfied with their replacement teeth than those with conventional dentures. They also will evaluate personality factors that influence satisfaction with dentures.

"There haven't been many controlled studies looking at the effects of an implant-supported bridge on the patient's general well-being," said Brahim. "That's why we're doing this study. We want to be able to give dentists the information they need to recommend the best treatment for their edentulous (toothless) patients." Brahim pointed out that many patients are satisfied with removable dentures and may not want to undergo the expense and initial discomfort of implants. "It's a decision each patient must make after consulting with his or her dentist," he said.

Marie Lech, former chief of the arthritis nursing service at NIH, was one of the first patients in the NIDR study. "They're wonderful. I wouldn't part with them for anything," she says about the implants placed in her lower jaw almost 2 years ago. Now 72, Lech began wearing dentures when she was in her late twenties. Over time, the pressure of the lower denture had forced her to stop eating many foods. "Now I can eat anything I want," she says. "There's no pain or pressure in my jaw, no matter what I eat."

Not everyone prefers permanent replacement teeth, however. Bill Robbins, another NIDR patient, asked his doctors to make his implant-supported bridge removable again just a month after it was installed. Robbins, 39, found the implant-supported bridge harder to clean than a removable denture, and felt it had changed the appearance of his face. Robbins has ectodermal dysplasia, and never developed any teeth of his own. "I wore dentures from the time I was five and had become very used to them," he said. He decided to try implants because his denture was causing sore spots on his gums and he feared that progressive bone loss would eventually make it hard for him to wear a conventional denture.



*David Morrison entered the NIDR implant study a year ago. He has five implants in his lower jaw and says he is delighted with the results.*

Guckes solved Robbins' problem by making him an overdenture that attaches to the implants in his jaw by means of magnets. The denture does not move around in his mouth, but he can take it out for cleaning. The continued presence of the implant fixtures in his jaw will prevent further bone atrophy. Robbins says he is "very pleased" with the result. □

## The NIH Record

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## Neuroscience Research Provides Clues to Alzheimer's Disease

By Claire McCullough

At a recent 3-day symposium, leaders in neuroscience of aging research presented findings and shared their thoughts about the changes in brain structure and function that occur in normal aging and Alzheimer's disease. The meeting, convened by the NIA Neuroscience and Neuropsychology of Aging Program, was supported by the Sigma Tau Foundation and several drug manufacturers interested in pharmacological treatments for dementia.

The many topics of discussion included changes in cell membranes occurring with age, the role of calcium in cell growth and survival, chemical substances that affect cell-to-cell communication and strategies for recovering lost function.

One of the most interesting and hopeful findings in neuroscience research and the motivation for this meeting is the discovery that some brain cells retain the capacity to grow and change throughout the lifespan, a property known as neuronal plasticity. This ability allows the brain cells to establish new connections and compensate for cells that die during the normal aging process. In Alzheimer's disease, this adaptive capacity appears to be much diminished or lost altogether. A major focus of the meeting was special proteins known as trophic factors and their potential for maintaining or restoring neuronal function.

Drs. Franz Hefti of the University of Southern California and Ira Black of Cornell University reviewed information about known neurotrophic factors. The best known is nerve growth factor (NGF), which is normally produced in the brain. NGF acts directly on the neuron or possibly through the intervention of glial cells, which support neurons and are known to produce their own trophic substances. Some investigators suspect that the glial cell's role is disrupted early in Alzheimer's disease.

Another important aspect of the meeting involved determinants of neuronal cell death. Among these are receptors that regulate the cell's response to various chemical messengers. Scientists speculated how these receptors and their intermediaries (called second and third messengers) function normally, contributing to the processes of learning and memory, and how they may go awry in certain disease states.

An encouraging finding with potential relevance to human disease may have emerged from an insect model. Dr. James Truman from the University of Washington in Seattle explained that in the tobacco ringworm, selected nerve cells die when the worm



*NIA researchers Drs. Zaven Khachaturian (l), associate director of the Neuroscience and Neuropsychology of Aging (NNA) Program, and Creighton Phelps (2nd from l), NNA program official, recently attended a 3-day symposium on neuronal plasticity and its part in Alzheimer's disease. The symposium, sponsored by the Sigma Tau Foundation and other drug manufacturers, gathered scientists from all over the United States including University of Rochester researchers Drs. Paul Coleman (2nd from r) and Gerald Higgins (r).*

matures into an adult moth. However, with supplementation of particular steroid hormones, cell death can not only be delayed but also prevented altogether. As with any neuron, timing of exposure and the balance of such hormones are crucial to the survival of the cell.

Dr. Robert Sapolsky from Stanford University suggests this delicate balance may be disrupted when the cell's energy supply is interrupted. He believes that glucocorticoid stress hormones (GCs) interfere with a cell's ability to use glucose. This could explain why cells die in the hippocampus, an area of the brain responsible for learning and memory. While GCs impair the cell's function by only a small amount, it could be enough to push an otherwise unhealthy cell "over the edge during an energy crisis." This may happen, for instance, when there are excessive amounts of glutamate in the brain. Glutamate, an important neurotransmitter produced in the brain, can be toxic when present in large amounts.

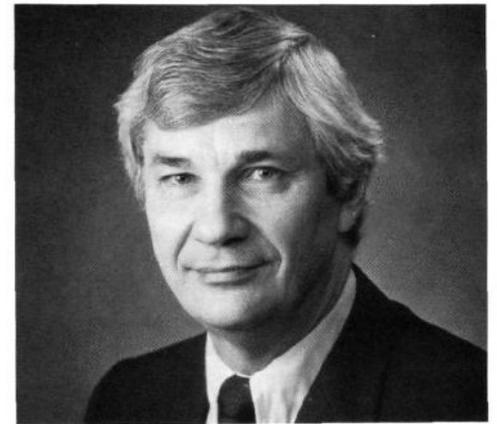
Investigators reported on the most recent findings regarding the gene(s) responsible for the amyloid precursor protein. Amyloid, an abnormal protein found in blood vessels and senile plaques in the brain, has become the target of intense research directed at defining a neuropathological marker for Alzheimer's disease. Researchers do not yet know the function of this precursor protein found in both normal and Alzheimer brains. Drs. Dennis Selkoe of Harvard University and Konrad Beyreuther of the University of Heidelberg discussed the possibility that the amyloid precursor protein may be linked to synaptic turnover (remodeling of cellular elements at the site of nerve

connections) and neuronal plasticity, and may have some growth promoting capabilities.

Recent advances in molecular neurobiology have begun to provide investigators new insights into the genetic basis of Alzheimer's disease. For instance, scientists have identified particular genes in some neurons that are activated by growth factors and that serve to maintain essential levels of neurotransmitters and their receptors in the brain.

Dr. Paul Coleman from the University of Rochester moderated the final panel of the conference. He noted that, while the meeting provided many insights into the complexity of processes involved in learning and memory, additional studies are needed to further knowledge of the structure and function of many proteins critical in brain plasticity, aging and disease.

The meeting was organized and chaired by Dr. Creighton Phelps of NIA and Drs. Paul Coleman and Gerald Higgins of the University of Rochester. □



*Dr. Gerald J. Chader has been appointed director of the intramural research program at NEI. He will be the principal advisor to Dr. Carl Kupfer, NEI director, on all intramural research activities of the institute. Chader was assistant professor in the Howe Laboratory at Massachusetts General Hospital, and tutor in the department of biochemical sciences at Prince House, Harvard College, before he joined NEI in 1971 as a research chemist. He rose to the position of chief, Laboratory of Vision Research in 1982. He is recognized as an international authority in vision research with his main interests in the action of retinoids and their binding proteins and in retinoblastoma cell differentiation. In 1987 he received the Alcon Research Award and in 1988 he received the Jonas S. Friedenwald Award for his outstanding research in visual science.*

## Library Hosts Bond Drive Kickoff

The National Library of Medicine hosted this year's U.S. Savings Bonds kickoff recently in the Lister Hill Center auditorium.

Guest speaker Jack Mahoney, NIH associate director for administration, cited Winston Churchill, who once defined success as "going from disaster to disaster with enthusiasm." Added Mahoney, "putting something away for a rainy day is the enthusiasm insurance we can all use to help us face the day-to-day disasters."

Dr. William Raub, NIH deputy director, likened NLM to NIH's bank. "It is here that the earnings of our researchers are deposited for all to withdraw and redeposit with interest," he said, "and so I find it particularly fitting that we kick off this year's Savings Bonds campaign in the Library of Medicine."



Holding up a dollar bill is Eugene Kinlow, deputy assistant secretary for personnel administration, PHS, who spoke at the U.S. Savings Bonds kickoff on behalf of Secretary Louis Sullivan, DHHS. Referring to the symbols on the dollar that stand for 'a new order of the ages,' Kinlow said, "luckily, the only price we have to pay is to our own account."

Among the larger depositors was Eugene Kinlow, PHS deputy assistant secretary for personnel administration, who appeared on behalf of DHHS Secretary Louis Sullivan. Kinlow spoke of how it always seems we're being asked to do certain things such as giving blood, or donating an organ—things we always seem willing to do—for others. Then Kinlow stressed the hard part: "With bonds, we're asked to do something for ourselves."

Bob Sweeney, federal bond campaign coordinator, said, "Bonds are just a way to save money, mostly for the things that 'aren't supposed to happen.'" Holding up a fistful of bonds, Sweeney said, "I can't give you these bonds, but you can give them to yourself. Say yes to a program that works."

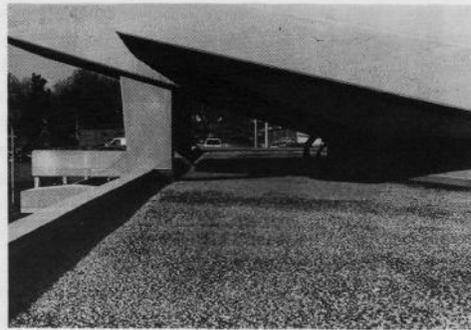
The archival film clip "Uncle Sam Speaks," stole the show with stars of past bond campaigns such as Bing Crosby, John Wayne, Robert Young and even Mr. Ed (a horse, of course) parading through memory.

The ceremony opened with an introduction

by NLM's Ken Carney, coordinator of this season's NIH Bond Drive.

On Tuesday, July 11, a representative from the Social Security Administration will be in the lobby of Bldg. 31A from 10 a.m. to 2 p.m. Those wishing to purchase U.S. Savings Bonds for their children must first obtain a Social Security number for their child. This year's bond campaign runs through July 21. For further information about bonds, contact your area U.S. Savings Bonds coordinator.—

Carol R. Cronin



1



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## Win a \$100 Savings Bond

It's easy! Just name the building area in each picture and find the hidden phrase.

Bldg.	Key	Letter
1		T
2		O
3		S
5		N
10		U
11		D
12		B
14		Y
15K		D
16		O
20		U
31		Y
36		A
38A		B
41		Y
60		B

Hidden Phrase: \_\_\_\_\_

1      2      3      4      5      6      7      8

Name: \_\_\_\_\_

NIH Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

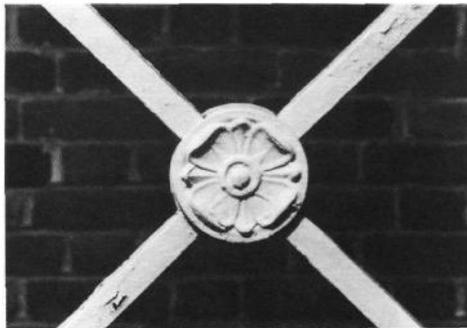
You must be on the NIH payroll to enter the contest. Send your entry to Linda Goodwin, Bldg. 38A, Rm. 128. All entries must be submitted on this page; no photocopies will be accepted. Entries must be received by July 21. One winner will be drawn at random from all correct answers. The winner will receive a \$100 Savings Bond donated by Crestar Bank. The winner will be announced in *The NIH Record*.

To win, you must correctly identify the area/building in each picture and name the hidden phrase. Use the key for the building numbers and the letters.

Many people buy bonds for their children as an excellent investment for higher education and financial security. Interest on Savings Bonds purchased in the child's name is tax deferrable. If you buy a \$100 bond every month for a child age 1 today, by the time the child is 18 these bonds will have a total value of \$34,712.16 at the current minimum interest rate of 6 percent.



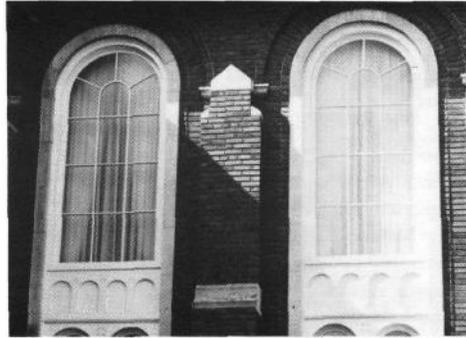
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## Extra Journal Copies Nixed

The NIH Library plans to cancel its subscriptions to second copies of certain journals because a study of usage has shown that one copy should be sufficient to meet needs for these titles.

The library will continue to subscribe to all these journals.

Rapidly rising costs of journals are causing all research libraries to economize on subscriptions. The NIH library advisory committee has approved the proposed cancellations of the following "copy 2" subscriptions.

Additional information is available from Elsie Cerutti, 496-1156.

- Acta Endocrinologica*
- Acta Psychiatrica Scandinavica*
- Advances in Enzyme Regulation*
- Advances in Heterocyclic Chemistry*
- Advances in Lipid Research*
- Advances in Metabolic Disorders*
- Advances in Pediatrics*
- Advances in Pharmacology and Chemotherapy*
- American Journal of Diseases of Children*
- American Journal of Epidemiology*
- American Journal of Obstetrics and Gynecology*
- Archives of Internal Medicine*
- Archives of Pathology and Laboratory Medicine*
- Arthritis and Rheumatism*
- Biochemical Society Transaction*
- Brain*
- British Journal of Haematology*
- British Journal of Psychiatry*
- Circulation*
- Circulation Research*
- Essays in Biochemistry*
- FASEB Journal*
- Genetics*
- International Review of Cytology*
- Journal of Allergy and Clinical Immunology*
- Journal of Applied Physiology*
- Journal of Clinical Pathology*
- Journal of Histochemistry and Cytochemistry*
- Journal of Nervous and Mental Disease*
- Journal of Neuropathology and Experimental Neurology*
- Journal of Neurophysiology*
- Journal of Pathology*
- Journal of Psychiatric Research*
- Journal of the American Chemical Society*
- Journal of Thoracic and Cardiovascular Surgery*
- Journal of Urology*
- Medicine (Baltimore)*
- Metabolism, Clinical and Experimental*
- Molecular and Cellular Biochemistry*
- Nursing Clinics of North America*
- Proceedings of the Society for Experimental Biology and Medicine*
- Progress in Brain Research*
- Progress in Medical Genetics*
- Recent Progress in Hormone Research*
- Research Communications in Chemical Pathology and Pharmacology*
- Results and Problems in Cell Differentiation*
- Surgery*
- Surgical Forum* □

## NIDR Seeks Volunteers

The National Institute of Dental Research is looking for individuals who have cold sores or fever blisters for research studies. For more information, call 496-0309. □

## GENE TRANSFER

(Continued from Page 1)

ically altered cells are being added to these patients' tumor-infiltrating lymphocytes (TILs) to introduce a marker that demonstrates how thoroughly these tumor-fighting cells are distributed throughout the patient's body and how long they survive there.

"The patients in our study have failed all other treatment and have advanced disease," Rosenberg said. "Basically, they were sent home to die. This therapy offers, for the first time, some hope."

Of the many ways to insert genes into human cells, murine retroviruses are the most efficient means—slightly more than 30 percent effective, said Rosenberg. He, along with Anderson and Blaese, is tagging TILs with the deliberately crippled mouse virus as a means of finding how these "magic bullets" find their targets.

"We intend to move very quickly to more effective cancer treatments using gene therapy," he said.

While the current therapy relies on interleukin-2 to multiply the power of a patient's TILs, future experiments will use other agents such as tumor necrosis factor (TNF) and interferon for heightened tumor-killing effectiveness.

No progress will be made, however, without the expertise of the men and women behind the scenes who are growing the cells needed for these therapies.

Dr. Paul Aebersold leads a team of four technicians who work day and night to assure that the first 10 patients to receive an altered gene get the best product possible.

"My job is to keep people from bothering my staff," he joked one recent morning as he and his coworkers prepared cells for the second patient in history to get an altered gene. "I'm the air traffic controller. It's my job to organize the vast number of different cultures in the lab. We have cells from as many as 12 patients under cultivation at any given time."

A more crowded laboratory could scarcely be imagined. Every available inch of space in the room on the second floor of the Clinical Center's B wing is devoted to cell culture. That's not to mention an even bigger "farm" on the sixth floor where continuous flow centrifuges produce grand harvests of cancer-fighting cells.

There are roughly 10 steps that must be completed during the 3-to-6 week period between when a patient has a tumor removed and when the infusion of transduced (genetically altered) TILs takes place. A problem at any stage can bring to a standstill an experiment that has already been called the most rigorously monitored clinical trial in medical

history (see sidebar).

The process begins when a nurse from the operating room walks a freshly resected tumor to Aebersold's lab.

"They range in size from a big marble to softball size," he said, "and are brought down in a sterile container a minute after they are excised from the patient."

Melanoma is the only tumor currently being studied because it is immunogenic and can spontaneously regress (although very rarely), said Aebersold. This means that it elicits production of a very specific tumor-fighting cell in the body, he explained. If scientists can capture a few of these cells and grow large

### Superlatives of Scrutiny and Sharing Mark Experiment

Besides the science itself, the human gene transfer experiments conducted at NIH this summer are notable for at least two other reasons.

First is the degree of scrutiny the experiment received before it could be conducted. Seven different committees spent seven months reviewing the protocol.

"It was the most rigorous scrutiny of any clinical study in history," declared Dr. Steven A. Rosenberg, chief of NCI's Surgery Branch. "The first time you do things, it's important to consider all implications," he allowed. "I think (the review process) has been fair. Any technology has potential for abuse. A precedent has been set, however, for faster clearance of future work in this area."

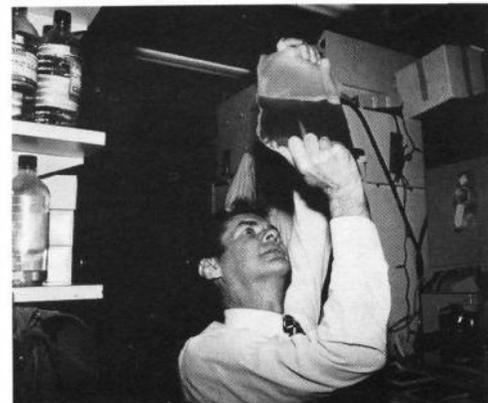
The second remarkable feature is the degree and ease of interinstitute collaboration that has occurred, in this case between NCI and NHLBI.

"More than any other institution I've known, NIH fosters the free and open exchange of information among all people on campus," enthused Rosenberg. "It's an extraordinary example of cooperation—scientific collaboration in its finest form."

batches of them, the cells can be reintroduced to the body where they will presumably do an even better job of killing tumor cells.

Almost no other solid tumor has such fortunate characteristics, Aebersold noted. As an added bonus, melanoma responds to interleukin-2 (IL-2) and lymphokine-activated killer cells (LAKs), a combined therapy that was effective in promoting tumor regression in about one-third of the patients Rosenberg treated in a study several years ago.

Once in the lab, the tumor is "minced into little pieces. Part of it goes to the pathology lab to confirm the diagnosis and to check the



Dr. Paul Aebersold examines a bag of culture media in which lymphocytes are growing. A fast growth rate appears to correlate with a good clinical outcome, he said.

lymphoid infiltrate (how many tumor-killers have reached their target). The rest is placed in enzymes that degrade the extracellular matrix," he said.

The digestion process typically goes on overnight of the day the tumor arrives. The next day, a single-cell suspension containing tumor cells and TILs remains, along with some unwanted cellular refuse. The mix is washed to remove enzymes and debris. Then a lymphocyte separation medium is used to skim off the desired cell populations—tumor cells and lymphocytes.

At this point, "a mixture of tumor cells and lymphocytes is cocultured in a variety of media," said Aebersold, a 2-year NIH veteran



Discussing details of their historic gene transfer experiment, NCI's Surgery Branch, Dr. W. French Anderson, left, and NHLBI, Dr. R. Michael Blaese, deputy chief of the lab who runs the tumor-infiltrating lymphocyte (TIL) lab.



Kenny Hines shows an incubator on the CC's sixth floor where TIL cells are grown in large volume.

who, in his rare spare time, is interested in suppressor cell networks. "That tells us which media perform best for growing cells."

Before starting cultures under different media conditions, the technicians must count the number of tumor cells and lymphocytes—using both machines and their eyes—in each culture. The workers always freeze and save a few vials of tumor suspension so that the ability of TILs to kill those tumor cells can be determined later.

"As the lymphocytes get dense in culture, they go from a few hundred milliliters to 150 liters in a period of 4 or 5 weeks," Aebersold said. Every two or three days the workers count the cells to determine how fast they are



ment are (from l) Dr. Steven A. Rosenberg, chief of chief of the Laboratory of Molecular Hematology, Metabolism Branch, NCI, and Dr. Paul Aebersold, laboratory.

## Safety Testing Turns Hope into Help

While the results of successful adoptive immunotherapy have offered hope to patients who had little, and while the promise of gene therapy may be able now to expand the limits of that hope, both treatments with all their implications and repercussions are subject to the consideration of one small but all-important word—safety.

Safety, or the maintenance and monitoring of it, is not a glamorous topic. It requires strict attention to detailed calculations, constant notekeeping and documentation and careful adherence to stringent standards. But the fact remains that in every lab experiment, biomedical or otherwise, safety is the bottom line.

In the recent gene transfer experiment, the technology was developed in the laboratory of NHLBI's Dr. W. French Anderson, whose colleagues on the 7th floor of the Clinical Center took responsibility for safety testing. Dr. Rick Morgan, a postdoctoral fellow who developed the gene testing technology, summarized the role of his group:

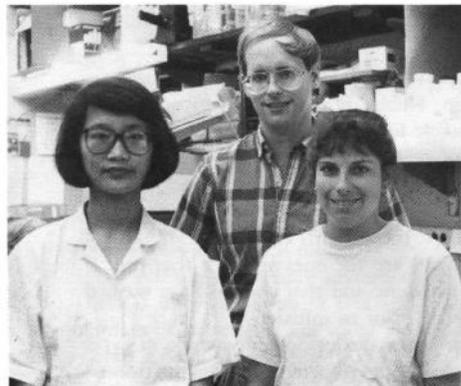
"Basically, we receive samples of the patients' cells, which are now marked for tracing with a specially treated noninfectious mouse virus. We then assay them to make sure there is no sign of replicating virus before the therapy proceeds."

Unlike other workers on the gene therapy experiment, Morgan's group has no direct contact with the patients. The samples from the patient must be handled with just as much care, however.

"We have to be extremely careful," said Nga Nguyen, a 4-year NIH veteran lab technician who works with a number of different assays designed to detect and trace enzyme activity. "There is a lot of bookkeeping to do."

"And sterile technique is a must," adds second year lab tech Ann Stephens, whose work on the experiment marks her first job after college graduation last year. "We've been trying to develop standards (for testing) to use since last summer. We've used a number of different types of cells and different protocols. We've really had to fine tune everything."

To Morgan's group, fine tuning has meant increasing the sensitivity of the test. With the most advanced process developed by Morgan so far, a technician can now detect one marked



NHLB lab technicians Nga Nguyen (l) and Ann Stephens and Dr. Rick Morgan, a postdoctoral fellow, share responsibility for safety testing for the pioneer gene transfer experiment.

cell in the presence of one million unmarked cells.

"We call it the 'one in a million' test," said Morgan, recalling the various and seemingly unending regulatory hurdles that all the testing procedures had to pass in order to gain approval. "They (advisory board and approval committee members) would ask us 'Can you detect the cells at very low levels?' and we'd have to prove to them that we could . . . We started at the level of about one marked cell in ten thousand unmarked, now we're up to one million."

So far, four patients have been treated, but because all samples have been coded and the study is double-blinded, the lab technicians might as well be testing the samples of four normal patients. Perhaps they are a bit more conscious of being a bit more careful but there really is no outward indication that the entire medical community, not to mention many hopeful patients, lay in waiting for these results.

Morgan puts his part of the experiment in perspective: "We're first and foremost concerned about safety, that's the bottom line." He also explained that the same technology used for safety testing will also be used to track the marked cells once they are returned to the patient. "Up to this point we'd lose (the ability to track the treatment) after about 7 days. What we're interested to know is what happens to these treated cells after 7 days."

—Carla Garnett

growing.

"The cells are only healthy within a certain density range," Aebersold said.

Adds Hyatt, "Cells like to have a little freedom. They don't like to be packed in there."

Eventually, one liter of highly concentrated TILs will be gathered from 150 liters of cul-

ture media. The final product is thoroughly washed and characterized so that the researchers know precisely what the patients are getting.

"You don't want to end up putting cancer cells back in a patient," observed Katy Otta-

(Continued on Page 8)

(Continued from Page 7)

way, one of the technicians on Aebersold's staff.

Ottaway, along with technicians Susie Johnson, Kenny Hines and Hyatt are each responsible for every aspect of the growth of patients' cells.

"They're doing the whole kit and caboodle," Aebersold declared. "Their hands put the cells together with the genetically altered virus. They are the ones who see that the assays get done and that the cells are washed and sterile prior to infusion."

Their many duties take advantage of expertise each has developed. Johnson, for instance, specializes in antibody-labeling of cells and helps others on the staff discover what kinds of lymphocytes are being grown. Ottaway, on the other hand, conducts safety tests on transduced cells and determines for everyone on the team how many TIL cells have gotten the new gene.

Hines came to Rosenberg's branch after 14 years in clinical chemistry.

"I wanted to work in a research setting that also included clinical applications," he said.



On the front line of caring for patients receiving TIL therapy are (from l) Dr. Stephen Karp, Claudia Seipp, Dr. Susan Calabro and Dr. Richard Sherry.

"This work is very interesting, but so many things can go wrong along the line—just getting a tumor to work with is no guarantee of success."

Neal Hyatt is the group's tissue culture expert, having worked in the TIL lab since the days when it was the LAK lab.

"It is physically and mentally stressful to work here," she admitted with a weary, though satisfied, smile. In addition to her talent for growing cells, she is also in charge of ordering materials for the lab.

All of the technicians keep detailed records of how well—or poorly—each of their patients' cells are growing. "We are learning slowly the correlation between types of cells and their tumor-killing ability," said Aebersold. "Cultures that take a long time to grow don't tend to work."

Growth rates vary erratically, the team has observed. While a fast growth rate of TILs in



Data managers Allison McMullen (l) and Melissa Corbitt have kept track of almost 800 patients who have undergone TIL therapy in the past 5 years.

vitro gives the scientists hope for a good clinical outcome, nothing is certain until the cells arrive in the patient's body. In general, however, the group has found that if it takes more than 6 weeks to grow the cells, the response is usually poor.

The growing "season" for each patient's cells begins in a 6-well plate incubated at body temperature for several days. Once a colony of TILs starts expanding, the workers put them in large plastic bags of culture media constituting a closed environment in which they can grow.

Incubators the size of industrial refrigerators are filled with bags of slowly growing tumor killers. They look like translucent wineskins filled with strawberry Kool-aid. On closer inspection, they are filled with a clumpy precipitate—the TILs themselves.

Spun down to their most highly concentrated form, the TILs, numbering more than 100 billion, are eventually ready for infusion. Each one is specific to the tumor from which it was originally harvested and each will, it is hoped, seek out any tumor(s) to which it is related.

Nurse Claudia Seipp, who has worked with Rosenberg for 15 years (and for the past 5 years on all eight of the IL-2 trials conducted at NIH so far), says patients can have a tough time tolerating the side effects of interleukin-2.

"Patients have said that they feel like they've been hit by a truck," she said.

Observes Dr. Richard Sherry, a clinical associate on Rosenberg's staff, "It makes them sick. The onset is acute and includes chills, malaise, diarrhea, muscle aches and nausea. They feel like they have a dose of the flu. But it is very transient. By the time they go home they are feeling pretty good. Most could return to their jobs in a week or so. But by protocol design they return to NIH for another treatment cycle."

Attaching gene therapy to TIL therapy has

resulted in a heightened sense of anxiety, the physicians say.

"There is nothing different about treating these patients (who got the altered gene) than others who have received TILs," said Dr. Stephen Karp, "except somewhat more intense levels of attention given to them. We monitor all of our patients very closely, but with any new treatment there is always some additional excitement and expectation.

"The most difficult thing is letting patients understand what the big deal is," Karp added. "It takes a much greater effort for me to get informed consent from these patients because so many difficult concepts must be explained."

Added Seipp, "You have to demystify what's going on and assure the patient of the safety of the procedure."

"None of these patients really care whether they are the first or second or tenth to get gene therapy," Karp continued. "It's much more important to them that they respond to treatment."

All members of the staff, including data managers Allison McMullen and Melissa Corbitt, who in 5 years of TIL trials have kept records on almost 800 patients, agree that the possibilities implied by these historic experiments are "truly endless."

As for the patients themselves, all will be followed closely in the coming months.

"We will continue very careful study of both the patients and cells," said Rosenberg. "X-ray studies and scans will help us determine the extent of the tumor, and we will monitor the function of the heart, kidney, liver and lungs."

Each patient will also undergo tissue biopsy and blood drawing so that investigators can track the marked cells as they move through the body.

Few tracks in the history of medicine will have been as keenly observed.



Enjoying a light moment are technicians (from l) Katy Ottaway, Susie Johnson and Kenny Hines. Their working lives are regulated by how well their patients' cells are growing.

## Moving Feet, Busy People

### CC's Messenger and Escort Service Pleases Patients, Staff

By Anne Barber

On the first floor of the Clinical Center near the staff elevators, people are hustling by, popping in and out of an office that seems to be tucked away in a corner; these busy people work for the messenger and escort services. Their job is to serve both the hospital and clinic sides of Bldg. 10 by delivering medication, blood samples, patient charts, and escorting the patients to and from appointments.

"There are approximately 60 employees and we are here 24 hours a day, 7 days a week," says Diane Jenifer, assistant on-site supervisor for Ebon Research Systems, a contractor that has been providing these services since Sept. 25, 1985.

"We have about 22 employees on the day shift with the remaining working other shifts," she explains. "After the volunteers leave for the day, we pick up the slack and deliver flowers (to patient rooms) also.

"On an average day, we receive approximately 300-400 requests," Jenifer continues, "and we answer them all."

One of their messengers, Julio Zavaleta, has received words of praise and letters of appreciation from his employers as well as from the deputy director of the Clinical Center, Dr. Saul Rosen, and the nursing staff whom he serves.

"Many nurses tell me they are very happy to see my work well done and how interested I am in doing my job. Also, how nice I am to everyone even though I am sad with sympathy for the patients," Zavaleta says.

"Julio is pleasant, enthusiastic, willing, courteous and very eager to do his job in a timely and pleasant manner," says Jenifer. "He is one of the best."

Zavaleta, a native of Bolivia, South America, came to Washington, D.C., almost 8 years ago to live with one of his daughters attending school. His wife and three other daughters still live in Bolivia.

"We still have children in school there as well as properties," he says. Eventually, his wife and other daughters will join him in the United States.

Zavaleta has not been back to his country since coming here, but his wife has visited. His plans, however, do include a trip back in the near future.

In his native country, Zavaleta worked in engineering and construction, and studied at an American institute.

"I worked with American people, so I had the opportunity to speak English in my country," he says.

Zavaleta joined NIH in January 1988.



Julio Zavaleta (second from l) along with members of his team (l to r): Connie Farrell, Lorraine Gilpin, team supervisor Pamela Brown, Danielle Johnson and Christina Edmunds.

Before that, he provided care to handicapped patients and others who required home care or assistance. Although Zavaleta misses his friends in South America, he is trying to make friends here.

"NIH is a nice place to work. I make friends with patients, personnel and I try to help as much as possible with my job."

Zavaleta, 65 years old, feels this job is very good for him: "Walking is good for my health."

He enjoys strolling the grounds of NIH, viewing the art displayed on the Clinical Center walls and attending music presentations arranged for the patients.

"These are really nice things to do for the patients and yet I can enjoy them too."

Zavaleta loves his job because it helps him avoid wasting time. "With any job, messenger or whatever," he says, "I like to do it well. I enjoy this and I am happy to do this."

Zavaleta also makes other people happy by doing his job well.

In fact, recently he received a letter of appreciation from the nurses on 2J, a surgical intensive care unit, stating: "He is always conscientious in transporting patients and specimens in an efficient manner. Not only is he well-known for doing an excellent job whatever the mission, but also because he works to make the job run smoothly. He is a pleasure to work with. We are very pleased to work with someone who is always smiling and always eager to assist."

Working along with Zavaleta are other members of the team: Danielle Johnson, x-ray escort; Christina Edmunds, admission charts and medical records; Connie Farrell, patient escort; and Lorraine Gilpin, blood bank messenger.

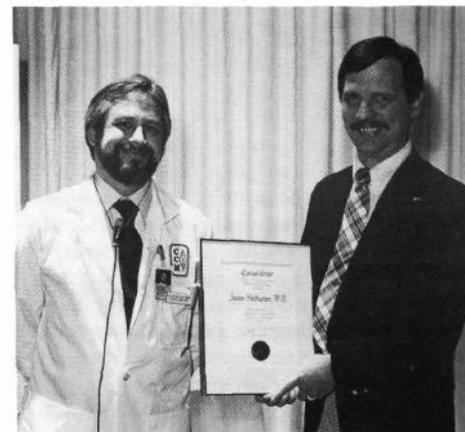
Pamela Brown, shift supervisor for the team, says, "The whole team is outstanding, quick, neat, very polite and generous and a pleasure to work with." □

### Computer Expo Scheduled, July 13

NIH's Computer Expo '89 will be held on Thursday, July 13, in Wilson Hall (Bldg. 1, 3rd fl.). The 1-day showing of advanced office automation and graphics will begin at 9:30 a.m. and run until 2:30 p.m.

Vendors from all over the East Coast will be demonstrating the latest in desktop publishing, chemical data bases, presentation/reporting graphics, printers, LAN, software applications and much more.

All NIH personnel are invited to attend. There is no registration or cost and refreshments will be served. For more information, contact Linda Alger, 496-1004. □



Dr. James Shelbamer (r), senior investigator with the Clinical Center's critical care medicine department, was honored recently as Clinical Educator of the Year. He was cited "in recognition of excellence in teaching clinical medicine." Dr. Anthony Sufredini, also a senior investigator in critical care medicine, presented the award at a recent Clinical Center Grand Rounds.

### Mosimann Receives Award from AU

Dr. James E. Mosimann, chief, Laboratory of Statistical and Mathematical Methodology, DCRT, recently received the University Faculty Award for outstanding teaching in adjunct appointment from American University. The award praised Mosimann for his availability to students and his ability to communicate in his 10 years of teaching.

Mosimann is known worldwide for his contributions in the field of statistical methodology; more than 50 of his research articles are in print. Several of his research developments, which have been significant applications of statistical techniques to physical problems, are widely cited in statistics texts. □

## TREATMENT

(Continued from Page 1)

team being aware of the need for cancer patients to receive oral care prior to beginning cancer therapy and aggressive management of oral complications that develop during cancer treatment. The panel further stated that many of the devastating dental and oral complications caused by cancer therapies could be prevented or minimized if dental care is initiated early enough.

"In the main, oncologists often do not seek appropriate levels of consultation and advice from dental peers about how to prevent and manage oral complications," said panel chairman Dr. James J. Sciubba, chairman of the department of dentistry at Long Island Jewish Medical Center in New York.

### Acute Problems

All cancer therapies—including radiation, chemotherapy, surgery and bone marrow transplantation—can prove hazardous to oral tissues. Among the acute oral complications that can arise during treatment are mucosal inflammation, ulceration, oral candidiasis, viral and bacterial infections, dental or periodontal infections, xerostomia (dry mouth) and bleeding. These complications are painful, difficult to treat and may diminish the quality of life for patients. Oral side effects may become so severe as to cause significant compliance problems and discourage patients from continuing treatment. They may be life threatening and lead to fatal systemic infection.

Citing the oral complications resulting from radiation therapy for head and neck cancer—including mucosal inflammation, ulceration and loss of salivary gland function—panel member Dr. R. L. Scotte Doggett, medical director of the radiation oncology center at the University of California at Davis, stated, "It's important for radiation oncologists to know that they have to work more closely with dentists in managing cancers of the head and neck. And this must be done prior to beginning therapy."

Many of the oral complications occur because cancer therapies have become more potent and aggressive. Most chemotherapy agents, for example, are capable of damaging normal tissues in addition to malignant cells, resulting in mucositis, local and systemic infections and hemorrhages. Cancer patients with neutropenia and compromised immune systems are at particular risk for oral problems. Herpes simplex virus is the most common viral pathogen found in patients receiving myelosuppressive chemotherapy or bone marrow transplants. When immunosuppression occurs, the latent virus often

reactivates, leading to severe infections. Moreover, the resulting ulcerations can serve as portals of entry for bacterial and fungal infections, posing additional hazards for the patient.

Other types of oral mucosal lesions found in cancer patients are commonly caused by candidiasis, a fungal infection. Candida organisms may further infect other sites in the gastrointestinal tract, causing esophagitis or diarrhea.

### Chronic Problems

For some patients, oral side effects do not cease when their cancer therapies stop. Xerostomia is an example of just one of the chronic oral problems that can persist years after patients receive radiation therapy for head and neck cancers. Total body irradiation, and especially local radiation to oral structures, may irreversibly affect the production of saliva by both major and minor salivary glands. Xerostomia can affect speech, taste, nutrition and the patient's ability to tolerate dentures or other oral prostheses. Decreased saliva production also can lead to rampant dental caries. An increase in the frequency of candidiasis and in the severity of gingival and periodontal infections has also been observed in some patients with xerostomia.

Osteoradionecrosis, while relatively uncommon, can result from the cytotoxic effects of radiation on bone-forming cells and tissue. This condition is associated with hypoxia of the affected bone. When bone is injured, it is unable to heal and becomes susceptible to secondary infection. The process can lead to pathologic fracture, infection of the surrounding soft tissues and oral-cutaneous fistula formation, characterized by severe, constant pain. The risk of developing osteoradionecrosis is lifelong, and the injury that usually initiates it is the extraction of a tooth from an irradiated mandible.

### Special Pediatric Problems

Pediatric oncology patients experience oral problems similar to those observed in adults. Some reports indicate that these problems may even occur more frequently in children. As modern therapies result in improved survival rates for children with cancer, long-term sequelae are beginning to emerge. The nature and severity of these problems depend on a number of factors, including: the type and location of the tumor; the age of the patient; the dose of radiation; the aggressiveness of chemotherapy; the status of oral and dental health; and the level of dental care before, during and after therapy.

Pediatric oncology patients may suffer from extensive dental and developmental abnormalities resulting from cancer treatments. These include: impaired growth and develop-

ment of hard and soft tissues, leading to orofacial asymmetry; xerostomia; dental caries; trismus (spasms of the jaw muscle); and a variety of dental abnormalities, including failure of teeth to develop and erupt. They may have lifelong dental problems requiring periodontic, orthodontic, prosthodontic or orthognathic procedures. In addition, the potential for secondary malignancies to arise in these children is a serious delayed consequence of successful cancer therapy. The panel stressed that the emotional and psychological consequences of orofacial deformities and oral dysfunction in these children deserve more attention as increasing numbers of children survive.

### Lack of Third-Party Reimbursement

The panel acknowledged that insurance coverage is often inadequate or nonexistent for dental care needed prior to, during and after cancer therapy. "We know it is a very real problem because third-party payers view the pretreatment examination and subsequent management of oral complications as dental problems, not as problems linked to the underlying medical problem (cancer)," said Sciubba. "Patients undergoing initial dental evaluations often are not reimbursed."

### Recommendations

The panel issued the following recommendations to prevent or minimize oral complications:

- A multidisciplinary approach should be used to prevent and minimize oral complications in cancer patients. Members of the treatment team need to coordinate their efforts. The team also should provide education and information to the patient and family and ensure that patients are aware of the potential oral side effects of cancer therapies.
- Before cancer treatment is initiated, a comprehensive dental evaluation should be conducted. Ideally, all dental procedures, particularly dental extractions, should be completed at least 14 days prior to beginning cancer therapy.
- Precise diagnosis of mucosal lesions and specific treatment of fungal, viral and bacterial infections are essential.
- The use of acyclovir should be encouraged in bone marrow transplant patients and others whose immune systems are significantly suppressed, to prevent the reactivation of the herpes simplex virus.
- Mucosal ulcerations should alert the cancer team to the risk of systemic infection.
- Treatment for xerostomia should include fluorides, attention to oral hygiene and sialogogues.
- The use of topically applied fluorides and chlorhexidine should be encouraged to prevent and control dental caries and plaque.

(Continued on Page 11)

## 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 496-6371</i> Practical Approaches to Stress	7/18
<i>Office Operations Training 496-6211</i> Introduction to Working at NIH for New Support Staff	7/17
Reducing Stress: Rebuilding Energy	7/12
Delegated Acquisition	7/24
Travel Orders & Vouchers	7/24

### *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	8:30 a.m.-4:30 p.m.
Tues. Wed. Thurs.	8:30 a.m.-7:00 p.m.
Friday	8:30 a.m.-4:30 p.m.
Saturday	9:00 a.m.-1:00 p.m.

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### **(Continued from Page 10)**

- Awareness of the potential problem of osteoradionecrosis is essential as the incidence can be minimized. When present, it is best managed with hyperbaric oxygen alone or with surgery.

- In the pediatric population, the long-term consequences of radiation therapy should be recognized. These may include dental and developmental abnormalities and secondary malignancies.

- Studies of oral complications should be incorporated into ongoing cooperative group protocols. The incidence and prevalence of oral complications related to different types of anti-cancer therapies and related risk factors should be determined.

- Accurate, quantifiable and reproducible criteria for assessing and classifying oral complications of cancer therapy should be devised.

- Appropriate curricula in medical, dental, nursing and dental hygiene programs should be developed to address the problems of the oral complications of cancer therapies and heighten awareness of the significance of these complications.

The conference was sponsored by NIDR, NCI, the NIH Office of Medical Applications of Research, the Clinical Center and the Food and Drug Administration.

Copies of the consensus statement may be obtained by writing to the NIDR public inquiries and reports section, Office of Planning, Evaluation and Communications,



*Wilma A. Kline, a grants clerk in the NIGMS Biophysics and Physiological Sciences Program, retired recently after 27 years of government service, 11 of which were with NIGMS and 7 with NCI. Kline particularly enjoyed her interactions with students applying to the NIGMS Medical Scientist Training Program. She was active in the R&W, having served as a member of the board of directors. In retirement, Kline plans to travel and do volunteer work at NIH with her husband, Joe.*

NIDR, NIH, Bldg. 31, Rm. 2C35, 9000 Rockville Pike, Bethesda, MD 20892. Proceedings from the conference will be published later this year as a monograph of the National Cancer Institute. □

## Stipends Available to Guest Workers

FAES is administering special funds known as Wellcome Stipends to augment the stipends of postdoctoral level guest workers at NIH. Depending on the total funds that are available and the number of eligible applicants, a maximum of \$3,600/year (\$300/month) may be granted to each approved individual as an income supplement to a maximum total family income of \$15,000/year plus \$1,000 for each dependent including spouse.

The selection committee will consider the scientific merit of the research to be conducted as well as need and professional qualifications of the applicant.

Awards will be made twice a year, Mar. 31 and Sept. 30 for the 12-month periods beginning Apr. 1 and Oct. 1, respectively. Applications for 1989 must be received in the FAES office on or before Feb. 25 for the March awards or Aug. 25 for the September awards. Applications are being accepted now for the awards to be made on Sept. 30.

Additional application forms are available at the FAES business office, Bldg. 10, Rm. B1C18 or by calling 496-7976. □

## Healthy Women Needed

Healthy women ages 23 to 45 are needed for a study of brain activity at NIMH. Study involves a PET scan. Must be a high school graduate with no more than 4 years of college education and available for 2 full days. No history of psychiatric illness. Volunteers will be compensated. Call David, 496-7962. □



*Six Lawton Chiles Fellows in Biotechnology join NIGMS director Dr. Ruth L. Kirschstein (seated, c) and former deputy director Dr. Luther Williams (standing, r), at a recent ceremony honoring the fellows. The new postdoctoral training program, designed to help scientists prepare for research careers in biotechnology, is named for Lawton Chiles, the former senator from Florida who was instrumental in establishing the program. With a 1989 budget of \$2.8 million, the biotechnology research training program will provide support for 29 postdoctoral fellows as well as for 101 predoctoral students in its first year.*

## Addresses NIH Alumni

### Weicker Urges Public Support for More Research

By Harriet Greenwald

Former Sen. Lowell P. Weicker, Jr., spoke at the spring meeting of the NIH Alumni Association Washington chapter held recently at the Cloister. Now president and chief executive officer of the newly established Research!America, he told the group that "it is terribly important that this concept of an alumni association take hold, and it is terribly important that it succeed.

"Supporting science and health in Congress has not been a very rewarding experience," he said, because a member of Congress can "cut with impunity" the science and technology budget. "That tells you how important the NIHAA is. Unless you speak up, nothing will be done. Nobody is viewing any of the health issues from the prism of scientific research."

Citing a recent Louis Harris poll, Weicker noted a drop in public support for biomedical research—only about 46 percent now compared with 60 percent a decade ago. "You know where I think you should tell the story of NIH? Between the fourth and fifth innings of the World Series, not on public television. Maybe the story of NIH should be told in the *Weekly Reader* to encourage some of our kids to go into science."

Weicker talked about some of the common goals shared by NIHAA and Research!America, which was founded on the premise that the American people, when educated about the basic values of science and medicine, will protect and advance the goals of medical research.

"Isn't it of some concern to you right now, as we talk about the rising cost of health care, that no one is talking research?" he asked. "Doesn't it bother you that, for the first time, we are going to talk about how to ration health care in this country?" One of the purposes of Research!America is to make sure "the NIH budget doesn't get eaten; that we have adequate education budgets."

Weicker concluded, "The case for biomedical research has to be taken to the people. The truth as to science and health desperately needs to be told, and if told, I have no doubt that the American people will do what has to be done. You have to go ahead and make your case for the best that is this nation."

Earlier in the program, Dr. Abner Norkins, director of NIDR's intramural program and chairman of the NIHAA organizing committee, described the alumni association's progress. A Washington chapter has been established with an office and a director, a wider national and international membership drive has been initiated with success, local



Sen. Lowell P. Weicker Jr. (c) greets guests, including NIDR's Dr. Abner L. Norkins (l) and Dr. Lois Salzman (r), at the NIH Alumni Association's recent gathering at the Cloister.

chapters will be set up throughout the United States and in foreign countries, and, finally, plans for an Alumni House at or near NIH will be considered.

The goal of NIHAA is to promote the best interests of NIH in its role as the leading biomedical research institution in the world. It is founded on the belief that there is a continuum of service to biomedical science that can be enhanced by an association of individuals who have conducted, supported and administered research at NIH.

Membership in NIHAA is open to both past as well as present NIH employees for \$25 per year, or \$250 for life membership. For further information call 530-0567. □

### EEO Awards Presented

In addition to the NIH Director's Awards and the Outstanding Service Medals presented at the NIH Honor Awards Ceremony on June 21, NIH director Dr. James Wyngaarden also recognized the following recipients of two awards in the Equal Employment Opportunity category.

Dr. Eugene Streicher, director of the Division of Fundamental Neurosciences, NINDS, received the NIH Equal Employment Opportunity Award of the Year. He was recognized for his leadership and outstanding contributions and support of the concepts and practices of equal employment opportunity and affirmative action.

Elizabeth S. Hamby, librarian, Operation Branch, Rocky Mountain Laboratory, NIAID, received the Harvey J. Bullock, Jr. Award for Equal Opportunity Achievement. She was recognized for her contributions to the advancement of the principles and practices of equal employment opportunity and affirmative action. □

### New Rules Govern NIH Photography

Effective immediately, the photography section of the Medical Arts and Photography Branch, DRS, will begin using the Service and Supply Fund Activity System (SSFAS) to handle requests for services. For a 60-day period, work may be requested from the section either through SSFAS or the old system. Use of the new system is slated to become obligatory Sept. 4.

SSFAS, which is accessed through the NIH-wide Delpro system, will ultimately be used for all products and services provided to the NIH community through the Service and Supply Fund (fee for service) organizations.

The media section and the Telecommunications Branch in the Office of Research Services, OD, already use SSFAS.

In the new system, customers will obtain an SSFAS number from their administrative office before taking a job to the photography section. SSFAS numbers may be issued either for an individual job or as a standard number that may be used continually throughout the fiscal year.

After obtaining the SSFAS number, customers will take their work to the photography reception desk just as they have in the past.

All users of photography services are asked to begin using the SSFAS numbers now in preparation for obligatory use planned to begin Sept. 4. Just remember, if you want to take a photo, you've got to take a number. □

### IOM Elects Two NIH'ers

The Institute of Medicine recently increased its roster to more than 800 members with the election of 40 new active members including two NIH'ers, Dr. Robert C. Gallo, chief of NCI's Laboratory of Tumor Cell Biology and Dr. Ada Sue Hinshaw, director of the National Center for Nursing Research. Also elected were 5 new senior members including U.S. surgeon general Dr. C. Everett Koop and 5 foreign associates, bringing IOM's total membership to 828. □

### Bowling Teams Wanted for Fall League

Bowling teams are wanted for a Wednesday night mixed league at Bethesda Navy Bowling Center. League play begins in September. For more information, call Dan Zenor, 649-5429. □