

"Still The Second Best Thing About Payday"

# The NIH Record

## Postal Career Postponed

### Julius Axelrod: Portrait of a Late Bloomer

By Rich McManus

Forty-one years ago, a man who would later go on to win a Nobel Prize arrived at NIH with relatively slim prospects for achieving distinction.

Back then, lacking a Ph.D., he was a long-shot candidate for success. Today, he concedes resignedly, a man like him wouldn't have a prayer at NIH.

"There are no opportunities in science for a late bloomer now," says Dr. Julius Axelrod, a guest researcher at NIMH's Laboratory of Cell Biology and winner of the 1970 Nobel Prize in physiology or medicine.

"There are a lot of people who mature slowly, and they just don't have a chance," he observed. "You have to have a fast start today—the best schools, the best grades, the best fellowships—or you won't get into the system. I was a good but not outstanding student. Opportunities came and I just made the right choices."

Axelrod was 33 when he began his research career and 43 before he earned a Ph.D. "Many (scientists) are over the hill by then," he laughs. Though he retired in 1984, he still works virtually every day, and has published some 35 papers since "retiring."

"People think I'm a sort of oddity," he admits. "I've had a very unconventional scien-



Dr. Julius Axelrod has, in 41 years at NIH, seen various institutes rise, pioneered in the chemistry of the nervous system and in drug studies, trained scientists, won the Nobel Prize, and, lately, immersed himself in signal transduction research.

tific career. I wouldn't recommend it."

Born in New York City 78 years ago, Axelrod remembers having been a voracious reader as a child. "I read a lot—I was intellectually interested in everything, and eager to learn."

(See AXELROD, Page 6)

## Inflammation Is Key Factor

### NHLBI Releases New Asthma Guidelines

The National Heart, Lung, and Blood Institute has released comprehensive new guidelines on the diagnosis and management of asthma, a chronic lung disease affecting more than 10 million Americans.

NHLBI's report was issued at a Feb. 5 press conference at the Bethesda Marriott Hotel, after the coordinating committee of NHLBI's National Asthma Education Program (NAEP) voted to approve the new guidelines.

"This report is very significant, even historic, in that it represents the perspectives of allergists, pulmonologists, nurses, and behavioral scientists. I believe it will have a profound impact on the way asthma is treated in this country," said NHLBI director Dr. Claude Lenfant at the news briefing.

The report was written by a panel of experts convened by the National Asthma Education Program. NAEP's coordinating committee represents 29 major United States scientific, professional, governmental, and voluntary organizations concerned about asthma.

Based on the latest scientific findings on asthma and its causes, the report emphasizes that inflammation of the airways is the key factor in the disease.

"We now know that inflammation is the predominant feature of asthma," Dr. Albert L. Sheffer told reporters at the press briefing.

(See ASTHMA, Page 4)

## Animal House

### Disease-Free Animal Facility Construction Completed

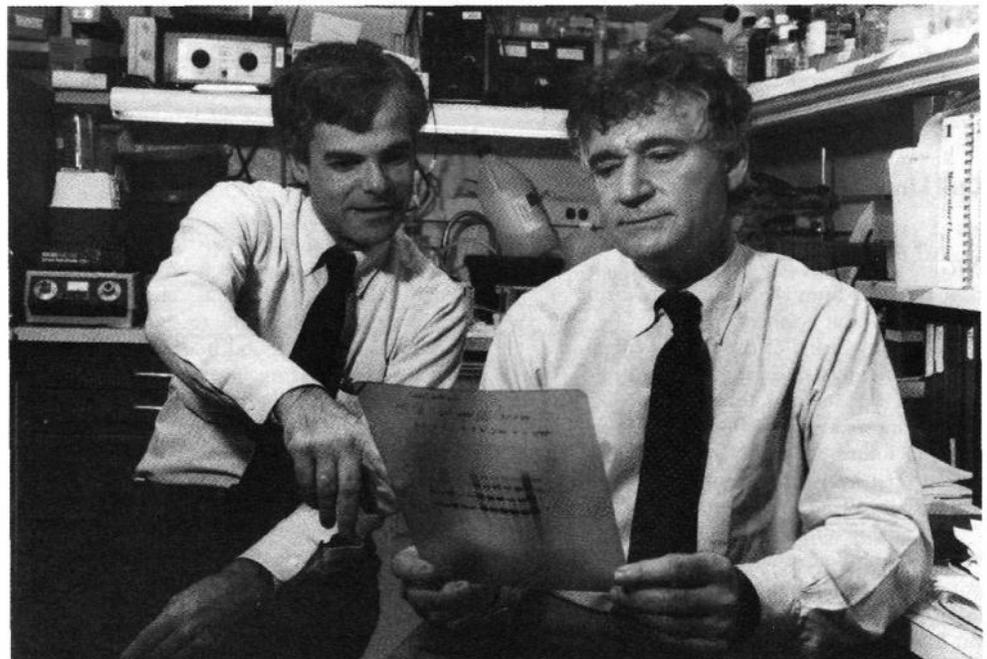
By Anne Blank

Bldg. 6B, the first disease-free animal facility on the NIH campus, opened its doors to the human public last December—animal occupants inhabited the building in January.

"This is not just a facility for the superb care of animals, but a place where scientists will continually discuss what the right thing to do is in terms of using animals for research," said Dr. Arthur Levine, scientific director for NICHD, which is the new facility's lead institute. Levine spoke at the building's open house.

Four other institutes share the facility with NICHD, including NEI, NIAID, NIDDK and NIAMS. Representatives from these five institutes have formed a users' committee that is responsible for establishing policy and procedure for the facility. "Over the years that it's been developed, the users' committee has become a close-knit, cohesive force that is

(See BLDG. 6B, Page 10)



NCI researchers Drs. Michael Gottesman (l) and Ira Pastan produced in 1989 a new line of genetically engineered mice that scientists say could help combat some chemotherapy-resistant cancers. (Story, p.9)

## NIH'ers Give Record Amount to Combined Federal Campaign

Employees at NIH are outdoing themselves once again as the Combined Federal Campaign (CFC) has garnered more than \$700,000, or about \$35,000 more than was given during last year's record-setting campaign. These results were reported by Ken Carney, executive officer at the National Library of Medicine, who is coordinating the drive.

More than 6,400 employees participated in the 1990 campaign, which received much help from consultant Jack Patterson, and from the many deputy coordinators and keyworkers in each ICD.

Those who contributed via payroll deduction to the CFC were automatically enrolled in a raffle, the drawing for which was held recently. Winning a television set and video cassette recorder donated by the NIH Federal Credit Union was Paul W. Sparacino of the Division of Security Operations, ORS. He happens to be a volunteer at one of the agencies that receives CFC money—SOME (So Others Might Eat). Sparacino spent the summer of 1988 helping SOME distribute food to the poor and homeless, and returns occasionally to volunteer his services.

USAir donated two free roundtrip airfares to anywhere in the continental United States to lucky winners from the ranks of the CFC contributors and the CFC keyworkers. The winning contributor was DRG's Caroline Grabner; Julia Lobotsky of NICHD was the fortunate keyworker.

Winning a 35 mm camera donated by Geico Insurance Co. was Mary Jean Frye of NIA.

An award ceremony for those who contributed to NIH's most successful CFC campaign yet will be held from 9 a.m. to noon Mar. 4 in Wilson Hall. □

### Cell Line Catalog Available

The 1990/1991 *Catalog of Cell Lines: NIGMS Human Genetic Mutant Cell Repository* is now available from the National Institute of General Medical Sciences.

The 15th edition of the catalog contains 358 new listings, bringing the total to 4,767 cell lines. For the first time, the catalog lists DNA samples available from selected cell lines, including a panel of rodent-human somatic cell hybrid lines, which are used by scientists involved in gene mapping.

The catalog also contains an updated map of human chromosomal aberrations, which provides an important tool for scientists working to fill in the many gaps that now exist in our knowledge about the human genome.

The repository, supported by a contract from NIGMS to the Coriell Institute for Medical Research in Camden, N.J., establishes,



*Paul W. Sparacino accepts a certificate of ownership for the TV/VCR donated to the CFC raffle by the NIH Federal Credit Union, whose chief executive officer, Lindsay Alexander, looked on at a recent ceremony attended by (from l) Jim Sweat, director, Division of Security Operations; Ken Carney, NLM executive officer and coordinator of this year's CFC campaign; Chief Tom Brightwell of the NIH Police; and Jack Maboney, NIH associate director for administration.*



*On hand for the CFC raffle drawing, held recently in Bldg. 10, were (from l) Carl Fretts, acting NIH associate director for administration, Ken Carney, NLM executive officer and coordinator for NIH's CFC drive, and Kelly Goka, director of recreation and member services at R&W.*

characterizes, and stores cell lines from people with genetic disorders and from apparently normal individuals for use as controls. Cultures from cell lines in the repository, along with detailed background information, are provided to requesting investigators at modest charge. By using cells from the repository collection, scientists can study rare genetic disorders in their own research settings without having to locate a cell donor.

Since its inception in 1972, the repository has processed more than 10,000 submitted cell cultures, tissue biopsies, and peripheral blood specimens and provided more than 50,000 cell cultures to investigators.

Single copies of the catalog are available from the NIGMS Office of Research Reports, Bldg. 31, Rm. 4A52, 496-7301. □

### New Commuter Service

Riders are wanted to join a newly formed commuter service from Frederick, Md., to NIH to Westwood and return. For further information call Lynn, (301) 540-9193. □

## The NIH Record

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## Study Finds Urinary Incontinence Can Be Treated

Urinary incontinence in women is often dismissed as a condition of "old age." But dramatic results of a study supported by the National Institute on Aging and the National Center for Nursing Research show that urinary incontinence can be treated effectively. A 6-week program of bladder training reduced the number of incontinent episodes among older women studied by 57 percent without surgery or drugs. A significant number of patients were cured fully by the end of the program.

At a press conference on Capitol Hill earlier this month, Dr. J. Andrew Fantl, department of obstetrics and gynecology, Medical College of Virginia Hospitals (MCVH)/Virginia Commonwealth University, discussed the results of the study, published in the Feb. 6 issue of the *Journal of the American Medical Association*. Dr. Stanley Slater, program director, Geriatric Research and Training, NIA, Dr. Kathleen A. McCormick, nursing research director, NIA, and Daniel Perry, executive director, Alliance for Aging Research, joined Fantl at the briefing. They stressed that the good news about noninvasive techniques for treating urinary incontinence will keep additional millions of older people functionally independent. The experts also noted that the positive findings should help foster a public dialogue on an issue that people are often too embarrassed to talk about with their doctor or close family and friends.

"Educating the public about the kinds of treatments that are available—indeed that treatment is available—is an important function of the NIA," Slater said. "Urinary incontinence is a condition of quiet personal anguish. That's why speaking out about the availability of treatment is so important." An estimated 10 million Americans are affected by urinary incontinence and the costs of managing the condition have been estimated at more than \$10 billion a year. Rep. Mary Rose Oakar (D-Ohio), a member of the House select committee on aging and of the congressional women's caucus, said studies like Fantl's demonstrate the value of investing in research on aging to improve quality of life and to reduce health care costs.

Fantl and his colleagues at MCVH conducted a controlled clinical trial of 123 community-dwelling women, age 55 and older, with different kinds of urinary incontinence. An education program for patients receiving bladder training consisted of two segments; an audiovisual program emphasizing neurologic control of the lower urinary tract function, and verbal and written instructions on how to adapt the program to the individual's lifestyle. Bladder training techniques started with scheduled urinations at 30 minutes to 1 hour, depending on how long the



Dr. J. Andrew Fantl presents results from a clinical trial on bladder training for incontinence in older women at a recent news briefing on Capitol Hill. The trial was sponsored by NIA and NCFNR.

patient could comfortably wait before voiding. The goal of the program was to reach a 2½ to 3 hour interval between voidings. Ultimately, 12 percent of the patients treated became completely continent. Some 75 percent of the women improved 50 percent or more.

The NIA last month awarded Fantl and his team a 5-year, \$3 million grant to conduct a study of the three major forms of treatment for urinary incontinence. In that research, behavioral therapies, estrogen supplementation therapy, and surgical therapy will be evaluated.—Vicky Cahan □

### NICHD Seeks Moms, Kids

The NICHD seeks the help of mothers and their preschoolers for a study of thinking, artistic and social development. Youngsters 45 to 48 months old are needed. If you would like to participate, or if you need more information about the "Spectrum Study," call Rebecca Baras, (301) 496-6832. □

### NIH Musicians To Perform

The Foundation for Advanced Education in the Sciences invites employees to enjoy a noontime concert by the NIH Chamber Players on Thursday, Feb. 28, in the Visitor Information Center, Bldg. 10. The group includes Morton Raff, violin, Susan Epstein, cello, and Carl Banner, piano. The musicians will play trios by Mozart and Brahms. All are welcome. □

### NEI Announces Symposium On Eye Disease Epidemiology

The Third National Eye Institute Symposium on Eye Disease Epidemiology will be held Mar. 25-27 at the Hyatt Regency Bethesda. The goals of the symposium, sponsored jointly by NEI's Collaborative Clinical Research Branch and the Biometry and Epidemiology Program, are to provide a forum for the presentation and discussion of the results and methods of recent research on the epidemiology of eye diseases, including clinical trials, and to stimulate future research in this field.

There is a registration fee of \$100, which will cover the cost of materials, attendance at an opening reception on Sunday, Mar. 24, and a dinner on Tuesday, Mar. 26. Special rates are available for students: \$75 to attend the symposium and the special events or \$50 to attend only the symposium.

Additional information on registration and program topics is available from Johanna McDonough, Social and Scientific Systems, 7101 Wisconsin Ave., Suite 610, Bethesda, MD 20814-4805; phone 986-4870. □

### Free Clinic Needs Docs

The Washington Free Clinic seeks volunteer physicians for the Tuesday and Thursday night general medicine clinics. The clinic requests that physicians volunteer one night per month. The majority of the clients are uninsured. Malpractice insurance is provided. For information call (202) 667-1106. □

**ASTHMA***(Continued from Page 1)*

Sheffer, of Harvard Medical School, chaired the expert panel. "Treatment for most asthma patients must include anti-inflammatory medication to reduce and prevent recurrence of inflammation," he said. Cromolyn sodium and corticosteroids are the main anti-inflammatory agents used against asthma.

Traditionally, said Sheffer, asthma has been considered a disease primarily involving bronchial constriction. Bronchodilator drugs have been relied on to relieve the wheezing, coughing, chest tightness, and breathing problems associated with an asthma episode.

"Reducing and hopefully preventing inflammation, not just reversing bronchial constriction, is central to asthma management," Sheffer said. "This means not only using a bronchodilator to relieve immediate symptoms, but also using anti-inflammatory agents such as cromolyn sodium or inhaled corticosteroids to reduce inflammation over the long-term."

Many asthma patients have feared using corticosteroids in the past, he said, because steroid pills were given over a long period of time and had risks of adverse side effects. However, recent advances in asthma therapy have produced inhaled corticosteroids. Since these drugs are inhaled, their effect is directly on the airways and they are not absorbed into the body's circulatory system in the way pills are. Thus, they produce few adverse effects and are among the most effective drugs for asthma therapy.

Bronchodilators, specifically inhaled beta-agonists, are recommended to treat acute episodes because they open the airways quickly and relieve symptoms, said Sheffer. However, they do not appear to affect the underlying inflammation of the airways. For more severe asthma episodes, oral corticosteroids may be required for a short time, he added.

Asthma is a serious chronic disease with acute episodes that can be fatal, said Dr. A. Sonia Buist of Oregon Health Sciences University, a member of the NAEP coordinating committee. Buist said that asthma is getting increased attention as a public health concern because its frequency, and the number and rate of hospitalizations and deaths from asthma, have risen significantly during the past 10 years. "These trends are worrisome because they come at a time when we understand much more about the disease and we think we have more effective treatment," she noted.

Somewhere between 3 and 6 percent of all Americans—about 10 million people, of whom 3 million are children—suffer from asthma, said Buist. Asthma is one of the leading medical causes of absenteeism from school and a major cause of lost work days in the U.S. In 1988, there were almost 15 million



*Dr. Albert L. Sheffer (r) of Harvard Medical School makes a point at the NHLBI news conference on asthma; looking on is the institute's director, Dr. Claude Lenfant.*

visits to physicians for asthma; about 35 percent of these visits were made by patients under 20 years of age.

In 1987, said Buist, there were more than 450,000 hospitalizations in which asthma was the first listed diagnosis. In children under age 18, asthma causes more hospitalizations than any other serious chronic disease.

Moreover, asthma deaths have been increasing slowly but steadily, about 6 percent per year over the past decade. In 1988, 4,580 people died from asthma in the U.S. The death rate from asthma is about three times higher among blacks than whites. Based on accumulating scientific data, most asthma specialists now believe that people who die from asthma are those who were undertreated or treated inappropriately, Buist observed; deaths from asthma apparently are not tied to use of any particular drug.

Nevertheless, the report emphasizes that asthma is treatable and that with an accurate diagnosis and appropriate treatment, most asthma patients can expect to lead normal, active lives.

"With appropriate treatment, virtually all asthma patients can become free of symptoms," said Dr. Allen T. Luskin of the expert panel. "Patients with asthma can live normal lives. They and their families should expect nothing less." □

**Normal Volunteers Sought**

The Clinical Neuroendocrinology Branch, NIMH, and the Developmental Endocrinology Branch, NICHD, seek healthy men and women between the ages of 20 and 55 for studies involving the relations of hormone changes to sleep and psychological functioning. Individuals will be admitted to the Clinical Center for four nights. Psychological testing will be conducted along with blood sampling and EEG monitoring. For more information call 496-4319. □

**NICHD's Alan Hinnebusch Gives Hoffmann-LaRoche Lecture**

Dr. Alan Hinnebusch of NICHD's Laboratory of Molecular Genetics presented the annual Hoffmann-LaRoche Lecture at the New York Metropolitan Area Yeast Molecular Biology Meeting last month. He was honored for his notable contributions to the field of yeast genetics. Because of their short generation time, single cell animals such as yeast are well suited to genetic analysis, and for that reason, the molecular genetics of yeast have attracted a great deal of attention in recent years.

Hinnebusch's research has contributed substantially to our knowledge of the complex genetic machinery with which yeast coordinates its response to environmental stress in the form of nutrient scarcity. He was the first to establish how the synthesis of a regulator of amino acid biosynthesis (GCN4) is controlled. GCN4 mRNA is only translated when the



*Dr. Alan Hinnebusch*

cells are starved of amino acids. Hinnebusch and his colleagues showed that, when nutrients are plentiful, ribosomes scanning GCN4 mRNA are trapped in the message's leader before they get to the initiation site. The scanning process itself is controlled by a series of positive and negative regulators, for which he has identified the genes. One of the positive regulators appears to be a protein kinase with a region of homology to histidyl-tRNA synthetase, suggesting a mechanism by which such a regulator could detect amino acid depletion. The finding that yeast has the same initiation factors as mammalian cells has made his work particularly relevant to genetic control in all higher animals.

Hinnebusch is a graduate of the University of Dayton and received his Ph.D. from Harvard in 1980. He started his work on the genetics of yeast as a postdoctoral fellow with Gerald Fink at Cornell, before coming to NIH in 1983. He has been a member of NICHD's Laboratory of Molecular Genetics since then.—Birgit C. An Der Lan □

## NIH Observes Women's History Month

March is National Women's History Month. Throughout history women have made valuable contributions to the economic, cultural and social welfare of our nation. Women constitute a significant portion of our work force, serving in clerical, technical, administrative and professional positions.

In recognition of the numerous accomplishments of women, the Division of Equal Opportunity will sponsor an observance of Women's History Month on Thursday, Mar. 7, from 11:30 a.m. to 1 p.m. in Lipsett Amphitheater, Bldg. 10. This year's theme is "Nurturing Tradition, Fostering Change." The program features keynote speaker Dr. Beverly Coleman-Miller, special assistant for medical affairs, Commission of Public Health, Washington, D.C.

Coleman-Miller has extensive experience in the field of health care. Her assignments have included developing a database and producing statistical reports on infant mortality, trauma, homicide and drug overdoses for distribution to public and private institutions; coordinating research projects for the D.C. Medical Examiner's Office; and providing advice to the Centers for Disease Control on revising its current statement, "Preventing Lead Poisoning in Young Children," at the request of DHHS secretary Dr. Louis Sullivan. Coleman-Miller is a member of DHHS's Office of Minority Health Resource Network and an accomplished lecturer.

The performing artist for the observance will be Carmen White, a Creative and Performing Arts Scholarship student at the University of Maryland. White recently participated in Alvin Ailey's American Dance Center master classes under the instruction of Judith Jamison at Morgan State University.



Dr. Beverly Coleman-Miller

She also has been a guest on such radio and television stations as WETA, WYCB, WHMM-TV and on such programs as *Stuff*, *Newsbag*, and *Saturday Magazine*. White also produced "Youth Calendar" on WPFW-FM and appeared in a television commercial for the Department of Agriculture.

All employees are encouraged to attend this program. Special shuttle service will be provided for employees at the Executive Plaza, Federal and Westwood Bldgs. A schedule of departure times will be posted in these buildings. Sign language interpretation will also be provided. For additional information and reasonable accommodation, contact DEO, 496-6301. □

*Dr. Classie G. Hoyle has been appointed as a special expert in science education for NIGMS and its minority programs. Before joining NIGMS, Hoyle was an associate professor of community and preventive dentistry, assistant to the dean, and director of planning and development in the College of Dentistry at the University of Iowa in Iowa City. She also spent several years as vice president for academic affairs at Clarke College in Dubuque, Iowa, and as director of affirmative action at the University of Iowa. In all of these positions, Hoyle worked to recruit minority students into health professional careers as well as to increase minority students' awareness of their options in higher education. Hoyle received a B.S. in biology and science education and an M.S. in biology from Morgan State University, and a Ph.D. in science education and higher education administration from the University of Iowa.*



## African-American Scientists Program Features McCurdy

As part of its ongoing celebration of Black History Month, NIH will host an African-American Scientists Observance on Tuesday, Feb. 26, from 11:30 a.m. to 1:30 p.m., in Masur Auditorium, Bldg. 10. The featured guest speaker is African-Canadian microbiologist Dr. Howard McCurdy, a second-term member of Canada's Parliament, that nation's highest legislative body. He will present "Behind the Laboratory Door: Keeping Secrets from Black Folks."

An Ontario native, McCurdy, 57, completed undergraduate degrees at the University of Western Ontario and Assumption University. He received his M.S. and Ph.D. degrees in microbiology and chemistry from Michigan State University, where he served as president of its NAACP chapter 1958-1959.

After studying at Michigan State, McCurdy was professor of biology at the University of Windsor for 25 years, becoming chairman of



Dr. Howard McCurdy

the department in 1974 and producing some 45 scientific articles.

A major national figure in Canada's civil rights movement in the 1960's, McCurdy helped found the National Black Coalition of Canada and later served as its president.

In 1984, he led a national campaign for science and technology-driven economic development and social justice for minorities, women and the disabled; McCurdy captured a seat in Canada's House of Commons that year and was reelected to that post in 1988.

All employees are encouraged to attend the observance. Special shuttle service will be provided for off-campus employees: Westwood Bldg.-10:45 a.m., Federal Bldg.-11 a.m. and Executive Plaza-11 a.m. Sign language interpretation will be provided. For additional information and reasonable accommodations, contact DEO, 496-6301. □

## AXELROD

(Continued from Page 1)

Axelrod's first ambition was to become a doctor. He attended the free City College of New York, graduating with a B.S. in biology and chemistry in 1933. "I couldn't get into medical school, though, probably because of my religion. At that time, there were quotas for Jewish students in medical schools."

The year Axelrod graduated from college, the country was in the depths of the Great Depression and jobs were scarce. To assure that he could earn an income, Axelrod took the government's postal exam.

"I almost joined the Post Office, but a lab assistant job was open at NYU medical school, paying \$25 a month," he recalls. "It was just pure luck that I decided to take the laboratory position."

After a few years in the lab, he obtained a job testing newly discovered vitamins in food at the Laboratory of Industrial Hygiene in New York.

"I was there for about 10 years," he remembers. "I didn't do research. My job was to modify existing methods for the analysis of vitamins to test in food products. The experience of developing and modifying methods proved useful in my subsequent research career."

Hardly anyone chose a research career in those days, Axelrod said. "There were few opportunities to do research and the work was poorly paid. What little work was done was supported by philanthropists. A person had to be wealthy and smart to do research. Few physicians did research in their spare time."

At this point, Axelrod still "had no idea of a research career." One day, the head of his laboratory—a retired professor of pharmacology named George Wallace—came to him with a problem: certain nonaspirin analgesics were causing blood disorders in some people. The professor advised that Axelrod see Dr. Bernard Beryl Brodie, who was on the faculty of NYU, about it.

"I met with Dr. Brodie one fateful day in February 1946," says Axelrod. "This was my first introduction to research. I found him to be a stimulating and inspiring person. He suggested that I join his lab to work on non-aspirin analgesics. We found that these compounds, acetanilide and phenacetin, formed toxic metabolites."

Curious to find what the main metabolites of these analgesics were, Axelrod and Brodie found that the drugs were metabolized to what is now known as acetaminophen. They also observed that this metabolite did wonders for headaches. Today, acetaminophen is known popularly as Tylenol.

"We didn't deliberately look for a new headache remedy," explains Axelrod. "It just turned up in the course of our research.

"I took to research immediately," he recalls fondly. "I did it well and I loved it."

Axelrod continued working in Brodie's laboratory at Goldwater Memorial Hospital (a branch of NYU medical school) and spent 3 years studying the metabolism of analgesics and anticoagulants. Realizing that he couldn't be promoted in academia without a Ph.D., he began a job search.

"One day I saw an item in the *New York Times* that James Shannon, formerly a professor at NYU medical school, was appointed head of the National Heart Institute," he said. "I wrote to him and he gave me a position at the heart institute."

Scientists were reluctant to come to NIH in those days, Axelrod remembers. "It was considered just another government lab. It was not at all as prestigious as it is today."

Axelrod credits Shannon, who became the eighth NIH director, with transforming NIH to the high status that it enjoys today.

"Shannon persuaded Congress that the way



*Axelrod ponders a question about his distinctive eyeglasses he wore after an eye blinded in a laboratory mishap early in his career. Ammonia was the cause of the mishap. "One cleaved my eye," he said. "That's luck," he said.*



*He was "Mr." Julius Axelrod when this picture—of fractionating equipment used in determining the fate of caffeine and other drugs and biologicals in the body—appeared in the Sept. 21, 1953, issue of the Record.*

to treat and cure diseases is not to throw money at targeted research but to understand basic fundamentals of how the body works. He also had a great capacity to attract very good people."

At Shannon's bidding, Axelrod joined NHI in 1950, where he was reunited, at the GS-9 scientist level, with his mentor Brodie in the Laboratory of Chemical Pharmacology.

Located in Bldg. 3 on a campus that featured just a handful of buildings and about

*"My style of research is to never predict where you'll be years down the road. I didn't have to explain any great extent why I do."*

—D



during a seminar. The  
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p and the other didn't.

100 employees, Axelrod found the atmosphere heady.

"It was a remarkable place," he remembers. "We were all young, and working in a very charged atmosphere. There were three future Nobel Prize winners there—(Christian) Anfinsen and (Arthur) Kornberg were the others—and we all bumped into each other. There were also two eventual NIH directors (Drs. Donald Fredrickson and James Wyngaarden) and many investigators who became distinguished scientists.

"We were given a lot of freedom to do basic research, and the salary wasn't too bad. There was a critical mass of people," he reminisced. "We all knew each other and discussed each other's work.

"I was working fairly independently, and had published about 25 papers, including one on the discovery of a new class of enzymes that metabolized drugs, when I applied for a raise to a GS-12," he says, recalling an inci-

the remainder of his career.

"I didn't quite get what I wanted at NHI, so I started a new career in neuroscience research," he states, simply. "I don't know whether you can do this today."

Axelrod's main research at NIMH was to study the chemistry of the nervous system, especially neurotransmitters.

"I did LSD research in the 1950's, and in 1960 described how cocaine and antidepressant drugs work (by blocking the uptake of catecholamines into nerves)," he said. "We were the first to get radioactive marijuana, and to show that it went into fat cells and stayed there for a long time."

The receptor for THC—marijuana's active ingredient—was cloned in his current lab chief Dr. Michael Brownstein's laboratory at NIMH, reports Axelrod.

Was he ever tempted to try any of the drugs? "I think you'd be crazy to do it. I've seen the bad things drugs can do," he says. "I get my kicks doing research."

Several of his colleagues experimented with LSD. "They said it distorted their perception of time and space," he said. "It was a little unpleasant."

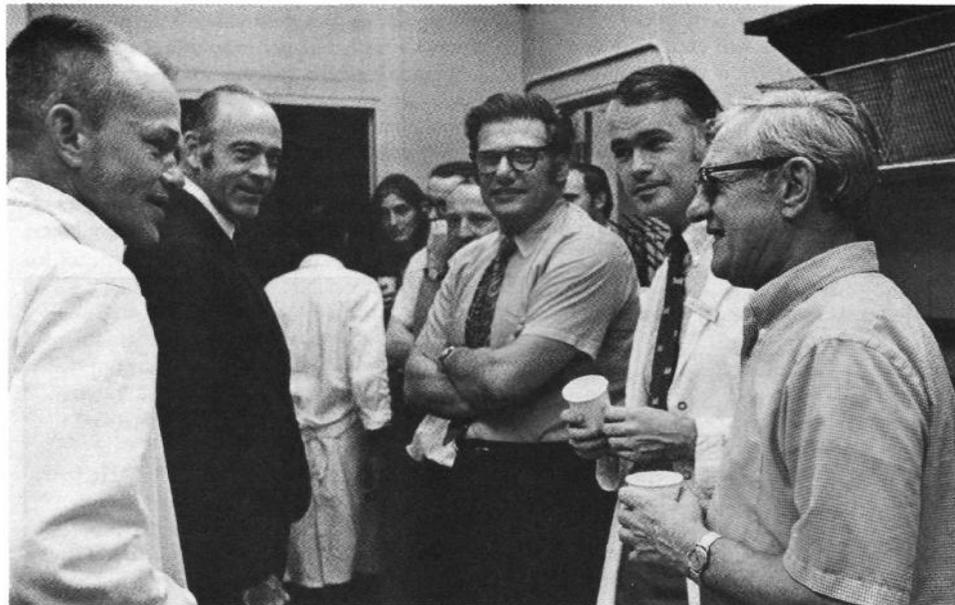
With the Shannon era, NIH's growing reputation began to attract more good people, Axelrod observes. "The Vietnam war also attracted a lot of bright M.D.s. Administrators had been very farsighted in getting the best people—like Kety (Dr. Seymour, head of NIMH) and Fredrickson (who became NIH's 11th director)—and giving investigators the opportunity to select and carry out their own problems. We did great science.

"There wasn't the large bureaucracy there is now," he continues. "There were few regulations and restrictions on the kinds of experiments you could do. As the NIH grew, so did its bureaucratic infrastructure. In spite of this, I think the quality (of intramural NIH research) is really first rate.

"NIH still attracts top people," Axelrod allows, "but not as many as it used to. The very bright ones today go to top academic institutions. But most of the professors at those institutions are NIH-trained."

Axelrod says he'd think twice today about embarking on a research career: "I don't know if I'd want the hassle. But I love it so much that I would probably take the chance. Many prospective scientists are pretty cocky when they come out of college. Even if the grant funding level is down around 12-15 percent, you think you're good enough to get it."

Acknowledging that tenure at NIH is tough to get nowadays, Axelrod says it was easy three decades ago. "The corollary to that was that some dead wood accumulated," he said. "We used to have what was known as the 'NIH shunt'—scientists would gain their reputation at NIH and then leave for a pro-



Axelrod (r) is surrounded by well-wishers including Dr. Roscoe Brady (second from l), Dr. Irvin Kopin (c) and Dr. Frederick Goodwin (r) when he learned of winning the 1970 Nobel Prize. Axelrod shared the prize in physiology or medicine with Bernard Katz and Ulf Von Euler "for their discoveries concerning the humoral transmitters in the nerve terminals and the mechanisms for their storage, release and inactivation."

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r. Julius Axelrod

dent that still rankles him. "They turned me down because I didn't have a Ph.D."

Axelrod had earned a master's degree from NYU in 1941, which satisfied the classroom requirements for the Ph.D. he now began to earn at George Washington University. "I took a year of courses to pass the qualifying exams," he said. "My thesis was on enzyme work that I was doing at NIH."

Once he took his Ph.D. in 1955, Axelrod abandoned NHI for NIMH, where he spent

(Continued from Page 7)

fessorship in academia."

Though courted by the private sector, Axelrod never thought seriously of leaving NIH. "I didn't want to go through the hassle of getting grants. My style of research was just a matter of following my nose. I could never predict where I might be 3 or 4 years down the road. At NIH, I didn't have to explain or justify to any great extent what I was going to do."

Which brings him to what he sees hampering young scientists today: "There is a tendency to do fashionable, safe research, to not take chances. If you take a chance and it doesn't work, it would be extremely difficult to obtain another grant. People tend to take on problems they know they can solve and do it just a little bit better than anyone else."

In spite of this, biological science, he admits, is growing at a tremendous pace.

"The important science is done by relatively few—maybe 10 or 20 percent—of scientists," he said. "Many just plod along, improving existing information. If one judges by literature citations, only 10 or 20 percent of the working scientists receive 80 to 90 percent of the citations."

Axelrod takes particular delight in acting as mentor to young scientists. "I always give advice. It's a great pleasure to work with and train young people," he says, eyes brightening. "I've trained about 70 people, many of whom are very distinguished."

Three NIH-Howard Hughes Medical Institute scholars are working or have worked in Axelrod's lab on the third floor of Bldg. 36, where he maintains a study stout with journals. Two intramural research directors—Dr. Steven Paul at NIMH and Dr. Irvin Kopin at NINDS—are his students. Other prominent academics, including Richard Wurtman at MIT and Solomon Snyder at Johns Hopkins, are also Axelrod alumni.

Axelrod's lab chief nowadays happens to be a former trainee—Dr. Michael Brownstein, whom Axelrod describes as "a sympathetic but tough guy—he has high standards."

Though he quit bench work about 10 years ago—"I don't think I'm good enough with my hands to do it anymore"—Axelrod continues to lecture and to exchange ideas with colleagues in his field. He can be amusingly offhand about his cogitations with his friends: "We talk about problems, we talk about ideas. Some work, some don't."

What continues to consume his still-curious intellect, however, is the chemistry of the brain.

"My main interest is neurotransmitters, the chemical signals of nerves. Neurotransmitters carry a special message to nerves and other cells. My colleagues and I are trying to find out how the neurotransmitter message is conveyed to the cell so that it can be stimulated

to carry out a special function. This general area of research is called signal transduction."

For Axelrod, much of biomedicine, including immunology, cardiology, and the study of hormones and other chemosensory factors, involves transduction of biological signals.

"Even the AIDS virus conveys a signal, but a bad one," he says.

"Signal transduction is a very complicated and fascinating field, one that we're just beginning to understand. Many clinical problems, including AIDS, diabetes, mental and cardiovascular disease, will be better understood by knowing how cells can send and interpret signals."

After 41 years here, Axelrod has a variety of opinions on the current state of NIH, which strikes him today as being "large, fragmented and very specialized. It's hard to know who's doing what, even in your own institute. Of course we're talking about a campus that is more than 10 times larger than it was when I first came." Other observations:

—On the genome project: "I think it's an important project, but I also think it's pretty boring. I don't know how getting the sequence of the genome will excite the very best scientists. One worry is that it would take money away from small science, where most of the novel ideas and advances come from. But you can't discount the possibility that the genome project would help small science."

—On RO1 (investigator-initiated) grants:

### 'An Unexpected Life in Research'

Successful scientists are generally recognized at a young age. They go to the best schools on scholarships, receive their postdoctoral training fellowships at prestigious laboratories, and publish early. None of this happened to me.

My parents emigrated at the beginning of this century from Polish Galicia. They met and married in America, where they settled in the Lower East Side of New York, then a Jewish ghetto. My father, Isadore, was a basketmaker who sold flower baskets to merchants and grocers. I was born in 1912 in a tenement on East Houston Street in Manhattan.

I attended PS22, a school built before the Civil War. Another student at that school before my time was I.I. Rabi, who later became a world-renowned physicist. After PS22 I attended Seward Park High School. I really wanted to go to Stuyvesant, a high school for bright students, but my grades were not good enough. Seward Park High School had many famous graduates, mostly entertainers: Zero Mostel, Walter Matthau, and Tony Curtis. My real education was obtained at the Hamilton Fish Park Library, a block from my home. I was a voracious reader and

"They are the guts of science. Any time you diminish that, you diminish the advance of science."

—On winning a Nobel Prize: "We all dream of it, but I really didn't expect it. Once you get a Nobel Prize, you become a sort of minor celebrity. It didn't change the way I did things at all. I didn't even have an office when I won the prize, only a desk in a lab."

—On fraud in science: "I think it's a minor problem. Misconduct generally comes out in the wash eventually."

—On retirement: "Unless you have a boring job, retirement is not a good thing. One of the ways one can stay young is to use your

*"There is nothing as exhilarating as an experiment that turns out the way you hoped it would."*

mind. My job is a labor of love and I find satisfaction doing it, even at this age. I manage to keep up with new advances. I retain some of what I read, but not everything. I feel very fortunate that NIH permits me to stay (he has a lab, two job slots and a budget). I also have the freedom to consult for biotechnology companies. I don't have to justify every little thing I do."

—On lab politics: "There are many styles of management in NIH labs. Some are very hier-

read through several books a week—from Upton Sinclair, H. L. Mencken, and Tolstoy to pulp novels such as the Frank Merriwell and Nick Carter series.

After graduating from Seward Park High School, I attended New York University in the hope that it would give me a better chance to get into medical school. After a year my money ran out, and I transferred to the tuition-free City College of New York in 1930. City College was a proletarian Harvard, which subsequently graduated seven Nobel Laureates. I majored in biology and chemistry, but my best grades were in history, philosophy, and literature. Because I had to work after school, I did most of my studying during the subway trip to and from uptown City College. Studying in a crowded, noisy New York subway gave me considerable powers of concentration. When I graduated from City College, I applied to several medical schools but was not accepted by any.—Julius Axelrod

*From "An Unexpected Life in Research," which Axelrod wrote for publication in the Annual Review of Pharmacology and Toxicology, 1988, 28:1-23.*

archical and some are almost anarchistic. I would describe our lab as convivial. I like the style of freedom of interchange, and democratic decisionmaking. I think this freedom is the reason that American science has gone so far."

—On research careers: "The competition today is fierce but still worth the effort. There are a lot of disappointments in research. Most of the time your ideas don't work the way you want them to. But you forget about that and go on to the next thing. There is nothing as exhilarating as an experiment that turns out the way you hoped it would."

Though he admits to having bloomed late, Axelrod clearly believes in blooming long. "One can still do good work in the biological sciences at an advanced age," he noted.

His last observation, delivered with a self-deprecating chuckle, is about luck's role in a career that almost didn't happen: "I could easily have become a post office clerk." □

## Retirement Credit Available

Public Law 101-530, enacted on Nov. 6, 1990, allows retirement service credit for pre-1969 service as a National Guard technician even though the individual did not have subsequent service as a National Guard technician after Dec. 31, 1968. This law applies to employees covered under either the Civil Service Retirement System (CSRS) or the Federal Employees Retirement System (FERS).

Employees (or survivors of such employees) who performed the service described above will receive retirement credit for such service if: they separate from (or die while employed in) a position in which they were covered by CSRS or FERS on or after Nov. 6, 1990; they (or their survivors) make a deposit for such service to the U.S. Office of Personnel Management before final adjudication of the employee's (or survivor's) claim for benefits.

Employees who think they qualify for this service credit should contact their servicing personnel office for details. □

## Study Subjects Needed

The Clinical Neuroendocrinology Branch, NIMH, and the Developmental Endocrinology Branch, NICHD, are conducting an outpatient study on depression in adolescents ages 11 to 16. Biological and psychological characteristics of depression will be examined. The study does not involve drug treatment. Individuals will be paid for their time. For more information call 496-4319. □

## Designer Mice Could Aid Cancer Treatment

By Elaine Blume

Researchers have shown that a new line of genetically engineered mice could help scientists combat the resistance to chemotherapy exhibited by many cancers. The work is reported in the Jan. 15 issue of *Proceedings of the National Academy of Sciences*.

Drs. Ira Pastan, Michael M. Gottesman and their coworkers at the National Cancer Institute produced the unique mice in 1989. The cells of these animals carry the human MDR gene, which confers resistance to a number of drugs used to treat cancer, including doxorubicin, vinblastine, and taxol. The transgenic mice are now being used to test agents that can reverse this resistance.

The MDR (multidrug resistance) gene is expressed, or active, in many human cancer cells, either from the outset, or after one or more rounds of chemotherapy. Expression of MDR often causes chemotherapy to fail, thus contributing to many cancer deaths.

"The MDR gene produces a transporter protein that pumps toxic drugs out of cells," Pastan explained. "In tissue culture, certain other drugs, known as reversing agents, overcome multidrug resistance by competing with toxic drugs for the MDR transporter. This allows the toxic drugs to remain within and destroy the cells."

Development of a safe and effective reversing agent for use in humans would be a significant advance in cancer treatment. Such an agent could be given along with anticancer drugs to patients with drug-resistant tumors.

Some of the agents that reverse drug resistance in tissue culture could possibly fill this role. But a reversing agent that works in tissue culture will not necessarily work in animals. For example, it may be too toxic, or it could be excreted too rapidly.

Current methods of testing reversing agents in animals are cumbersome and unsatisfactory. "A typical experiment may take 4 weeks, require a hundred mice—often special mice that are very expensive—and still give equivocal results at best," Gottesman noted.

In part for this reason, no new reversing agent has yet been developed for clinical use. At present, only drugs that have already been approved by the FDA for other uses are being tested in humans. Unfortunately, most of these drugs have serious side effects that limit the dose that can be used.

"The real goal is to find something new with minimal side effects," Pastan said. "Drug companies need a rapid screening method in animals that will show whether candidate agents can overcome drug resistance."

The newly engineered mice carry the human MDR gene in all their cells, but it is expressed only in the bone marrow, which is the source of white blood cells. Expression of

the gene protects the bone marrow from the effects of cancer chemotherapy, permitting normal numbers of white blood cells to be manufactured even when the animals are treated with toxic drugs.

In their current work, the researchers showed that the MDR mice maintained normal white blood cell levels in the presence of a panel of anticancer drugs. Both major white cell types—neutrophils and lymphocytes—were protected.

Reversing agents overcame this protection, allowing toxic drugs to attack the bone marrow. Thus, the number of white cells in the animals' blood decreased when they were given a reversing agent along with an anticancer drug such as Adriamycin (doxorubicin).

"When we challenge the mice with Adriamycin alone, their white counts don't change," Pastan explained. "But when we challenge them with Adriamycin plus a reversing agent such as verapamil, their white counts fall rapidly, and it's very easy to see the effect."

A candidate reversing agent can be tested by exposing the MDR mice to the anticancer drug plus the agent. A drop in the animals' white blood cell counts indicates that the agent has reversing activity.

"These mice offer a simple, reliable test system that requires no more than three to five animals and can give a result within 3 days," Pastan said. "What this represents is a rapid and inexpensive way of screening all kinds of drugs that pharmaceutical companies have on the shelf and have already tested in tissue culture. The MDR mice should help us develop new agents that can overcome drug resistance in tumors and extend many cancer patients' lives." □

## Healthy Volunteers Needed

Healthy volunteers, male and female ages 30 through 65, are needed to participate in studies of endocrine secretion. Volunteers must be on no medications, and may participate in one or several studies. All volunteers will be compensated for their time. If interested, call the Clinical Neuroendocrinology Branch, NIMH, 480-0944. □

## USUHS Needs Volunteers

You and two friends can each earn \$420 for participating in a study of commonly prescribed drugs. The study requires 6 hours during the day, 1 day a week, for a total of 7 weeks. Each member must be between 21 and 50 years old, in good health, and not active-duty military. Call 295-0972 for more information. □

**BLDG. 6B***(Continued from Page 1)*

interested in getting the job done and doing it right," said Dr. John Bartholomew, NICHD veterinarian and facility vet for Bldg. 6B.

While the 25,000-square-foot building is not the first animal facility on the NIH campus, it is the first to be built specifically as an animal facility; the others were converted from older, renovated buildings. After 2 years and an original construction cost of \$7 million, construction of 6B was completed this past December.

What also makes 6B unique among animal facilities at NIH is that it's disease-free, meaning that all animals are kept in special, high-tech, protective cages to ensure that they remain free of any animal diseases. This enables scientists to do research without worrying about the possibility of animal diseases obscuring their findings. "The caging system is very sophisticated," Bartholomew said.

"You don't just have animals on a shelf. Each shelf has doors that close and each cage has a micro-isolator top on it that filters air. So if you want to get to those animals, you have to open the door, pull the cage out and put it into a hood where it's getting fresh, clean air and is not exposed to any other animals."

In addition to the protective cages, animals receive sterile feed and wood chip bedding, sanitized caging, and daily room sanitization. Masks and protective clothing, similar to those worn in surgical suites, are required of people entering the animal rooms. Also, researchers who have been in other animal facilities will be required to wait 48 hours before entering 6B. Showers are available in the building, however, for emergencies.

The animal rooms are constantly monitored for environmental control, including temperature (maintained at 72 degrees Fahrenheit), humidity, air changes per hour and lighting cycles. Completely fresh air is circulated through the cages a minimum of 10 times per hour. If any problem arises, NIH maintenance is immediately notified by alarm.

Bldg. 6B also has a unique area for studies that require strict control over light cycles. This section of the facility is equipped with full red light capabilities, which enable researchers to manipulate the animals' day/night cycles, also known as circadian rhythms. "We can change the light cycle to 2 hours a day, half an hour a day, or 20 hours a day, as well as the intensities," explained Rosemary Riggs, manager of the animal facility.

The facility is designed to hold rabbits and rodents including mice, rats, hamsters and guinea pigs. In addition, 6B has an aquatic species room that will house frogs and may eventually have fish and sea urchins. "It's designed to be a flexible, multi-functional, multi-species facility," Riggs said.



*The newly constructed Bldg. 6B, the first disease-free animal facility on NIH's campus, recently opened its doors to occupants. The uniquely sterilized structure will house such landlubbers as rabbits, mice, rats, hamsters and guinea pigs as well as such aquatic species as frogs, fish and sea urchins.*

The building's entire ground floor has been designated for transgenic, or "custom-made," mice. Using this technique, scientists inject mouse embryos with foreign genetic material—human for example—enabling them to actually create mice with functional human genes or immune systems. Both NICHD and NEI will have transgenic colonies in the facility.

The animal facility meets all requirements stated by the American Association for the Accreditation of Laboratory Animal Care, which is a separate, nongovernmental body established to evaluate compliance with regulations. It also complies with NIH regulations as stated in the *Guide for the Care and Use of Laboratory Animals*, and Public Health Service policy and the Animal Welfare Act.

Entrance to Bldg. 6B is strictly monitored, both for security reasons and to maintain the disease-free animal environment. A card key is required at all entrances to the building, which will be locked 24 hours a day. During business hours (7 a.m. - 5 p.m.), one set of doors will be accessible with a special code. "We have a multi-level barrier," Bartholomew said. "People coming in are first stopped at the entrance. From there, each room has its own code. Then you have the individual animal rack, then the shelf, and finally the cage with the cover on it and its own air supply."

Another special feature of 6B is a computer software system designed to maintain records of animal inventories and cage space. As part of this system, every animal cage in the facility is bar-coded. "This animal facility is leading the way in the NIH animal care program on developing and instituting customized animal facility software," said Riggs. "It's like a hotel."

In addition to tracking inventories, the computer system maintains approved animal research protocols, which are required before using any animal in a research project. "When an animal research order comes in, we first check to see if the investigator has a protocol and that we have information about the protocol: which committee approved it and when, as well as which species of animal and how many animals may be included," Bartholomew explained.

Clearly unique among animal facilities at NIH, Bldg. 6B is also competitive with animal facilities nationwide. Said Levine, "I'm quite sure it ranks among the best in the country." □

**Carey To Address Science Writers**

The NIH Science Writers' Guild meeting on Feb. 21 will feature John A. Carey, who covers the science beat in Washington for *BusinessWeek* magazine. He will talk about writing leads, focusing on how even the most technical topics can be lively and readable.

Before coming to *BusinessWeek* in 1989, Carey was associate managing editor of *The Scientist*. Prior to that, he held posts as senior editor for *National/International Wildlife* magazine, and health and science reporter for *Newsweek* magazine.

Carey holds two master's degrees, one in forest science from the Yale University School of Forestry and Environmental Studies and the other in marine biology from the University of North Wales. His undergraduate degree from Yale is in molecular biophysics and biochemistry.

Carey will speak from 10:30 to 11:30 a.m. in Bldg. 31, Conf. Rm. 9. □



## TRAINING TIPS

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

### Courses and Programs Starting Dates

<i>Management and Supervisory 496-6371</i>	
Voice for Success	3/18
Report Writing	3/26
Effective Communication (Phase 1)	3/26
Practical Management Approaches	4/17
How To Write and Publish Scientific Papers	4/15

<i>Special Courses 496-6211</i>	
Retirement Planning Seminar	3/11
Basic Employee Relations	3/11

<i>Personal Computing Training 496-6211</i>	
Welcome to Mac	3/5, 3/18
Introduction to WordPerfect (Mac)	3/6
Advanced Microsoft Word	3/22
Intro to Filemaker II	3/29
Excel — Level 1	3/11
Excel — Level 2	3/21
Excel — Level 3	3/25
Foxbase — Level 2 (Mac)	3/13
Intro to Pagemaker 3.0	3/15
HyperCard Programming-Level 2	3/12
3-Com PC Network-Level 1	3/4
3-Com PC Network-Level 2	3/19
3-Com PC Network Management-Level 1	3/27
Introduction to Personal Computing for New Users	3/1, 4/9
Introduction to PC Keyboarding	3/6
Improving PC Keyboarding Skills	4/1
Introduction to DOS	3/11, 3/29
Introduction to WordPerfect 5.1	3/13, 3/25
WordPerfect 5.1 — Advanced Topics	3/19, 4/16
WordPerfect 5.0 to 5.1 Transition	3/5, 4/29
Printing With WordPerfect and Laser Printers	4/2
Introduction to Harvard Graphics	3/4, 5/1
Introduction to dBase 3+	3/12, 4/8
Intermediate dBase 3+	3/4, 5/14
dBase 3+ — Advanced Topics	3/26
Introduction to Lotus 1-2-3, Release 2.2	3/18, 4/15
Lotus 1-2-3, Rel. 2.2 — Adv. Tops.	4/30

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

The URC hours are:  
Mon.-Thurs. 8:30 a.m. - 7 p.m.  
Friday 8:30 a.m. - 4:30 p.m.  
Saturday 9 a.m. - 1 p.m.

Training Center, DCRT, and other training information is available on WYLBUR. Logon to WYLBUR and type ENTER TRAINING

### Facial Pain Patients Needed

The NIDR seeks patients with chronic facial pain to participate in studies evaluating the causes of this disorder. Patients will receive a complete evaluation for possible inclusion in studies of chronic facial pain associated with facial muscles, the temporomandibular joint, and other forms. For more information call 496-8896. □

### TV Report Irks Credit Union Management, Customers

A consumer affairs newscast on WRC-TV that aired Feb. 6 suggesting that several area credit unions, including NIH's, were on shaky financial footing, has irked the NIH Federal Credit Union, which has taken issue with the report.

During a 4-part series on the health of the financial services industry, reporter Lea Thompson of WRC singled out several local credit unions, including NIH's, as financially "troubled."

Thompson, according to NIH credit union CEO Lindsay Alexander, based her report on figures supplied by Veribanc, a private company that compiles ratings on financial institutions. The figures Thompson used were 7 months old when her report was broadcast and no longer reflect the state of the union, charges Alexander.

"Thompson's information was not totally accurate and not complete—it borders on irresponsible journalism," said Alexander, who says she and her staff spent 2 days dousing the doubts raised by the news report. "Our financial picture has improved dramatically in the last 7 months. A recent report card from our CPA firm and from our examiner (the National Credit Union Administration) gave us very high marks."

Alexander said the NIH credit union has spent the last several years working to improve its image with both members and prospective members, which made Thompson's newscast all the more vexing.

"A lot of our members called to see where Thompson got her information," reported Alexander. "Since credit unions are owned by their members, there is a very protective feeling. Members take it more to heart, and were

quite upset."

Despite the negative publicity, Alexander said there was no run on the bank at NIH. "We've gotten a very positive response from our members," she said. "Most of them are angry about it—some suggested taking legal action."

Alexander predicted that the credit union won't ultimately be hurt by the newscast, but said she would lodge a complaint with WRC-TV.

Alexander sent a letter explaining the credit union's position to all members the day after the program aired. In it she reports that the union is in good health, having shown a positive net income every year since 1983, and an adequate return on assets.

The figure that caused controversy in the first place was an evaluation of the union's capital assets, which are reported twice yearly. Veribanc, the rating service, puts institutions with a capital ratio of less than 3 percent on its red "danger" list. Back in June 1990, Veribanc rated NIH at 2.97 percent and ran up the red flag. Alexander says her figures put NIH at 3.3 percent last June; the current capital ratio is 4 percent.

"It takes several years to build a healthy capital ratio," Alexander explained, "and we went from zero to 4.0 in 4 years. Our regulators like the direction we're going in. We are not considered troubled by any of our overseers."

"I will be very happy to talk to anyone who has a question about the health of the NIH Federal Credit Union," she added. Alexander may be reached at (301) 881-2750.—Rich McManus □

### DCRT Offers CHARMMing Computer Course on Mondays

To accommodate the increasing number of NIH scientists working on molecular graphics workstations, the Division of Computer Research and Technology offers training opportunities relating to this new technology. One course teaches participants about CHARMM, a molecular design software package.

CHARMM, which stands for Chemistry at HARvard, Molecular Mechanics, is a powerful computer program that allows scientists to visualize simulations of macromolecules such as proteins and nucleic acids. The program provides for the energy minimization and dynamics of these molecules in vacuum, in solution and in crystals.

The course, entitled "CHARMM: A Program for Macromolecular Energy, Minimization, and Dynamics Calculations," provides a detailed explanation of the commands used to operate this research instrument. Topics to be covered include energy functions, crystal simulations, vibra-

tional analysis, solvent dynamics, and time series analysis.

The course is open to anyone interested in molecular simulation. Participants need not have Silicon Graphics workstations to take the course or run the program; this general-purpose program, written in FORTRAN, will run on several different computer platforms.

Class instructors are Drs. Bernard Brooks and Martin Field, DCRT; Richard Venable and Dr. Richard Pastor, FDA; and Dr. David States, NLM.

The class meets on Monday afternoons from 2 to 5. Although 2 of the 13 sessions have already taken place, the instructors welcome anyone who would like to join the class. Explicit handouts complement the instruction and are very helpful for future reference in running the program. There will also be laboratory sessions for those who are interested.

For further information or to register for the class, call the Computer Center Training Unit, DCRT, 496-2339. □

*Kitchen Utensils or Lab Instruments***Joan Shih Carducci Wins Recognition for Cooking, Science**

By Anne Barber

What do Joan Shih, cooking educator, and Joan Carducci, chemist, have in common? The answer—they are one and the same. Joan Carducci, the chemist, works in the biophysical instrumentation section, Laboratory of Biophysical Chemistry, NHLBI. Joan Shih, the cooking educator, was recently listed in the 1991/1992 *Who's Who in the World*.

This is not the first time Shih (her maiden name) has received recognition for her cooking skills. She has also been listed in *Who's Who of American Women*, *Who's Who in the East*, and *Who's Who in America*.

How did a chemist by trade become involved in Chinese cooking? "Chemistry does help," she says. "Food is chemistry. It helps me in writing precise recipes, developing and designing recipes that keep the authenticity of Chinese recipes while also meeting the particular health needs of different people."

Shih came to the United States from Taiwan to attend St. Mary College in Xavier, Kan., on a full scholarship. After receiving her B.S. in chemistry, she entered the pre-medical program at St. Mary's Hospital in Rochester, N.Y., where she received a certificate in medical technology. She worked as a medical researcher for Strong Memorial Hospital at the University of Rochester before joining Strassenburgh Laboratories in Rochester as a pharmaceutical chemist in quality control.

Shih moved to the Washington, D.C., area because of her late husband's computer science work. It was here that her second daughter was born and she decided to stop working full-time. Later, she would make a career in Chinese cooking.

Once she decided to pursue her cooking interests, Shih went back to Taiwan, attended a professional cooking school, and received a certificate in Chinese cuisine.

Upon her return, she began teaching cooking for the adult education classes offered by Montgomery County. She continued to do this from 1973 through 1979. In 1975, she opened her own cooking school, called Chinese Cookery Inc., on Rockville Pike.

Along with writing her own cookbooks, *Chinese Cookery* in 1981 and *Human Cuisine* in 1984, she performed cooking demonstrations at area functions as well as on television. She has been on Channel 9's *Morning Break*, Channel 20's *Eye on Washington*, Channel 4's *Fred Thomas in the Morning*, and PBS' *Fairfax Magazine* from Northern Virginia Community College.

She has been written up in *Newsweek* (1975), *Washingtonian* (1975, 1981), *Travel and Leisure* magazine as well as the *Montgomery County Journal*, *Montgomery County Sentinel* and



Joan Shih Carducci holds the *Who's Who in the World* award she recently received because of her Chinese cooking skills. She works in NHLBI's Laboratory of Biophysical Chemistry as a chemist.

the *Washington Post* several times.

Besides teaching, Shih also did catering. In September 1980, she and her students catered for the Beijing Opera Company for 2 weeks during its performance at the Kennedy Center.

In 1987, she came to work at NIH and closed the doors to her store. "But I couldn't give up cooking entirely," she says. "I enjoy it so much."

So, she redesigned a portion of her home's basement as a cooking lab and now holds classes there weeknights and Saturdays. There are seven different levels of Chinese cooking offered in her classes, and even a teen class for ages 9 to 14.

"My classes are small, which is the way I prefer it," Shih says. "I have also added a sushi class, upon request. I don't even advertise my classes anymore. It is by word of mouth only."

Shih's two daughters, who used to assist her in the cookery store, now have their own careers. Suzanne, the oldest, is an optometrist at the Eye Lab on Rockville Pike. Elizabeth is a recent electrical engineering graduate of the Massachusetts Institute of Technology. Both girls worked at NIH during the summers while going to college.

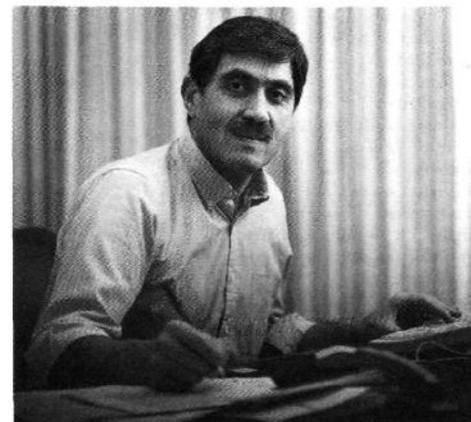
Shih has lived in the United States longer than she lived in her native country, Taiwan. "All of my family are still in Taiwan with the exception of one brother who is dean of the

graduate school of civil engineering at the University of Alabama in Huntsville.

"I'm proud of my heritage," she says. "My great grandfather was one of the early governors of Taiwan during the Ching Dynasty. I come from a family of physicians—my father, his four brothers, two of my brothers, plus a sister who is a pharmacist."

Chinese New Year was Feb. 15—the year of the lamb. According to Shih, a staple of the holiday meal is a dish made of glutinous rice. Supposedly, the kitchen god (which every Chinese kitchen has) visits Earth on New Year's Eve and partakes of the sticky rice. When he returns to Heaven, he will not be able to relay any bad reports because his mouth will be stuck shut. "With just a big smile on his face," she says, "he gives the impression to the Heavenly God that the family is doing well, treating him nicely, and therefore, blessings will be sent back to the family."

If you can't get into one of Shih's cooking classes, don't lose heart. Her recipes are copyrighted in the Library of Congress. □



Dr. Allen Spiegel, NIDDK acting scientific director, gave the 1990 Jacobaeus Lecture in Oslo, Norway, recently. The prestigious Scandinavian lecture series is sponsored by Nordic Insulinfond, a private foundation in Gentofte, Denmark. Spiegel spoke on the structure and function of G proteins, which act as intermediaries in cell signaling. Past recipients of the Jacobaeus award include NIH intramural researchers Drs. Marty Rodbell and Jesse Roth of NIDDK and Dr. Abner Notkins of NIDR.