the NIH Record

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

April 8, 1975
Vol. XXVII, No. 7

NATIONAL INSTITUTES OF HEALTH

Vaccines for Hepatitis B Are Developed; Reported Safe in Tests on Chimpanzees

Development of a method for producing vaccines against hepatitis B which were safe and effective in tests on chimpanzees was reported by Dr. Robert Purcell in a recent Symposium on Viral Hepatitis held at the National Academy of Sciences.

Dr. Gerin inserts a rotor into a zonal centrifuge located inside the Glove Box. Such a centrifuge is used to separate and remove the infectious Dane particles from the smaller non-infectious particles in the blood of hepatitis B carriers.

Dr. Purcell, head of the Hepatitis Virus Section, Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases, and Dr. John Gerin, director of the NIAID-AEC Molecular Anatomy Program Laboratory, believe their work provides a strong, scientific base for expanded studies of hepatitis B immunization now under way at NIH and in other laboratories.

Vaccines against hepatitis B, or serum hepatitis, are needed, particularly for use in high-risk groups such as members of the Armed Forces, patients and personnel of hemodialysis units, and residents of institutions.

Starting material for the model vaccines is serum or plasma from a human chronic carrier of the hepatitis B surface antigen, formerly known as the Australia antigen.

This antigen, occurring in several subtypes, is shared by the Dane particle—now believed to be

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Dr. Torsten Wiesel to Give Lecture at NIH Tomorrow

Tomorrow evening (Wednesday, April 9) at 8:15 p.m., Dr. Torsten N. Wiesel will deliver the NIH Lecture in the Masur Auditorium. His topic is Visual Deprivation and Its Effect on the Monkey Striate Cortex.

His research on this subject has been conducted in collaboration with Dr. David H. Hubel. Both scientists are at Harvard Medical School; Dr. Wiesel is Robert Winthrop Professor of Neurobiology at that university.

Drs. Rauscher and Fink Write Cancer Articles

A special supplement on cancer, including articles by NCI Director Dr. Frank J. Rauscher, Jr., on the National Cancer Program and Dr. Diane J. Fink, director of the division of Cancer Control and Rehabilitation, on Cancer Control, is scheduled for the Sunday *Washington Post* on April 20.

The educational supplement, sponsored by the American Cancer Society, will contain articles by former cancer patients, including Betty Ford and Senator Hubert Humphrey.

NCI's Dr. Alan Rabson Heads Div. of Cancer Biology and Diagnosis

Dr. Alan S. Rabson has been appointed director of NCI's Division of Cancer Biology and Diagnosis.

Since 1970, Dr. Rabson had served as deputy chief of the Division's Laboratory of Pathology. He joined the staff of that laboratory in 1956—a year after coming to NCI as a resident in pathologic anatomy at the Clinical Center.

The Division which Dr. Rabson now heads is responsible for research in cancer diagnosis and cancer biology and immunology.

It also supports the Breast Cancer Task Force, a program of coordinated research in the treatment, diagnosis, causation and biology of breast cancer.

Dr. Rabson's primary research has been in viral oncology, with emphasis on papovaviruses and herpes viruses.

In a collaborative study with Dr. Gregory T. O'Conor, NCI's as-

(See DR. RABSON, Page 4)

Tickets for Opening Meeting of NIH Alumni Reunion On First-Come, First-Served Basis; Kornberg Speaks

Tickets for admittance to the opening day convocation of the NIH First Reunion on Saturday, April 19, may be picked up at the new NIH Visitors Center in Bldg. 31, A-Wing.

Registrants Get Packets

These tickets for NIH employees and personnel from other agencies on the campus—NIMH, BB, and BHRD—are on a first-come, first-served basis. Those registering for the Saturday evening banquet and Sunday morning brunch will receive convocation tickets in their reunion registration packets.

The Saturday morning session—to be held in a tent adjacent to Bldg. 35 cafeteria and Old Georgetown Road—starts at 10 a.m. Dr. Arthur Kornberg, Nobel Laureate who came to NIH in 1942 as a PHS Commissioned Officer, will address the opening meeting.

Dr. Kornberg was with the then National Institute of Arthritis and Metabolic Diseases. After 3 years, he left for other research work, but returned to the Campus in 1947 as chief of NIAMD's Enzyme Metabolism Section.

Later, Dr. Kornberg taught and headed departments in Washington University School of Medicine in St. Louis and Stanford University School of Medicine.

Kornberg Continues Research

The noted Laureate who devoted his career to biomedical research, lives near Stanford and is still associated with that university's department of biochemistry.

For a detailed account of the times and places of events and the bus schedule to the banquet at the Washington Hilton Hotel, see the March 24 issue of *the NIH Record*.

NIH'ers Will Participate In 59th Annual Meeting Of FASEB Next Week

Many NIH scientists and alumni will be participating in the 59th annual FASEB meeting on April 13-18 in Atlantic City before returning to Bethesda for the First NIH Alumni Reunion April 19-20.

Some 15,000 biologists from 66 countries are expected to attend this Federation of American Societies for Experimental Biology meeting — the largest scientific meeting held in 1975.

In addition to presenting many of the 5,000 papers scheduled, NIH staff members will be serving as colloquia chairmen or taking part in panel discussions.

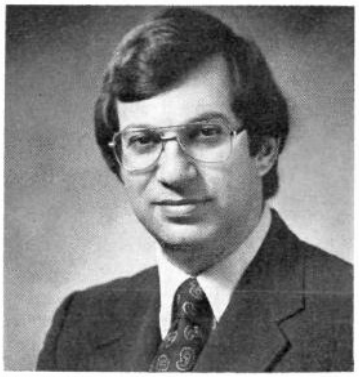
On Monday evening, April 14, a panel of speakers will discuss NIH activities.

Dr. Stetten to Speak

Dr. DeWitt Stetten, Jr., Deputy Director for Science, will discuss current NIH policy and budgetary matters.

Other NIH staff members will speak about the new Freedom of Information and Privacy Act legislation and its effect. These speakers will include Dr. Thomas E. Malone, Associate Director for Extramural Research and Training; Dr.

(See FASEB, Page 4)



Dr. Vincent T. DeVita, Jr., has been appointed director of the Division of Cancer Treatment. He had been serving as acting director of that Division. Dr. DeVita is known for his accomplishments in the therapy of Hodgkin's disease and non-Hodgkin's lymphomas. He has been cited for his research in this field.

the NIH Record

Published biweekly at Bethesda, Md., by the Editorial Operations Branch, Division of Public Information, for the information of employees of the National Institutes of Health, Department of Health, Education, and Welfare, and circulated by request to interested writers and to investigators in the field of biomedical and related research. The content is reprintable without permission. Pictures are available on request.
The NIH Record reserves the right to make corrections, changes or deletions in submitted copy in conformity with the policies of the paper and the Department of Health, Education, and Welfare.

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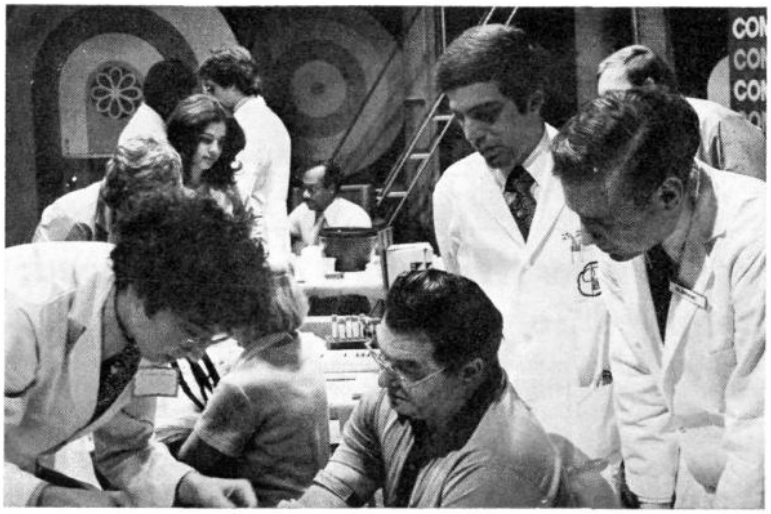
1st Free Blood Pressure, Cholesterol Check Offered To D.C. Area Residents, Congressmen, and Staff



Drs. LaRosa (second from right) and Brensike (right) check blood pressure and cholesterol screening procedures at the WMAL-TV studio.

Over 1600 Washington area residents between the ages of 30 and 59 streamed through the studios of WMAL-TV recently to take advantage of a free blood pressure and cholesterol check.

This day-long community service—the first of its kind in the metropolitan area—was offered by the Coronary Prevention Project with the collaboration of George Washington University and the Type II Coronary Intervention Study, National Heart and Lung Institute.

Counseling Helps

Participants who were found to have high blood pressure were given literature and counseling by the screening staff.

Those found to have high blood cholesterol from laboratory test results were informed confidentially and evaluated for participation in Project studies.

WMAL gave extensive live TV and radio coverage to the event, and well known radio personalities did on-the-spot interviews to stimulate listener response.

Screenings a Success

Following this screening, a similar event was staged in Congress. For 2 weeks ending March 28, Congressmen and their staff members were invited to visit the Rayburn Building first aid office for testing.

Dr. John C. LaRosa, Project director at G.W., and Dr. John F. Brensike, NHLI's coordinator of the Type II Intervention Study, feel that the screenings were a positive success, providing a model for future attempts.

Meeting to Expand Role Of Women and Minorities In Research Held Here

A 3-day conference to discuss an expanding role for women and members of minority groups in biomedical research supported by NIH funds will be held on the campus, April 22-24.

Representatives from the faculties and student bodies of about 75 minority and women's colleges have been invited to attend the meeting.

Among the institutions who have been asked to send representatives are 34 black academic institutions, 13 Spanish-surnamed, 5 American Indian, 9 Asian-American, and 14 women's colleges. Over half of the invited institutions do not receive NIH funds.

The meeting will familiarize conferees with activities and research at NIH and with opportunities for biomedical research support available under NIH grant and award programs. The conference will also alert NIH to the resources and capabilities of minority and women's colleges.

Levon Parker, NINCDS EEO coordinator, is chairman of the conference committee.

Call Compensation Officer For Questions on Benefits

For information concerning Workers' Compensation Program benefits and assistance in preparing claims following a work injury, contact Helen Thomas, Compensation Officer, NIH Safety Office, Bldg. 31, Room B1-C08, Ext. 65323.

Era Ends as NLM Bids MEDLARS I Farewell

In 1963, one year after moving to the NIH reservation, the National Library of Medicine installed its first computer system, MEDLARS I. On its first day of work, the computer operated steadily for 8 hours without a whimper.

On Feb. 28, the last production job was run on MEDLARS I. An

In operation for 12 years, MEDLARS I was created to produce the NLM's invaluable research tool, "Index Medicus," which has been published since 1879, as well as the "Cumulated Index Medicus," "Current Catalog," and numerous other bibliographies.

era came to a close the next day as NLM staff watched the computers loaded onto dollies and wheeled out of the computer room.

Just as an old-timer remembers his Model T and its idiosyncracies with fondness, the NLM staff feels nostalgia for the rented Honeywell-200 and Government-owned Honeywell-800 units now returned to the Honeywell Corporation and the General Services Administration, respectively.

The computer system processed thousands of demand searches before on-line searches with the MEDLINE system became operational in 1971.

The system was also instrumental in providing data which led to the development of its own successor, MEDLARS II.

All computer programs and associated data in MEDLARS I format will be retained on magnetic tape in the NLM storage vault for one year.

NIH Scientists Discuss Health Problems at Open House April 26 and 27

Serious health problems in the U.S. will be discussed by NIH scientists at the Open House on Saturday, April 26, and Sunday, April 27.

Employees, their families, friends, and the general public are invited to hear discussions of these problems and related NIH research in the Masur Auditorium.

Questions Answered

A question-and-answer period will follow.

On April 26 the schedule will be:

10:15 a.m., The Environment and Your Health, Dr. David P. Rall, NIEHS.

11:30 a.m., Childhood Diseases, Dr. Norman Kretchmer, NICHD.

12:45 p.m., Cancer: Who Is At Risk? How Can We Reduce The Risk? Dr. Marvin A. Schneiderman, NCI.

2 p.m., Your Lungs and Your Health, Dr. Ronald G. Crystal, NHLI.

3:15 p.m., Heart Attack, Dr. Peter L. Frommer, NHLI.

On April 27 the speakers will be:

10:15 a.m., Instrumentation in Biomedical Research, Dr. David F. Johnson, NIAMDD.

11:30 a.m., Mental Depression — Causes and Treatment, Dr. Frederick K. Goodwin, NIMH.

12:45 p.m., Acute Leukemia, Dr. Brigid G. Leventhal, NCI.

AVLINE to Begin May 1; Audiovisuals On-Line Is Computer Test by NLM

The National Library of Medicine will begin a 4-month test of a new computerized information storage and retrieval system to be known as AVLINE (Audiovisuals On-Line) on May 1.

AVLINE will contain a data base on audiovisual instructional materials in the health sciences, all of which are professionally reviewed for technical quality, currency and accuracy of subject content, and educational design.

Titles listed in AVLINE are those reported by and in use by medical school faculty. Each title must be nationally available.

When operational, AVLINE will allow teachers, students, librarians, researchers, practitioners, and other health science professionals to retrieve citations to evaluate audiovisual materials with maximum specificity.

For the test, approximately 30 selected institutions across the country will have access to citations to some 275 audiovisual units in the field of the neurosciences.

In addition to indexing and cataloging data, all citations will contain abstracts.

Citations will also contain physical descriptions of the materials, information on where and how they may be obtained, names of principal authors/producers, intended audiences, teaching effectiveness data (when available), and notice as to whether an individual unit is "recommended" or "highly recommended."

When fully operational, the AVLINE data base will be available to qualified users of MEDLINE.

It is anticipated that AVLINE will be made nationally available on or about Sept. 1. At that time approximately 900 items will be accessible for on-line searching.

Stride Interns Can Cope—Many Maintain High Grade Average, Get on Dean's List

Four of the six Stride interns on the Dean's List compare notes. Left to right are: Mr. Harshman, Ms. Muse, Mrs. Mead, and Mr. Brown.

By Judy Fleisher

How does a person cope with the grind of working 20 hours a week at NIH, attend college classes full-time, study late into the night, care for a family, and still wind up on the Dean's List with a 3.5 average?

"Panic is the best prod to keep you going at that feverish pace."

Stride intern Doreen Mead admits that being in the program imposes tremendous physical and psychological stress that never lets up. "It's a real hardship on family life."

A mother of three college graduates, who started college herself in 1947, Mrs. Mead is one of six Stride interns whose names were recently placed on the American University Dean's List for maintaining a 3.5 grade point average or better for four semesters while carrying a full academic load.

Other Stride interns on the Dean's List are: Cynthia Muse, Lewis Brown, Leonard Bahlman, Robert Harshman, and Carolyn Tilley. These six students are among 30 Stride interns — more than one fourth of the total program participants—who have cumulative grade point averages of 3.0 or better at American University.

At Marymount College, 13 Stride nursing interns were also placed on the Dean's List for attaining a 3.0 grade point average.

In a candid interview, several interns spoke of the extreme pressures, frustrations, and sacrifices that a Stride intern lives with daily for the 3 years they are in the program.

"People outside the program don't realize how demanding it is—they think it's a gravy train. They have no idea of the sacrifices you have to make—no family life, no social life."

As the oldest of seven children, Cynthia Muse took evening courses over a period of 12 years in several vocational areas. In 1961, she began her Government career, and was secretary to a DCRT branch chief when she entered Stride in 1972.

Ms. Muse is now working as a technical publications specialist trainee with NCI, and anticipates getting a bachelor's degree in general studies (social science) in May.

Lewis Brown commutes 84 miles each day from Walkersville, Md., to his job as an administrative technician with the Division of Personnel Management.

He admits that in high school he never considered himself college material. "Once you're in the working world and you're exposed to what it's really like, you change if you have any sense. At NIH it's exposure to the right kind of people."

Before he became a Stride intern in 1972, Mr. Brown spent most of his 9 years at NIH as a biological lab technician in NCI and NICHD. In May, he expects to receive a B.S. degree in general studies, concentrating on social science.

Doreen Mead joined NIH in 1965 in a temporary position, coding case histories for NCI, and was a secretary just prior to entering Stride in 1972.

In May, Mrs. Mead will get a B.S. degree in sociology with course work in communications to qualify her as a public information specialist.

Leonard Bahlman will be getting a B.S. degree in general studies

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Spock Opens Child Care Week on Campus; Donations Requested for Preschool Program

The world famous authority on infants and children—Dr. Benjamin Spock—will address the opening assembly of child care week on Monday, April 14, at noon, in the Masur Auditorium. A question-and-answer session will follow his talk.

During that week, through April 18, exhibits pinpointing the activities of the NIH Preschool Developmental Center will be shown in Bldgs. 10 and 35. The exhibits include art work made by the pupils of the nursery school. Parents of the preschoolers will be there to answer questions about the child care program at NIH.

On Tuesday, April 15, a film—The Great Age of Comedy—will be shown at noon in the Masur Auditorium. There is no charge for the movie.

Child care week is sponsored by the Parents Advisory Committee of the Center. The school, which is for children of NIH employees, is supported by tuition fees and donations. It is not subsidized by the Federal Government.

Donations to the school's scholarship fund are tax deductible; checks may be made out to the Foundation for Advanced Education in the Sciences. A receipt will be sent to each donor. Send donations to Virginia Burke, Bldg. 31, Room 2B-30, Ext. 61811.

Stride Nursing Interns Combine CC Experience With Academic Studies

The Stride Nursing Program combines experience in nursing duties at the Clinical Center with full-time college academic study for up to 2 years. Employees selected are those in non-professional jobs who have less than a bachelor's degree.

Since the program's inception at NIH in 1973, 31 nursing interns have attended classes at Marymount College and worked toward placement as professional nurses at the Clinical Center.

The first class of 12 Stride nursing interns will graduate in May.

Stride nursing interns who attained a grade point average of 3.0 during the first half of their sophomore year are: Cathleen Baughman, Joseph Hambrick, Kyle Smith, Carrie Ward, Lou Williams, and Deanna Stephens.

Freshman interns with a 3.0 average are: Carole Bent, Barbara Bowens, Sharon Fain, Ralph Forquer, Jr., Douglas Frey, Betty Goodwin, Ruth Rainey, Beva Schellhase, and Rosemary Wilson.

Adrian Hope, in her sophomore year, made the Dean's List in May 1974.

April 14 Last Day to Apply For Stride Nursing Posts

Twenty positions are available in NIH's Stride Nursing Program—applications are being accepted through next Monday, April 14.

Send a SF 171, Personal Qualifications Statement, to the Career Development Branch, DPM, Bldg. 31, Room B2-C39, to apply.

Also, submit a transcript of academic work at the high school or college level.

To be eligible, employees must have worked at NIH 12 months prior to the beginning of classes, July 30, 1975; have a grade of GS-7 or below, or wage grade equivalent, and must pass a complete physical exam at NIH.

NIH Visiting Scientists Program Participants

3/2—Dr. Jette Hesse, Denmark, Viral Leukemia and Lymphoma Branch. Sponsor: Dr. Paul Levine, NCI, Landow Bg., Rm. C309C.

3/2—Dr. Kauko K. Makinen, Finland, Caries Prevention and Research Branch. Sponsor: Dr. William H. Bowen, NIDR, Auburn Bg., Rm. 103.

3/4—Dr. Mario Pandin, Italy, Laboratory of Chemical Biology. Sponsor: Dr. Irwin Chaiken, NIAMDD, Bg. 10, Rm. 9N313.

3/10—Dr. Mohamad F. Rahman, India, Laboratory of Chemistry. Sponsor: Dr. Everette May, NIAMDD, Bg. 4, Rm. 135.

3/11—Dr. Sushilkumar G. Devare, India, Viral Carcinogenesis Branch. Sponsor: Dr. Padman S. Sarma, NCI, Bg. 37, Rm. 2D20.

3/11—Dr. Peter Maier, Switzerland, Environmental Mutagenesis Branch. Sponsor: Dr. Frederick J. de Serres, NIEHS, Research Triangle Park, N.C.

3/11—Dr. Pier L. Marchifava, Italy, Laboratory of Neurophysiology. Sponsor: Dr. M. G. F. Fuortes, NINDS, Bg. 36, Rm. 2C02.

3/13—Dr. Pramod M. Lad, India, Laboratory of Nutrition and Endocrinology. Sponsor: Dr. Martin Rodbell, NIAMDD, Bg. 6, Rm. B126.

3/17 — Dr. Giuliana Bertrand, Switzerland, Laboratory of Neurophysiology. Sponsor: Dr. Paul O'Bryan, NINCDS, Bg. 36, Rm. 2C02.

3/23 — Dr. Fredrik H. Guekes-Foppen, The Netherlands, Laboratory of Clinical Science. Sponsor: Dr. Irwin J. Kopin, NIMH, Bg. 10, Rm. 2D46.

3/24 — Dr. Tomio Suda, Japan, Laboratory of Biomedical Sciences. Sponsor: Dr. Thorsten Fjellstedt, NICHD, Bg. 6, Rm. 307.

DR. RABSON

(Continued from Page 1)

sociate director for International Affairs, he described enhancement of the growth of human adenoviruses in monkey cells by simian virus 40 (SV40), which led to the discovery of adenovirus=SV40 hybrid viruses.

Dr. Rabson received his B.A. degree in 1948 from the University of Rochester, and his medical degree in 1950 from the Long Island College of Medicine.

For the past 3 years, he has been a clinical professor in the department of pathology at Georgetown University Schools of Medicine and Dentistry.

Dr. Rabson received the USPHS Meritorious Service Medal in 1969. He is a member of several scientific organizations, including the American Society of Experimental Pathologists and the Society for Experimental Biology and Medicine.

FASEB

(Continued from Page 1)

Leon Jacobs, Associate Director for Collaborative Research, and Storm Whaley, Associate Director for Communications.

Others taking part in the evening symposium will be: Richard Riseberg, NIH Legal Advisor, and Mary Coggin, chief, Administrative Law Branch, Office of the HEW General Counsel; Drs. Robert P. Akers, Charles R. McCarthy, and Seymour Perry, OD NIH.

Minority Programs Cited

On Tuesday evening, April 15, the National Heart and Lung Institute Committee on Minority Programs is sponsoring a symposium on the Institute's research opportunities for minority group scientists.

Dr. Roger L. Ringler, Acting Director of NHLI, and Dr. George Lythcott, chairman of the National Heart and Lung Advisory Council Working Group on Minority Institutions and Individuals, will speak, followed by a panel discussion.

On Wednesday, April 16, Dr. Loretta L. Leive, NIAMDD, will chair a Biochemistry Evening Symposium on Current Efforts for Equal Employment Opportunities for Professional Women.

Dr. Leive will open the symposium, speaking on Women in Biochemistry.

Exhibits Presented

Both the National Institute of General Medical Sciences and the Division of Research Resources will be presenting exhibits at the meeting.

Honors to be given to NIH-affiliated scientists include the American Institute of Nutrition's naming of Dr. Floyd S. Doft as a 1975 Fellow. This signal honor is bestowed each year on not more than three members who have had distinguished careers in the field of nutrition.

Dr. Doft, who served in the PHS for 25 years, retired in 1962 as Director of the then National Institute of Arthritis and Metabolic Diseases.

He has recently served as NIH consultant and as visiting professor, Albert Einstein College of Medicine.

Others Honored

Dr. Doft is most known for his experimental contributions to the pathophysiology of nutritional liver disease, the relationship of folic acid to certain blood dyscrasias, and his pioneering investigations of germfree animals and their use as a tool in the study of water-soluble vitamins in the intestinal tract.

The other two named as Fellows were Dr. Mildred Adams, who was a consultant to the Nutrition Institute, USDA, at the time of her retirement in 1972, and Dr. Ancel Keys, now professor *emeritus* at the University of Minnesota's School of Public Health.

British Med. Research Council Head Visits for Informal Talks

Sir John Gray, head of the British Medical Research Council, visited here recently to discuss health research and care, international health policy, the role of WHO, and other topics.

Additional subjects considered included the Fogarty international fellowships and the Commission on the Protection of Human Subjects in Biomedical and Behavioral Research.

Stanford Medical Researchers Succeed In E-B Virus Free Lymphoma Cell Culture

Researchers at Stanford University School of Medicine have used new techniques to grow tumor cells in the laboratory from three patients with histiocytic lymphomas.

Except for Burkitt's lymphoma, a cancer found in African children, human lymphoma cells had not been grown successfully in culture.

The researchers, Alan L. Epstein and Dr. Henry S. Kaplan, said the cells will provide an important new source for laboratory investigations, paving the way for studies of drugs, radiation treatment, and improved methods of diagnosis.

Aids Immunotherapy Study

The cells can also be used in a search for cancer-inducing viruses and in immunotherapy research, finding ways of stimulating natural body immunity against cancer.

Cell cultures from human tumor biopsy specimens have been difficult to establish, the researchers noted, because dividing tumor cells require a critical combination of nutrients, growth factors, and environmental conditions for continued sustenance outside the human body.

Mr. Epstein and Dr. Kaplan said their success was due to development of new cell culture methods enabling rapid testing of a large number of factors.

By dividing tumor cells from patients into small samples and storing these at low temperatures, they could test specimens repeatedly until the growth requirements of each tumor were discovered.

Virus Affects Cell Cultures

The researchers note that these cell cultures are free of the herpes-like Epstein-Barr virus, associated with infectious mononucleosis and Burkitt's lymphoma, which has been found to pass onto normal white cells the ability to grow continuously in the laboratory.

They said that establishing a lymphoma cell line uncontaminated by Epstein-Barr virus has been a major challenge because the virus is present in most persons, including lymphoma patients, for most of their lives.

The scientists reported their work, done partly under a contract from the Virus Cancer Program, National Cancer Institute, in the December issue of *Cancer*.

"The malignant cells had the same chromosomal abnormalities (as the patients' tumors)," they said, and were capable of widespread growth when inoculated into the brains of "nude mice," a laboratory strain which lacks a thymus gland and therefore does not have a cellular immunity to destroy the implanted cells.

The cells were flown to Children's Hospital in Philadelphia, where Drs. Werner and Gertrude Henle confirmed the absence of the Epstein-Barr virus.

National Library of Medicine employees who received awards for their contributions to the NLM Equal Employment Opportunity Program and other participants in a recent EEO ceremony are (l to r) front row: Dr. Joseph Leiter, Lois Terry, Sylvia Stewart, and Alice Ladson. Back row are: Rubin Shulik; George Bell, EEO Committee Chairman; Raymond Jackson, NIH EEO Officer; Arthur Robinson, Jr., NLM EEO Coordinator; Alvin Barnes, and Joseph McGroarty. Alyce Myers, David Moriarty and Jo Nell Stancil also received awards.

James S. Alexander was elected chairperson of the NIH EEO Advisory Council at a recent meeting. Mr. Alexander is the EEO specialist at the Clinical Center. The Council, which meets on the Wednesday after payday, includes committees on supervisory development and training; upward mobility and employee development; recruitment, placement and promotion; counseling, and employee relations. NIH'ers may send material for consideration before the Council 2 weeks prior to a meeting. Such details may be addressed to Jean G. Oliver, chairperson, executive committee.

Drs. Cooper and Ringler Speak at the Dedication Of Sickle Cell Exhibit

Dr. Theodore Cooper, HEW Acting Assistant Secretary for Health, cut the ribbon at the recent dedication of The University of Chicago Comprehensive Sickle Cell Center exhibit. He also gave the opening speech.

Other speakers included Dr. Robert L. Ringler, Acting Director of the National Heart and Lung Institute, Dr. Rudolph Jackson, program coordinator of NHLI's National Sickle Cell Disease Program, Dr. Leon O. Jacobson, Dean of the Division of the Biological Sciences and The Pritzker School of Medicine at The University of Chicago, and Dr. James E. Bowman, Director of the University's Comprehensive Sickle Cell Center.

Dr. Bowman coordinated plans for the exhibit which was supported by an NHLI grant to the University. The grant provides for clinical and basic research on sickle hemoglobin at the University and at Michael Reese Hospital and Medical Center and for a program of community education.

Duckpin League Schedule Set For Next Season's Bowling

Next season, 1975-76, the NIH Parklawn R&W Duckpin Bowling League will be bowling on Wednesdays, 6:45 p.m., at the Twinbrook Bowling Alley, 2022 Viers Mill Road, starting Sept. 3.

Anyone interested in joining a team or substituting, call Helen Swarthout, 443-2657, or Gloria Johnson, 443-2653.

Time to Take Up That Sporting Life— R&W Teams Schedule Lineup for Spring

Looking for a way to shed those excess pounds gained over the winter? Want to get in shape, stay in shape, or keep your circulation moving? Need an excuse for enjoying spring weather out of doors? Interested in meeting new faces at NIH?

One way to combine these enthusiasms is to join fellow sports lovers in activities sponsored by the Recreation and Welfare Association at NIH.

The new spring sports schedule and a list of 1975 activity chairmen can be found at the R&W Activities Desk, Bldg. 31, Room 1A-18, Ext. 64600.

Softball is about to begin with practice sessions in April and after-work weekday games starting in May. Men's teams, organized by Bill Blackwelder, Ext. 65905, play on the NIH campus.

Co-rec teams with equal numbers of men and women play at Charles Woodward High School and North Bethesda Junior High School. Last year 12 teams of 20 to 30 members each played in the league, headed this year by Brian McLaughlin, Ext. 64406.

To join the lineup, fill out the form in the March R&W *Smoke Signals* newsletter and return it to the R&W Activities Desk.

The Tennis Club, very popular at NIH, will be planning spring and fall tournaments, lessons, and get-acquainted days at a meeting on Friday, April 11, at noon in Wilson Hall, Bldg. 1. Dues of $2 in addition to R&W membership enable NIHers to use the four tennis courts on campus.

The first course of tennis lessons began March 29. Information on subsequent lessons can be obtained from Ike Hantman, 652-3007 (evenings only) or Carol Rankin, Ext. 66763.

The Sailing Club, led by Frank Tietze, Ext. 61241, meets the last Thursday of each month. Membership is $10 in addition to R&W membership.

Owns Day-Sailers

The club owns four day-sailers which are chartered to members at low rates at the Back Creek Marina in Annapolis. More than 150 members will participate in intramural and regatta racing as well as lessons beginning in mid-April.

NIH has three golf teams. The Women's Team, organized by Shirley Aud, Ext. 67467, is already planning a spring outing and social.

The Men's Team still has a few spots open. Forms are available in the March *Smoke Signals* or at the R&W Activities Desk.

Play starts around April 15 and continues through September. Contact Russ Ulshafer, Ext. 67337, for further information.

Oscar Young Is Coordinator

Now in its eighth season, the NIH team has won the League of Federal Recreation Associations Golf Tournament every year. Oscar Young, Ext. 61671, is the coordinator.

Who are those people running a mile or more across the campus on Wednesday afternoons at 5:30? The NIH Jogging Club, a coed group led by Jay Miller, Ext. 66941. A meeting for those interested in staying in shape for skiing, tennis, or just good health will be held Monday, April 14, at noon in Bldg. 6, Room B2-22.

Some sports continue year-round in the 14th floor gymnasium at the Clinical Center. Badminton is held Tuesday evenings, with Dr. Boon Chock, Ext. 62073, as chairman.

Volleyball Popular

For volleyball tournaments and informal practices, consult the schedule at the R&W Activities Desk or call Bob Romanoff, Ext. 65641. The very popular co-rec teams move outdoors in spring.

Dr. Ray Chen, Ext. 62708, president of the NIH Table Tennis Club, recently led the group to victories in the first annual Montgomery County Table Tennis Tournament.

A finalist in the men's doubles, Dr. Chen won the senior men's singles title. The club continues to play Friday evenings in the Clinical Center gym throughout the summer.

Joseph Forbes Retires; Improved Lab Glassware, Quality of Equipment

Joseph G. Forbes, chief of the Quality Assurance Branch, Materiel Management, recently retired after 33 years' Federal service.

Mr. Forbes came to NIH from the Naval Weapons Plant in 1960. Three years later he was appointed head of the Purchase Standards Unit.

Last year his unit and the Quality Control Section were combined and became the Quality Assurance Branch, which he headed.

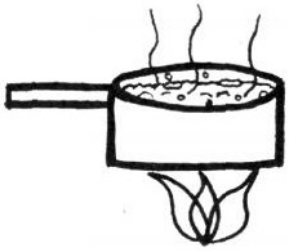
Under his leadership the NIH Standards for Animal Care Equipment were established, and he contributed much toward improving the quality of laboratory glassware used here.

He also assisted in the development of specifications for scientific equipment—including vertical and horizontal low temperature freezers, liquid scintillation counting systems, and electron microscopes—which resulted in purchase of such equipment at substantial savings.

An avid sportsman, Mr. Forbes plans to spend more time fishing and hunting as well as improving his golf game.

Mr. and Mrs. Forbes share the good wishes of colleagues and co-workers at a recent retirement party.

ENERGY TIPS



To use energy most efficiently when cooking, keep these tips in mind:

- Use pots that cover the heating element.
- Tea kettles heat water more efficiently than open pans.

Flat-bottomed pans and pressure cookers use less energy.

- Heating water hot from the tap uses less energy than starting with cold water.
- Broiled meats cook faster, saving energy and often improving taste. Another plus: broiled foods usually have fewer calories than fried foods.
- Clean under-burner reflectors often.

NIH Symphony Gives All Brahms Concert Sunday, Apr. 13, in CC

The NIH Symphony will present an all Brahms concert on Sunday, April 13, at 3 p.m. in the Masur Auditorium. Shirley Ritenour and the Georgetown University Men's Chorus will perform the Brahms Alto Rhapsody.

The concert will also include the Academic Festival Overture, and Symphony No. 1. There is no admission charge for the performance.

Safety Tips for NIH

Eating, drinking, smoking, chewing gum, applying cosmetics, and storing food in laboratories—such activities may result in contact with or ingestion of toxic, infectious, oncogenic, or radioactive materials.

Confine these activities to a restricted area where personnel are required to remove their laboratory clothing and thoroughly wash their hands.

For additional information, consult the NIH Biohazards Safety Guide, or call the Environmental Services Branch, Ext. 66034, or NCI Office of Research Safety, Ext. 66981.

H. G. Fredericks Retires; Contracts Expert Ends 33 Yrs. Fed'l Service

Herbert G. Fredericks, deputy director of the Division of Contracts and Grants, OD, since 1971, recently retired after 33 years of Federal service.

Mr. Fredericks implemented the decentralization of NIH research contracting activities to the bureaus and institutes. As assistant director for Contract Policy and Operations, he directed negotiated contracting policies and procedures and the evaluation of research contracting operations at NIH.

In addition, Mr. Fredericks was responsible for providing research contracting services to those components which have not delegated research contracting authority.

Before coming here, he was acting director of the Procurement and Production Directorate at the Edgewood Arsenal in Maryland.

Mr. Fredericks received a B.S. degree in social science from the City College of New York, and in 1939 graduated from the Brooklyn Law School, St. Lawrence University, where he was editor of the *Brooklyn Law Review*.

From 1935 to 1971 he held various posts concerned with legal matters in the U.S. Army Chemical Corps Materiel Command.

Mr. Fredericks, the author of several papers on government contracting, has received two sustained superior performance awards.

STRIDE INTERNS

(Continued from Page 3)

this May; he has concentrated on courses in information and computer science.

Prior to entering Stride, he was for 7 years in NLM's MEDLARS Management Section, managing and monitoring the computerized MEDLINE bibliographic on-line retrieval system used by over 400 centers. Mr. Bahlman expects to work toward a master's degree in library and information science.

Robert Harshman was working in inhalation therapy at the Clinical Center for 8 years before he became a Stride intern in 1973. He is seeking a career in scientific computer programming after he receives a B.S. in biology next spring.

Before entering Stride, Carolyn Tilley was with DRG and the Bureau of Health Manpower Education. Her Stride assignments have included working for the MEDLARS Management Section of NLM. In May, Ms. Tilley will receive her B.S. in general studies, primarily in information and computer science and management.

Combines Training and Study

Project Stride is a career development program which combines training in a technical position at NIH with full-time college study at American University at Government expense for up to 3 years.

The goal of the program is placement in a professional position at NIH. The major career areas in which an intern may study are: administration, accounting, life science, physical science, and mathematics.

Since July 1972, when Stride became a reality at NIH, approximately 130 interns have been in the program, with a dropout rate of less than 10 percent.

Osler Society to Meet at NLM Wednesday Afternoon April 30

The American Osler Society will meet at the National Library of Medicine's History of Medicine Division Reading Room on Wednesday, April 30, from 2 to 5 p.m.

The program includes four papers on William Osler's career, a paper on William H. Welch, and another on William S. Halsted.

Among the speakers are Drs. William B. Bean, Howard B. Burchell, William C. Gibson, and Peter H. Niebyl. The meeting is open.

Dr. Eugenie Clark and Ralph Nader to Speak Here

This month two well-known authorities in disparate fields—science and consumer education—will talk to NIH'ers in the Masur Auditorium.

The first lecture — on Friday, April 11, at noon—will be given by Dr. Eugenie Clark, marine biologist and professor of zoology at the University of Maryland. She will discuss her experiences while diving among the sleeping sharks in Mexican waters.

The lawyer-*cum*-consumer advocate—Ralph Nader—will give a lecture on Tuesday, April 22, at 1:30 p.m.

Both lectures are part of a series sponsored by the Foundation for Advanced Education in the Sciences. The lectures are open to all NIH personnel.

The opening lecture in February was given by Alice Rivlin, the new Director of the Congressional Budget.

Dr. Mercado Appointed Chief of NCI's Clinical Investigations Branch

Dr. Raul Mercado, Jr., has been appointed chief of the Clinical Investigations Branch in NCI's Division of Cancer Research Resources and Centers.

Dr. Mercado will coordinate grant-supported research programs —including the program in which new cancer treatment methods of 412 institutions in 22 cooperative groups are being evaluated.

He joined NCI in 1971 as the program director for Radiation in the Division of Cancer Grants, and 3 years later became chief of the Treatment, Rehabilitation and Continuing Care Branch in the Division of Cancer Control and Rehabilitation.

Dr. Mercado received an M.D. degree in 1951 from the St. Louis University School of Medicine.

He joined the University of Maryland School of Medicine faculty in 1958, and from 1964 to 1966 was an associate professor of radiology at the Mallinkrodt Institute of Radiology in St. Louis.

Also, from 1965 to 1966, Dr. Mercado was assistant director of the Cancer Research Center in Columbia, Mo.

During 1966-74 he was an associate professor of clinical radiology at the University of Pittsburgh. He is the author of 18 scientific publications.

Campaign to Benefit Mentally Retarded Needs Bicycle Riders

Bicycle riders have been asked by the Association for Retarded Citizens to help in a fund-raising campaign for the retarded on Sunday, April 20.

In case of rain, April 27 is the alternate date.

For further information call the Association in the following areas: Montgomery County, 949-8153; Prince George's County, 568-1234; Howard County, 301-730-0638, and Washington, D.C., 529-0070.

Dr. Robert I. Levy (c) shows the medal and citation which he received at the recent 27th Annual Arthur S. Flemming Awards ceremony to Dr. R. W. Lamont-Havers (l), NIH Acting Director, and Dr. Robert L. Ringler, NHLI Acting Director. Dr. Levy, director of NHLI's Division of Heart and Vascular Diseases, was cited for several achievements including his investigations "in the field of lipid metabolism . . . an international reputation both in basic and clinical investigations through personal creativity, diligence, and leadership." The awards were presented by Dr. Flemming to 10 outstanding Federal employees in scientific, technical, and administrative fields.

VACCINES

(Continued from Page 1)

the actual virus of hepatitis B—and by much smaller spherical particles found in abundance in the blood of hepatitis B carriers.

Drs. Purcell and Gerin used a 3-step procedure to remove or inactivate infectious hepatitis B virus (HBV) in the starting human material.

First, all Dane particles were removed by centrifugation. The remaining, small, non-infectious particles were then purified by centrifugation.

Vaccines Tested for Potency

As a final precaution, the purified particles were inactivated by treatment with formalin—a chemical successfully used in the preparation of a number of inactivated virus vaccines.

The potency of the prototype subunit vaccines was tested in guinea pigs, and it could be shown that hepatitis B surface antigen had been recovered from the human serum and that the vaccine, though inactivated, was still capable of inducing the formation of specific antibody.

Safety tests were carried out in unexposed chimpanzees. Six animals were infants born and raised at Holloman Air Force Base in New Mexico in a cooperative program jointly sponsored by NIAID, the Bureau of Biologics, FDA, and the Center for Disease Control. One chimpanzee was a jungle-caught animal housed at the Delta Primate Center in Louisiana, under an NIAID contract.

Studies With 6 Chimps

Six chimpanzees were given one of the following: a formalin-inactivated vaccine for the hepatitis B antigen subtype *ayw;* the same vaccine, not exposed to formalin; the hepatitis B antigen positive serum from which the *ayw* vaccine was made; a formalin-inactivated vaccine for the hepatitis B antigen subtype *adr,* or the solution used as the diluent for the vaccines.

One animal was given no material, and was later used as a control in efficacy tests.

The vaccines were given subcutaneously in two doses, one month apart. The *ayw*-containing serum was administered intravenously. Serum samples were obtained weekly from all the animals and tested for hepatitis B surface antigen and antibody and for antibody to the hepatitis core antigen (which is found only on the Dane particle).

None of the vaccinated animals showed any signs of hepatitis B infection, but did develop antibody to the hepatitis B surface antigen. The one chimpanzee given the untreated *ayw* serum actually developed hepatitis B.

Efficacy tests of the vaccines were carried out 6 months later in both vaccinated and control animals, all of whom were given infectious doses of hepatitis B virus, subtype *ayw* intravenously.

The two unvaccinated chimps developed hepatitis B. None of the *ayw* vaccinees had any biochemical or serologic evidence of HBV infection. The *adr* vaccinee became infected but did not develop signs of disease, indicating possibly, that the severity of his disease had been blunted by administration of the *adr* vaccine.

Scientists Explain Work

In presenting results of their work, Drs. Purcell and Gerin pointed out that preparation of a vaccine from antigens not grown in tissue culture is novel but not without precedent, as in Jenner's vaccine for smallpox and Pasteur's for rabies.

Although to date there has been no evidence of any harmful effects of the vaccines, additional studies are needed and are being conducted.

Only the doctor and the dramatist enjoy the rare privilege of charging us for the annoyance they give us.—*Santiago Ramon y Cajal.*

National Organization of Research Nurses, Dietitians Open to NIH'ers, Those in Other Clinics U.S. Wide

Research nurses and dietitians at the Clinical Center are eligible to join the National Organization of Research Nurses and Dietitians. The organization, which held its first meeting last fall, include members from the 84 General Clinical Research Centers supported by the Division of Research Resources.

Membership is also open to those practicing the two professions in other medical research clinics throughout the U.S.

This year, the newly-formed association plans to hold regional workshop meetings in seven cities: Dallas; St. Louis; Seattle; Ann Arbor; New York City; Jackson, Miss.; and Philadelphia.

Discussions will be held on nursing techniques, special patient problems, protocol compliance, special diet applications, and other subjects involving activities geared to these professions.

Research nurses and dietitians in the Division of Nursing, Bureau of Health Resources Development, are also eligible to join the new association, which is co-chaired by Mary Carolyn Borne, a registered nurse, and Shirley Hack, a registered dietitian, Children's Hospital, L.A.

For further information on the association's activities call Dr. Normand R. Goulet, General Clinical Research Centers Program, DRR, Ext. 66595.

Nurses Herschella L. Horton (l) and Shannon K. Jacobs, Arizona Medical Center, are editors for the two clinical research studies that the organization plans to publish quarterly. One study will be written by a nurse, the other by a dietitian.

James Graalman Named New NCI Branch Chief For Research Contracts

James E. Graalman was recently appointed chief of the Research Contracts Branch, National Cancer Institute.

Mr. Graalman administers research contracts activities of the five NCI divisions.

This includes development and implementation of policy as well as providing contract management data and staff support to project officers.

From 1961, until he joined NCI, Mr. Graalman held various positions in research and development contracting at NASA's Goddard Space Flight Center.

He attended the University of Oklahoma from 1950 to 1954.

Scientist Describes Special Diet for Children With Intestinal Complications From Radiation Treatment

A special diet may be effective in managing severe intestinal complications that result from radiation treatment in children with cancer.

The new work in radiation enteritis—inflammation of the intestine—was done by Dr. Sarah Donaldson, Stanford University Medical School, while she was a visiting fellow at the Institut Gustave-Roussy in Villejuif, France. She recently described the work at a meeting of the American Society of Therapeutic Radiologists.

Dr. Donaldson and her colleagues studied 44 children in France who had received whole abdominal irradiation as part of the treatment for their malignant disease.

It was determined that subsequent inflammation of the intestines and bowel obstruction in these children was caused by the radiation, not by recurrence of the tumors.

The problem may be life-threatening, even though the cancer has been arrested. According to Dr. Donaldson, "No specific dietary therapy has been developed for this condition in children."

The diet consists of a blended mixture of substances that can be taken through a tube if the patient is too sick to eat or drink it. It is free of gluten (the protein of wheat and other grains), free of protein obtained from cow's milk and lactose, low in fat, and low in residue.

'Diet by Omission'

Dr. Donaldson called it a "diet by omission," since it was developed by eliminating all the food items that affected the enteritis.

"Our work under the microscope gave us the clues," she explained. "We made it free of fat and milk products, since we saw that the damaged bowel could not absorb milk. We made it low residue to avoid further obstruction."

Dr. Donaldson described a "dramatic reversal in the children's clinical status that began with the initiation of the diet."

Followup for the 14 long-term survivors ranged between 19 months and 7 years. There were no deaths attributed to radiation enteritis. Of those surviving, none have shown evidence of recurrent intestinal obstruction.

Roughage, gluten, milk, and fat were gradually added to the children's diet following improvement in their X-rays and small bowel biopsies.

The diet, continued for 12 to 24 months in some cases, was gradually replaced to a normal diet which was well-tolerated.

Paper Describes Syndrome

The paper is the first description of the syndrome of intestinal injury following whole abdominal radiation in childhood. Dr. Donaldson pointed out that as the survival rate of children with those tumors increases, such complications of treatment become more apparent.

This is also the first time a specific dietary therapy has been published as the major form of treatment for radiation enteritis in children.

Work is now underway at the Institut Gustave-Roussy to determine if use of the diet during the period of radiation treatments would avoid later intestinal complications. The diet is not yet in use at Stanford, but is under study.

The research was supported in part by grants from the National Cancer Institute.

Guide for Sending Hazardous Materials Via Passenger Aircraft Issued by NIH

A guide to regulations governing shipments of hazardous materials, prepared by NIH, may be obtained by intramural scientists from the Quarantine Permit Service Office, Bldg. 31, Room 7A-50.

Labels which should be attached to such shipments are also available there.

Several months ago airline pilots threatened an embargo on shipments of hazardous materials on passenger aircraft.

The pilots' action was based on alleged violations of regulations relating to shipment of such materials as micro-organisms causing human disease, biological products, or human and animal material for diagnostic purposes.

Pilots Take Stand

Although the Airline Pilots Association originally pressed for legislation restricting air transport of hazardous materials to cargo planes, this stand was subsequently relaxed.

Transportation of etiological agents on passenger aircraft is still allowed, but a careful check is being made for proper packaging and labeling.

Responsibility for compliance with regulations rests on investigators as well as their institutions.

Dr. Earl Chamberlayne, of NIH's Quarantine Permit Service Office, cautions that the NIH guide is just that—a document which will help researchers comply with the variety of regulations governing transportation of pathogenic materials.

These regulations are extensive, complex, and subject to varying interpretations, according to Dr. Chamberlayne. Even though a scientist may be complying fully with the transportation act, there may be other regulations imposed by the PHS, the Departments of Agriculture and Commerce, and the Energy Research and Development Administration which must also be taken into consideration.

"For example, most people think that shipment of tissue cultures is simple," says Dr. Chamberlayne.

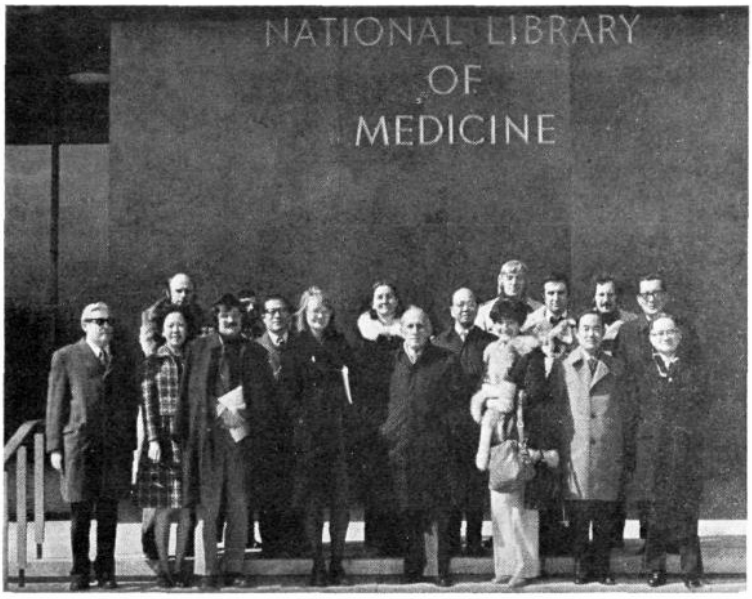
"However, a scientist might find that if he wants to import tissue cultures from certain countries, he would have difficulties with the Department of Agriculture because the media contains fetal calf sera and might carry foot-and-mouth disease of cattle."

Procedures Worked Out

Fortunately, the regulations are complicated only in their broad application. If a laboratory generally ships only one kind of material, appropriate procedures which may be repeated over and over can be worked out.

For a copy of NIH's policy guidelines, call the Quarantine Permit Service Office, Ext. 62516. This office assists NIH laboratories and contractors in meeting responsibilities for shipments in and out of the country.

NIH grantees and other scientists should contact the Foreign Quarantine Office, Center for Disease Control, Atlanta (404-633-3883), or the agencies responsible for administration of pertinent regulations.



A group of foreign correspondents from newspapers published in many parts of the world recently spent a day on the campus speaking with scientists and observing their research. The correspondents, who are based in New York, also toured NLM and the CC. Under the auspices of USIA, they will visit other major U.S. biomedical research facilities. Irving Goldberg (far left), Director of the Division of Public Information, OD, met with the reporters and briefed them on NIH health programs.

Nathaniel Berlin Heads Medical School's Cancer Center at Northwestern

Dr. Nathaniel I. Berlin, who has been with the National Cancer Institute since 1956, has accepted a post at Northwestern University Medical School as the first director of its cancer center. Dr. Berlin has been director of NCI's Division of Cancer Biology since 1972.

Dr. Berlin

In 1959 Dr. Berlin was appointed chief of the General Medicine Branch. Before that position, he headed NCI's Metabolism Service. In 1961 he was named clinical director, and 7 years later, he became scientific director of General Laboratories and Clinics.

Dr. Berlin has done his principal research in the physiology of red blood cells, metabolism of bilirubin, and in cancers of the blood.

The cancer center at Northwestern which Dr. Berlin now heads was established last year to coordinate the work of basic scientists and clinical investigators at the university and its affiliated hospitals.

Metro Will Open Bids, Begin Construction Here Starting in Midsummer

Bids will be opened tomorrow, April 9, for the tunneling contract of the Metro Rapid Rail System between the Beltway and Elm Street in Bethesda.

Work should begin along this section of Rockville Pike by midsummer. The Medical Center Station will be located at South Drive and Rockville Pike.

At this location the contractor will construct a shaft to remove material excavated from the tunnel. Later this shaft will be used for the escalator banks to the station platform.

This work is expected to have a very minor impact on NIH facilities. South Drive will be closed from 9 a.m. to 4 p.m. to facilitate contractor activity.

Blasting is expected to be unnoticeable except perhaps by sensitive instrumentation. The Division of Engineering Services will monitor vibrations.

If problems develop, a limited system of pre-blast warnings may be initiated.

A second contract will be let in about one year for the construction of the station platform, vault, and surface facilities. Metro expects the station will be operational in early 1980.

Dr. Saunders Is Honored For Apollo Animal Tests

Dr. Joseph F. Saunders, deputy associate director for international affairs, National Cancer Institute, is one of the recipients of the Group Achievement Award presented to the M212 Biocore Experimental Team by the National Aeronautics and Space Administration.

Dr. Saunders, as chief of biology in NASA Headquarters, was the scientist responsible for management of the experiment, which was part of the payload of Apollo 17.

In the experiment, the effects of high-energy, high-atomic-weight particles of cosmic radiation were studied as they interacted with non-replicating cells of the brain and the eye.

Dr. Saunders is one of the few Americans who have visited Star City, the home of the Cosmonauts, which is the Soviet Union's equivalent of the Lyndon B. Johnson Space Center in Houston.

The citation was "For outstanding contributions to the development and qualification of the first animal experiment carried in a manned spacecraft.

"Undertaken in an effort to investigate the pathophysiology of animals exposed to the deep space environment, this experiment has provided fundamental information needed in planning man's future interplanetary exploration."

During a visit to the Soviet Union in December 1974, Dr. Saunders was the guest of Prof. Oleg G. Gazenko, Director of the Institute of Biomedical Problems, USSR Ministry of Health, which is responsible for the Soviet efforts in space biology and medicine.

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