

the



# Record

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

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NATIONAL INSTITUTES OF HEALTH

## Dr. M. Hairstone Joins Grants Asso. Program For Year of Training

Dr. Marcus A. Hairstone, former science advisor with the Haile Selassie I University, Addis Ababa, Ethiopia, has joined the NIH Grants Associates Program for a year of training in health science administration.

### Education Noted

A graduate of Livingstone College, Salisbury, N.C., Dr. Hairstone received his M.S. degree in 1950 from Duquesne University and his Ph.D. degree in cytology and microanatomy in 1956 from the University of Pittsburgh, where he held a teaching fellowship.

In 1956, he joined the University of Nebraska at Lincoln as director of dental research, moving 2 years later to Long Island University.

During 1960 and 1962, Dr. Hairstone was also special lecturer and consultant to the National Science Foundation Summer Institutes.

### Joined Rockefeller U.

Then he became research associate at Rockefeller University where he remained until 1964 when he accepted a position with Columbia University.

He was a Fulbright professor with the Medical Research Institute, Alexandria, Egypt (1966-67),

(See DR. HAIRSTONE, Page 4)



**Dr. Hairstone**—whose research interests include microanatomy, electron microscopy, and cytopathology—has served as a consultant in the universities of several countries.

## Nationwide Recombinant DNA Standards, Compliance Discussed at Meeting Feb. 19



Flanked by members of the press and TV camera crews, Dr. Fredrickson (c) convened the meeting held Feb. 19 at NIH to discuss regulation of recombinant DNA research. On his right are Dr. William Gartland, director of the Office of Recombinant DNA Activities; Dr. DeWitt Stetten, Jr., NIH Deputy Director for Science (hidden); and to his left, Dr. Joseph G. Perpich, NIH Associate Director for Program Planning and Evaluation.

A group of the Nation's leading biomedical scientists met with Dr. Donald S. Fredrickson at NIH on Feb. 19. As described in the letter of invitation, the purpose of the meeting was "to exchange information and discuss activities of the National Institutes of Health and a Federal interagency committee concerning recombinant DNA research."

### Dr. Abelson Will Discuss Economic Effects of Oil At Fourth Wed. Forum

Dr. Philip H. Abelson, president of Carnegie Institution of Washington and editor of *Science*, the weekly magazine of the American Association for the Advancement of Science, will speak on World Energy in Perspective at the NCI's Fourth Wednesday Forum on March 23, at noon, in Bldg. 1, Wilson Hall.

The meeting is open to all NIH staff.

Dr. Abelson will discuss the economic effect many Nations have experienced during the past 25 years due to rapid expansion of the availability of abundant quantities of cheap oil.

Since prices have risen and scarcities loom, almost every one of the developed and semi-developed countries face drastic changes in their life styles and social organization.

Future living and health standards of most of the countries will

be determined by how well they succeed in harnessing their indigenous resources.

After his presentation, Dr. Abelson will respond to questions from the audience.

(See STANDARDS, Page 7)

## Dr. Simopoulos Named Chief of NICHD Branch, Dev. Biology Nutrition

Dr. Artemis P. Simopoulos has been appointed chief of the Developmental Biology and Nutrition Branch, Center for Research for Mothers and Children, National Institute of Child Health and Human Development.

Projects under Dr. Simopoulos' direction include biochemical, metabolic, genetic, immunologic, endocrinologic, and nutritional studies that contribute to the understanding of normal development, and consequently, abnormal processes.

### Early Prevention Stressed

The branch's emphasis, as that of other NICHD components, is based on the premise that the early phase of the life cycle offers exceptional opportunities for prevention of handicaps and disease that may



**Dr. Simopoulos** is the author and co-author of numerous publications. The most well known, "Genetic Screening: Programs, Principles, and Research," is used throughout the world.

affect individuals any time during the life span.

In addition to her responsibilities as branch chief, Dr. Simopoulos chairs the Subcommittee on Genetic Screening and Services, Ad-Hoc Interagency Genetics Workgroup, and is a member of the Committee on Childhood Antecedents of Adult Diseases, the Digestive Diseases Coordinating Committee, and the NIH Nutrition Coordinating Committee.

She is also the NICHD liaison (See SIMOPOULOS, Page 8)

**the**  **Record**

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**NIH Record Office** ..... **Bldg. 31, Rm. 2B-03. Phone 49-62125**

**Editor** ..... **Frances W. Davis**

**Associate Editor** ..... **Fay Leviero**

**Associate Editor** ..... **Heather Banks**

**Staff Correspondents**

ADA, Judy Fouche; CC, Susan Gerhold; DCRT, Frances Sarles; DRG, Sue Meadows; DRR, Jerry Gordon; DRS, Arthur F. Moore; FIC; George Presson; NCI, Dr. Robert M. Hadsell; NEI, Julian Morris; NHLBI, Bill Sanders; NIA, Ann Shalowitz; NIAID, Jeanne Winnick; NIAMDD, Pat Sheridan; NICHD, Tina McIntosh; NIDR, Sue Hannon; NIEHS, Elizabeth Y. James; NIGMS, Wanda Warddell; NIMH, Betty Zubovic; NINCDS, Jeannette Belliveau; NLM, Roger L. Gilkeson.

**Consumer Issues Are AMWA Topic March 17**

Dr. Ron G. Fair of Brighton, Colo., president of the American Optometric Association, will speak on Consumer Issues in Health Care at 7 p.m., Thursday, March 17, at a dinner meeting of the Mid-Atlantic Chapter of the American Medical Writers Association held at Brook Farm Restaurant, 7101 Brookville Rd., Chevy Chase.

A past president of the Colorado Optometric Association, Dr. Fair has also been chairman of the Colorado Citizens Traffic Safety Committee and a member of the Colorado Safety Association.

He is a former director-trustee of the AOA Department of Public Affairs and is a consultant to the U.S. Department of Transportation Driver Licensing Section.

A social hour at 6 p.m. and election of officers will precede the program. For reservations, call Mary Matzen, 654-0564, by March 11.

**HEW Honors Employee At NIH for CFC Efforts**

Jean Oliver, NINCDS, who served as NIH coordinator for this past year's Combined Federal Campaign, led the list of NIH volunteers who received awards for their efforts on behalf of CFC.

In this campaign NIH employees set a record, contributing \$13,000 over the preceding year's sum.

Ms. Oliver received a framed plaque from HEW expressing appreciation of her "outstanding contribution and endeavor."

**TRAINING TIPS**

The Training and Education Branch, DPM, is offering the following Communications courses and Supervisory Skill workshops.

An application, Form HEW-350, is required. Further information may be obtained from B/I/D personnel offices or by calling Ext. 62146.

Speech Communication, March 30, 31, April 1; application deadline: March 21

Refresher ABC Stenoscrypt, April 4-May 11; application deadline: March 24

Basic Mag Card II, April 5; application deadline: March 25

Advanced Mag Card II, April 4; application deadline: March 24

Medical Terminology, April 4-June 10; application deadline: March 24

Refresher Typing, April 11-June 2; application deadline: March 31

Alternative Management Approaches for the 70's, April 13-15; application deadline: March 30

Adv. Medical Terminology, April 13-June 17; application deadline: April 4

Better English Usage, April 18-June 27; application deadline: April 7

Travel Procedures, April 18-27; application deadline: April 7

Small Purchase Procedures II, April 19-21; application deadline: April 8

Also, 12 coordinators were presented certificates from CFC headquarters for exceptional effort, and 37 key persons received certificates from NIH for 100% participation.

**Ship Ahoy! Sail With R&W-Sponsored Club, Classes Offered Soon**

Again this spring the NIH Sailing Association is offering a comprehensive sailing education program combining the Coast Guard 4-week classroom course *Auxiliary Principles of Safe Sailing* with on-board sailing instruction.

The Coast Guard Auxiliary course, which *must* be completed first, will be presented at NIH Tuesday and Thursday evenings, starting March 29 at 7:30 p.m.

Cost for registration, text, and workbook is \$6.50. Preregister with Bob Velthuis, Bldg. 37, Room 1 A07, Ext. 62287. The course is also offered at other locations and times throughout the area.

The on-board training will start in late April and is open to any Sailing Club member who has finished the Coast Guard Auxiliary Sailing course.

Two evening classroom sessions pertain to the club boats, motors, and docking, then three weekday afternoon sessions are on the club's four 19-foot Flying Scot daysailers on the Chesapeake Bay.

Students successfully completing the on-board training will earn the Sailing Club's Helmsman rating and will be entitled to charter the club's boats.

Cost of the on-board training is \$55.00. Registration will begin April 11 at the R&W desk, Bldg. 31. Contact Barb Williams, 654-8588, if further information is needed.

The NIH Sailing Association is an R&W-sponsored activity, and is open to any NIH R&W member for the club membership of \$20.

Besides maintaining the four Flying Scots for charter, the club has monthly meetings (last Thursday each month) with informative programs on sailing as well as active racing and cruising programs.



Dr. Miles W. Cloyd (1) receives a check from the Damon Runyon-Walter Winchell Cancer Fund from Dr. Wallace Rowe, head of NIAID's Laboratory of Viral Diseases. Dr. Cloyd will spend a year of postdoctoral training in Dr. Rowe's laboratory investigating the genetic analysis of RNA tumor virus gene expression.

**National Blood Banking Conferees Meet in June**

A national conference on the Management and Logistics of Blood Banking is being sponsored by the Division of Blood Diseases and Resources, National Heart, Lung, and Blood Institute, on June 9-10 in Michigan.

The major theme is the impact of systems and financial management on blood centers, along with management styles and currently practiced concepts.

As in earlier conferences, physicians, academicians, and blood banking management personnel will explore problems of mutual concern regarding the daily operation of blood banks and consider how to provide total blood service to the community at the most economical cost.

For more information, contact Dr. Anthony René, Blood Resource and Transplantation Branch, NHLBI, (301) 496-1537.



Special achievement awards for work with the National Institute of Child Health and Human Development's Equal Employment Opportunity Committee were presented by Dr. Gilbert L. Woodside (r), deputy director of NICHD, to (l to r): John Smart, administrative officer, intramural programs; Helen Walter, chief, Statistical Analysis Section; and Dr. Kay Standley, intramural programs.

## Contractors, Scientists Confer on Latest Work In Kidney-Uremia Area

Approximately 300 scientists from the United States and eight foreign countries attended the 10th Annual Research Contractors' Conference organized by the Artificial Kidney-Chronic Uremia Program of the National Institute of Arthritis, Metabolism, and Digestive Diseases.

The 3-day conference, recently held at the Holiday Inn in Bethesda, brought together senior representatives from each of the 60 active research contracts to present their work.

### Topics Listed

Topics discussed in the main sessions included uremic pathophysiology; carbohydrate and lipid metabolism; the role of acetate in dialysis; anemia of uremia; blood access and biocompatibility; adsorbents, membranes, and devices; therapy evaluation; and peritoneal dialysis.

Many international authorities in the field of chronic uremia and dialysis—including physicians who have directed programs in artificial kidney centers, renal physiologists, physical chemists, and bioengineers—attended this meeting.

Among the eminent scientists at the meeting were Dr. Willem J. Kolff, University of Utah, Dr. Belding Scribner, University of Washington, Seattle, and Dr. George E. Schreiner, Georgetown University Hospital.

### Discuss Sexual Dysfunction

On the day preceding the conference, two special workshops were held on sexual dysfunction and on blood access. In the first, the discussions dealt with sexual dysfunction in uremic patients, methods of differentiating psychologic and organic aspects of impotence, hormonal abnormalities, and hypothalamic and pituitary dysfunction in uremic individuals with sexual problems.

Material problems relating to blood access devices and blood flow dynamics were included on the second program.

Guidelines and recommendations for future research were made in both workshops.

On the final day, a unique presentation was made in a new research area by a special panel of five foreign and two domestic participants on *hemofiltration*—a new form of artificial kidney therapy that has particular advantage in greater removal of higher molecular weight uremic metabolites compared to conventional hemodialysis.

We estimate vices and weigh sins not according to their nature, but according to our advantage and self-interest.—*Montaigne.*

## 3 New Members—Reid, Danforth, Weller—Attend Their First NIAID Advisory Council Meeting Here



NIAID Director Dr. Richard M. Krause (l) speaks with former Congresswoman Charlotte Reid and Nobel Laureate Dr. Thomas Weller during a recess at the NIAID Advisory Council meeting last month.

The appointments of three new NIAID Advisory Council members—Charlotte Reid, Dr. William Danforth, and Dr. Thomas Weller—were recently announced.

Mrs. Reid is a former member of Congress from Illinois, having served four terms in the House of Representatives beginning in 1962. She served on the House Appropriations Committee, the Labor-HEW Subcommittee, and the Standards of Official Conduct Committee.

### Served on FCC

In 1971—in the middle of her fifth term of office—she accepted a Presidential appointment as a member of the Federal Communications Commission. She has since resigned from this position.

Dr. Danforth is chancellor of the Washington University Medical School, St. Louis, and chairman of the board of the Danforth Foundation.

A native of St. Louis, he received an M.D. degree from Harvard Medical School in 1951, and in 1960 began his long association with the Washington University Medical School.

Dr. Weller also received an M.D. degree from Harvard in 1940, and that same year began his career as a teaching fellow in bacteriology at Harvard Medical School.

He is presently Strong Professor

and head, department of tropical public health, Harvard University School of Public Health, Boston.

An expert in the field of parasitology, Dr. Weller shared with Drs. Frederick C. Robbins and John F. Enders the Nobel prize in physiology and medicine in 1954.

This prize was given for growing poliomyelitis virus in tissue culture—a necessary step before vaccines could be developed.

He has also received the E. Mead Johnson award, the Kimble Methodology award in 1954, and the George Ledlie prize in 1963.

In addition, the 1975 appointment of Dr. Roger D. Estep as an NIAID Advisory Council member was extended through 1978.

## NIA Director Dr. Butler Talks on Quality of Life In STEP Lecture Series

Quality of Life in the Long Living will be the topic of Dr. Robert N. Butler, Director of the National Institute on Aging, for a lecture March 31, 9:15-10:15 a.m. in the Masur Auditorium.

The Staff Training Extramural Program is sponsoring a series of lectures on Provocative Issues in the Health Sciences as part of its Continuing Education Program.

On April 14, Dr. Joseph Perpich, Associate Director for Program Planning and Evaluation, Office of the NIH Director, will talk on Recombinant DNA Research—Public Policy Aspects. On June 9, Dr. Robert S. Gordon, Jr., Special Assistant to the NIH Director, will speak on Clinical Trials in the Primary Mission of NIH.

The two later lectures will both be given from 9:15 to 10:15 a.m. in Wilson Hall, Bldg. 1.

Registration is not required.

## Dr. Russell J. Hilmoe Retires After 32 Years Of Government Service

Dr. Russell J. Hilmoe, associate director of the Cellular and Molecular Basis of Disease Program, National Institute of General Medical Sciences, recently retired after 32 years of Federal service, 28 of which were spent at NIH.

In 1948, Dr. Hilmoe came to work in the NIAMDD laboratories from the U.S. Army Chemical Corps at Camp Detrick, where he had served 2 years.

While in NIAMDD, as a result of his research in nucleic acid biochemistry, he published numerous papers.

In 1964, Dr. Hilmoe joined the staff of NIGMS as head of its Biochemistry Section, Research Training Grants Branch.

When the Institute was reorganized in 1973, he was appointed to the position from which he retired. In this post he had been responsible for grant support of research in protein chemistry and broad areas of graduate research training.

### Received Awards

During his career here, Dr. Hilmoe received the Superior Accomplishment and the Sustained High Quality Work Performance Awards.

He received his B.S. degree from South Dakota College, and both his M.S. and Ph.D. degrees in biochemistry from Georgetown University.

From 1944 to 1946, Dr. Hilmoe served in the U.S. Army Medical Corps at O'Reilly General Hospital as a laboratory technician.

At his retirement party, friends and co-workers presented Dr. Hilmoe with a photo album of the NIGMS staff and a framed set of bronze medallions of the seven Presidents—from 1944 through 1976—during whose administrations he had served.



Dr. Hilmoe has embarked on a new career as executive officer for the American Society of Biological Chemists, with headquarters in Bethesda.

# BLACK HISTORY OBSERVANCE

## Beyond Civil Rights: A New Day of Equality



From left—Participants get together preceding a Black History Observance program: Raymond Jackson, EEO Director; Dr. Moone; Otis Watts, assistant director, Protection and Safety Management, Observance Co-Chairperson; Carl Rowan, TV commentator and columnist; Dr. Donald S. Fredrickson, NIH Director;

Mr. Laster; and Leroy Chisholm, in charge of transportation for the Observance. Cutting the cake are: Mr. Laster, Juanita Byrd, Hospitality chairperson, and Mr. Chisholm. Far right are Judge Alexander and Dr. Taylor. — Photos by Carl Guenver.



On Feb. 15 a reception was held for C. Delores Tucker (center), Secretary of State of the Commonwealth of Pennsylvania. Youngsters from the Preschool

Developmental Program at NIH join the enthusiastic audience during one of the noontime programs.

The Black History Observance at NIH concluded Friday evening, Feb. 25, with Judge Harry T. Alexander and Dr. Estelle Taylor speaking in Masur Auditorium when Dr. Julian Bond was unable to appear.

### Judge Alexander Speaks

Judge Alexander, retired from the D.C. Superior Court and now in private law practice, is the newly elected president of the D.C. chapter of the NAACP.

He challenged the audience to move beyond the mentality of Alex Haley's *Roots*; far beyond civil rights so that every citizen will be guaranteed his or her maximum potential.

Dr. Taylor—chairman of the department of English and chairman of the Division of Arts and Humanities at the Graduate School of Howard University—read excerpts of letters from Frederick

Douglass to his former master concerning the slavery system.

Also, the University of Maryland choir sang at this first evening program presented during Black History Observance.

Programs the previous week were held at noon, and according to O. H. Laster, program chairman, reactions to this sixth annual Observance have been highly complimentary.

### Special Month Proclaimed

In addition, Dr. James C. Moone, general chairman, announced that James Gleason, Montgomery County executive, had proclaimed the month of February 1977 as Black History month in the county.

It is strange how the memory of a man may float to posterity on what he would have himself regarded as the most trifling of his works.—*Sir William Osler*

### NIH Visiting Scientists Program Participants

2/7—Dr. Moshe Wolman, Israel, Laboratory of Neuropathology and Neuroanatomical Sciences. Sponsor: Dr. Igor Klatzo, NINCDS, Bg. 36, Rm. 4D02.

2/10—Dr. Wendy Powell-Jones, United Kingdom, Environmental Toxicology Branch. Sponsor: Dr. George Lucier, NIEHS, Research Triangle Park, N.C.

2/13—Dr. Jose Antonio Avendano, Peru, Eye Pathology Laboratory. Sponsor: Dr. Carl Kupfer, NEI, Bg. 31, Rm. 6A03.

2/14—Dr. Moshe Barzilay, Israel, Laboratory of Kidney and Electrolyte Metabolism. Sponsor: Dr. Maurice Burg, NHLBI, Bg. 10, Rm. 6N307.

2/22—Dr. Kumar Krishan Kohli, India, Environmental Biology and Chemistry Branch. Sponsor: Dr.

### DR. HAIRSTONE

(Continued from Page 1)

and with the Cancer Research Institute, Pahlavi Hospital, University of Tehran, Iran (1967-69).

During 1969-70, he was an NIH Fellow at Rockefeller University, and then joined the City University of New York.

Other positions he held include: professor and consultant, NSF; All India Science Teaching Improvement Program, New Delhi, Bhubaneswar, India, 1969; consultant, University of Tabriz, Iran, 1971-72; and advisor, American University in Cairo, Egypt, 1972-74.

Phillip W. Albro, NIEHS, Research Triangle Park, N.C.

2/22—Dr. Minoru Tanaka, Japan, Experimental Pathology Section. Sponsor: Dr. Toichiro Kuwabara, NEI, Bg. 6, Rm. 211.

## Dr. E. J. Driscoll Traces History, Future Trends Of Dental Pain Control

Anxiety about dental treatment can be managed successfully even in persons with dental phobias, Dr. Edward J. Driscoll of the NIDR said in the second annual Niels Bjorn Jorgensen Memorial Lecture at the Loma Linda School of Dentistry in California on Feb. 27.

The annual lecture is part of an effort to develop a Jorgensen Memorial Reading Room dedicated to the former Loma Linda professor, acclaimed by many to be the father of modern pain control in dentistry.

### Library-Museum Described

The library-museum is envisioned as a repository for reading materials, equipment, and memorabilia on dental anesthesiology.

In his talk, Dr. Driscoll traced the history of, and outlined future trends for, dental anesthesiology. He pointed out that little progress in pain and anxiety control was made between 1844 when general anesthesia was introduced and 1920 when Dr. Jorgensen came to this country from Denmark, graduated from dental school, and started his work.

In the early 1940's, Dr. Jorgensen introduced intravenous injections of pentobarbital sodium (Nembutal) and meperidine hydrochloride (Demerol) for operative dentistry.

For patients who do not want to be aware of, or to recall injections into the mouth and other distressing surgical events, oral surgeons now can use diazepam (Valium) and other sedatives and analgesics as an alternate to general anesthesia.

### Testing New Drugs

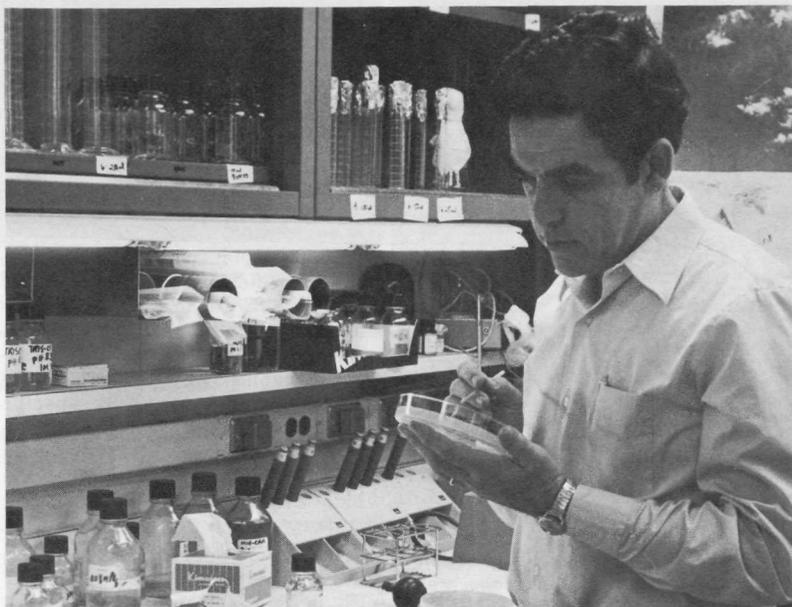
Looking into the future, Dr. Driscoll described new drugs being tested at the National Institute of Dental Research. The newer amnesic agents and techniques promise safety, fast action, ease of administration, and short duration of action.

Emphasizing that progress has been achieved only after research has developed new drugs and after changes in education have taken place, Dr. Driscoll said that training in pain control for dentists must be improved.

"One sign of real progress will be the establishment of departments of anesthesiology in all progressive dental schools, but first, educators and investigators to staff such departments must be trained," Dr. Driscoll stated.

When a disease is named after some author, it is very likely that we don't know much about it.—*August Bier*

## NICHD Scientists Study Differentiation Of Genome in Antibody Producing Cells



Dr. Leder, chief of the Laboratory of Molecular Genetics, NICHD, isolates a bacteriophage (bacterial virus) from a plate.

Almost any substance can elicit a reaction from the body's immune system. These substances, called antigens, cause an immune response which involves the production of about a million different antibody molecules, each directed against a highly specific set of antigens.

Over the past 10 years this class of molecules has been demonstrated to have certain unique structural features that are important in the antibody-antigen interaction.

### Differ in Variable Region

Usually, members of a particular class of antibody molecules have identical amino acid sequences in their *terminal* portions, called the constant region. They differ, however, from one another in their *initial* hundred or so amino acids, called the variable region.

It is in this initial, diverse portion of the antibody molecule that the antibody binding site resides and alterations in its structure provide the enormous diversity and specificity which characterize antibody molecules.

A major problem in understanding the immune response has been to understand how this diversity arose and how it can be encoded in the organism's genome.

Studies over the past 4 years by Dr. Philip Leder of the National Institute of Child Health and Human Development and other investigators suggest that the immunoglobulin molecules are encoded in a very small group of genes.

Furthermore, it now appears that the diversity of antibody molecules arises only in part through evolution; it is completed during cell differentiation.

Results suggest that the constant and variable regions are separately encoded and come together during differentiation of the antibody producing cell to form a continuous genetic sequence encoding an antibody subunit.

Scientists now postulate two very unusual steps in the differentiation of antibody producing cells. The first is a highly specific recombination mechanism for the joining of constant and variable region genes.

The second is an unprecedented mechanism which would bring about mutations in a very highly restricted portion of the genome during the process of somatic development.

This latter process would generate the final degree of diversity required to produce a complete repertoire of antibody molecules.

To understand the molecular mechanism responsible for these unusual reactions, and to understand how one antibody sequence is selected for production by an immunocyte, it is necessary to obtain substantial amounts of gene sequences corresponding to immunoglobulin molecules.

In the course of the last few years, a recombinant DNA technology has been developed in a variety of laboratories which makes the isolation of specific gene sequences feasible.

These new techniques allow the

## Symposium Proceedings On Microbial Aspects Of Caries Are Published

The proceedings of an international symposium on Microbial Aspects of Dental Caries has recently been published as a special supplement to *Microbiology Abstracts*.

The symposium, held in 1976, was organized and sponsored by the National Caries Program of the National Institute of Dental Research in collaboration with the University of Michigan.

The three-volume proceedings were edited by Drs. H. McE. Stiles and T. C. O'Brien of NIDR and Dr. W. J. Loesche of Michigan.

Topics covered include colonization of surfaces and inhibition of colonization, microbial ecology and epidemiological studies, growth and metabolism in plaque, biochemical and genetic determinants of virulence in cariogenic microorganisms, and *in vivo* and *in vitro* methodological considerations.

A limited number of copies of the proceedings are available from Dr. Thomas C. O'Brien, Westwood Bldg., Room 522, Ext. 67884.

cloning of a specific sequence corresponding to an immunoglobulin gene. This permits its isolation and production in amounts necessary for biochemical experiments.

Dr. Leder and other scientists in the Laboratory of Molecular Genetics prepared and modified several vectors based on a bacterial virus—bacteriophage lambda. Their purpose was to provide a safe host-vector for cloning experiments involving mammalian DNA.

### Mutations Involved

Two modifications involve mutations which permit the bacteriophage from making proteins critical to its complete structure and assembly.

A third mutant prevents the virus from being released from its laboratory host to one that might be encouraged in nature.

These safer vectors, which help ensure laboratory containment, should be of enormous value to scientists whose research turns on basic questions involving the use of DNA from higher organisms.

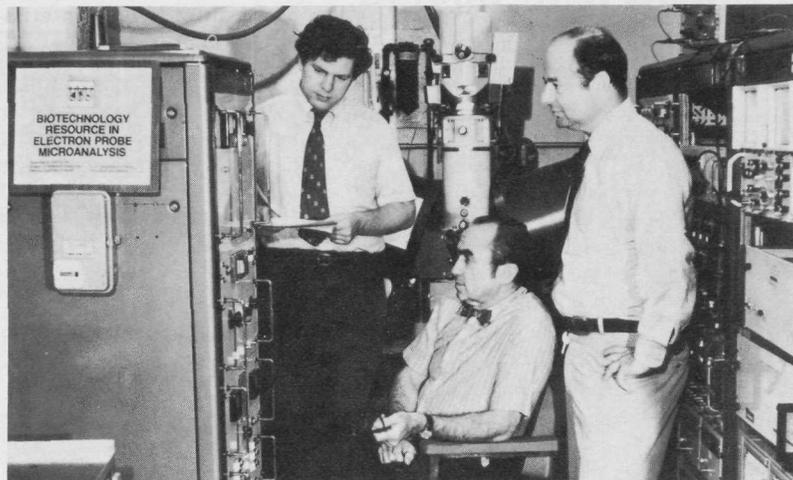
Current efforts of Dr. Leder's group are directed toward cloning the unusual genetic regions responsible for immunoglobulin production.



NATIONAL  
**POISON  
PREVENTION WEEK**

**MARCH 20-26, 1977**

## Electron Probe Microanalysis Promises Insights Into Chemistry of Living Things



At this Harvard electron probe microanalysis facility, which receives DRR support, are (l to r): Drs. Reinier Beeuwkes, A. Clifford Barger, and Claude Lechene. They are perfecting techniques for revealing chemical information never before known about microscopic structures. The electron probe was developed in the 1950's and used primarily in metallurgy. Constructed in 1973, the Harvard School of Medicine laboratory was the first electron probe resource in the U.S. for biomedical research.

A new area of research of the pituitary gland has recently been uncovered by use of electron probe microanalysis—an instrumentation which promises to have a wide-ranging effect on man's knowledge of the chemical makeup of living things.

The use of electron probe microanalysis at the Harvard Medical Center has determined that calcium is not uniformly distributed in the pituitary gland but concentrated in the intermediate lobe.

As calcium is not present in high concentration in any living tissue except bones, the Harvard researchers report that they were surprised to find it in the intermediate lobe.

This finding, made possible by use of the electron probe, may lead toward more complete comprehension of the physiology of the pituitary gland.

The electron probe microanalyzer is an extraordinary new instrument capable of localizing and quantitating any chemical element heavier than boron in sample volumes smaller than one cubic micron.

Funded in part by the Division of Research Resources, Harvard's biotechnology resource in electron probe microanalysis—headed by Dr. Claude P. Lechene—is providing new insights into the study of structure and function of living cells.

### Publication Describes NIEHS

"National Institute of Environmental Health Sciences Research Programs" is the title of a new pamphlet published by NIEHS describing the mission of the Institute and its research programs in technical terms.

Copies may be requested from: Elizabeth Y. James, NIEHS Public Information Specialist, P.O. Box 12233, Research Triangle Park, N.C. 27709; (919) 549-8411, Ext. 3345, or (FTS) 629-3345.

The "probe" directs an electron beam at small freeze-dried samples, or scans a tissue preparation. Characteristic primary X-rays are emitted, depending on the chemical makeup of the sample.

By determining the wave length and intensity of the emissions, researchers can ascertain the elemental chemical content of the sample.

An automatic stage moves the samples into position under the beam, spectrometers select the desired wave lengths, and the counters monitor those wave lengths.

A computer, through its multi-programming capability, simultaneously handles process-control functions—stage movement, beam control, spectrometer adjustment, and counter readings—as well as data analysis or on-line program development.

### Complete Analysis Possible

Complete analysis of human fluids, cells, and tissues is now possible, according to Dr. Lechene, a pioneer in electron probe microanalysis for biomedical research.

The instrument can quantitatively measure any chemical elements, particularly the location and amounts of sodium, potassium, chlorine, phosphorus, calcium, magnesium, and sulfur-components of the major chemical compounds of the human body.

In reproduction research, for instance, the electron probe can make possible complete analysis of the fluids surrounding the ovum before discharge, during transit, and after implantation. The process can also analyze the internal composition of

(See *PROBE*, Page 7)

## Prohormone Synthesis, Transport Study Finds New Peptides, Pituitary Release

Although the control of the pituitary gland by a region of the brain known as the hypothalamus has been well established, the notion that various peptide hormones may, in turn, control the brain is now being advanced.

Indeed, current investigations indicate that the brain itself may be an endocrine organ; that is, it may synthesize and release peptide hormones in order to influence brain activity.

The recent discoveries of endogenous opiate peptides in the pituitary and brain, and their profound behavioral effects, has intensified research into neuropeptides.

The well-known posterior pituitary hormones, oxytocin and vasopressin, are produced by specific nerve cells in the hypothalamus and are subsequently transported to the terminals of those neurons which are found in the posterior pituitary.

From these neuron terminals the hormones are released together with specific proteins known as neurophysins.

Although considerable indirect evidence in support of the hypothesis that these peptide hormones are derived from prohormones synthesized in the brain (similar to the relationship between insulin and proinsulin in the pancreas) has existed for some time, attempts to directly identify and isolate these prohormones have been unsuccessful.

### NICHD Groups Collaborates

In recent experiments, Dr. Harold Gainer of the National Institute of Child Health and Human Development and his colleagues, in collaboration with Dr. Michael J. Brownstein, National Institute of Mental Health, employed a novel combined microanatomic-biochemical approach to investigate this problem.

Using this approach, they discovered the prohormones for oxytocin, vasopressin, and neurophysin in the laboratory rat, and identified them by immunological techniques.

They demonstrated that while the synthesis of the prohormones occurs in the nerve cells in the brain, the transformation of these prohormones to the peptide hormones occurs in the nerve axons during transport to the pituitary.

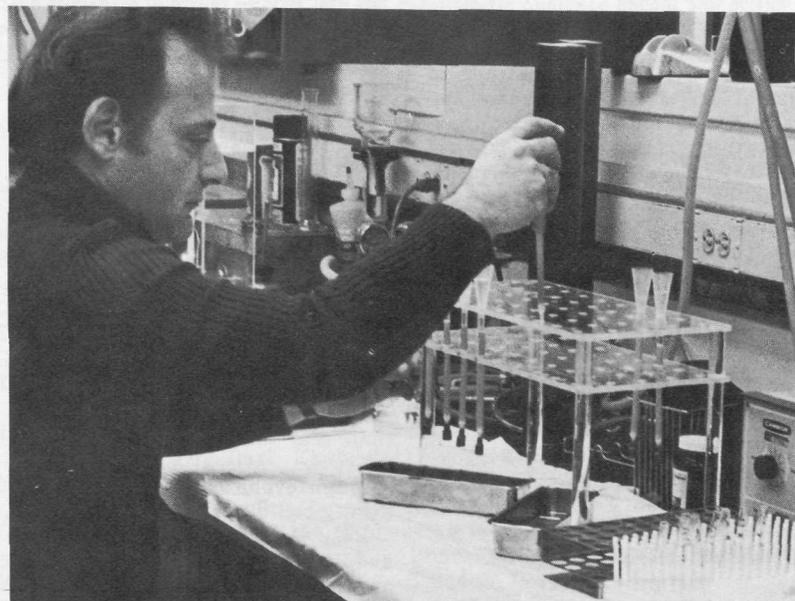
Of perhaps greater significance is their finding that several previously undiscovered peptides, in addition to oxytocin and vasopressin, are synthesized in the brain and released by the posterior pituitary.

The functions of these newly discovered peptides are unknown at present, and whether they may represent new peptide hormones elaborated by the pituitary is now under investigation.

### Provide Paradigm

These experiments, in addition to showing that brain peptides are synthesized in a manner similar to peptide hormones in the endocrine system, also provide an experimental paradigm for the discovery of new peptides in the brain.

If, as has been proposed, brain function is under the control of neuropeptides, then identification and localization of these peptides in the brain will possibly provide new insights for the study of neurological and mental diseases.



Dr. Gainer and his colleagues have found that several previously undiscovered peptides, in addition to oxytocin and vasopressin, are synthesized in the brain and released by the posterior pituitary.



Among the conferees seated around the table and attending the meeting held Feb. 19 at NIH on regulation of recombinant DNA research were leading figures



in the field of biomedical research. The meeting was open to the press and the general public.

## Compilation Is Available On Medicolegal Relations

A new NLM publication titled *Highlights in Medicolegal Relations* is now available. The work was compiled by Jaroslav Nemeč, J.D., before his retirement last year from the National Library of Medicine's Reference Section.

### Previous Work Available

An outstanding scholar in the field, Dr. Nemeč's previous work, *International Bibliography of the History of Legal Medicine* (1974, \$5.50) is also available from GPO.

In the preface, T. K. Marshall, professor of forensic medicine, Queen's University, Belfast, and past president of the International Association of Forensic Sciences, says:

"Within the covers of this book are the important events and publications in the medicolegal calendar extending chronologically from ancient times to the present day.

"... Let the reader go methodically through a few pages, and as he skips by the milestones he will absorb in a short space of time the medicolegal climate of the age, be it concern for legal codes or witchcraft and insanity or the teaching of forensic medicine..."

### Copies May Be Ordered

Orders with remittance (\$5.30 domestic, \$6.65 foreign) should be sent to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Include stock number S/N 017-052-00170-1.

## Next Annual AALAS Seminar Will Feature Current Concepts

The National Capital Area Branch of the American Association for Laboratory Animal Science will hold its annual seminar Sept. 7-8 at the Hunt Valley Inn in Cockeysville, Md.

The theme of the program will be "Current Concepts in Good Laboratory Animal Practices."

For additional information, contact the chairman, Dr. Gene New, at the National Cancer Institute, Bldg. 37, Room 6B-17, Bethesda, Md. 20014, or telephone (301) 496-1866.

## Investigators at NINCDS Find Peptides Appear to Control Nerve Cell Excitability

A different form of communication between nerve cells involving peptides—not only lasting longer than the excitability changes caused by neurotransmitters but also acting across greater distances and controlling a wider range of nerve cells—has been observed by National Institute of Neurological and Communicative Disorders and Stroke scientists.

Drs. Jeffery L. Barker and Thomas G. Smith, Jr., of the NINCDS Laboratory of Neurophysiology, presented their work in Toronto at the November 1976 meeting of the Society for Neuroscience.

"While neurotransmitters mediate single cell-to-cell interactions," said Dr. Barker, "peptides may

well be acting as 'hormones' in the nervous system, conveying long range messages to groups of nerve cells. Peptides thus appear to control excitability over a wider range of nerve cells in the nervous system."

The researchers used snail brains as a model of the vertebrate central nervous system. They found that two related peptide hormones (vasopressin and oxytocin) synthesized in the vertebrate central nervous system are highly active, causing long-lasting changes in excitability of specific nerve cells.

"Neurohormones," according to Dr. Barker, "may well regulate the physiology of entire circuits of target nerve cells whose concerted activity underlies one or more of the instinctive behaviors, such as drinking, mating, sleeping, eating, etc."

### Peptides Are Larger

Chemical neurotransmitters are small molecules which travel short distances to cause rapid, momentary changes in neuronal excitability, whereas peptides are larger molecules consisting of chains of amino acids.

In addition to acting across greater distances, peptide communications differ from those of neurotransmitters in requiring neither specialized inter-neuronal junctions nor as many molecules to achieve comparable effects, and in lasting for hours rather than seconds.

### Advantages Described

According to Dr. Barker, one advantage of a neurohormonal level of communication in the nervous system would be to allow activation of a diverse population of nerve cells, each type possessing the appropriate peptide receptor on its membrane.

## STANDARDS

(Continued from Page 1)

the committee might make."

Strict guidelines for conducting recombinant DNA experiments were released by the NIH last June. These apply to any such experiments funded by NIH.

At the Feb. 19 meeting, provisions of the Occupational Safety and Health Act, the Toxic Substances Control Act, and Section 361 of the Public Health Service Act, were reviewed. Also discussed in detail was the bill to regulate recombinant DNA research recently introduced by Senator Dale Bumpers (D.-Ark.).

Attendees at the meeting expressed their individual views on such topics as whether it would be more desirable to regulate recombinant DNA research or the possession, production, and use of recombinant DNA molecules, to license laboratories or license projects, to limit legislation to only recombinant DNA or to include other potential biohazards.

## PBS Broadcasts TV Show On Recomb. DNA Studies

The NOVA Series of the Public Broadcasting System will be showing a film, titled *The Gene Engineers*, dealing with the controversy regarding recombinant DNA research.

At press time, the program was scheduled to be shown locally by:

**WETA Channel 26**  
Wed., March 16, 8 p.m.  
**WAPB Channel 22**  
Sun., March 20, 6:30 p.m.  
Mon., March 21, 10 p.m.  
(captioned for the deaf)

In this way, one substance can mediate interactions among many cells in a discrete manner. This possible neurohormonal role for peptides is analogous to peripheral actions of regular hormones which discretely activate widespread, functionally distant cells to produce appropriate short- and long-term autonomic, endocrine, and motor responses.

## PROBE

(Continued from Page 6)

the early embryo.

In the area of renal function, the electron probe is capable of delving into all chemical transfers in the kidney; for example, it can monitor sulfate levels in the kidney fluids.

The instrumentation is capable of doing individual chemical analysis of large populations of red blood cells which would allow investigators to observe composition changes as a function of age, sex, or disease state.

This could be used in the study of leukemia, sickle cell anemia, diseases of the bone marrow, and other cell research areas.

### Support New Studies

Additional NIH support to the resource is being made by the National Heart, Lung, and Blood Institute and the National Institute of Arthritis, Metabolism, and Digestive Diseases.

"The perfection of the electron probe will open up new studies of chemistry in cells," says Dr. Lechene.

"It will probably give rise to discovery of new chemical labels in the field of cell biology. By labeling it should be possible to measure protein composition and localization in cells and tissues.

"We feel in the long run that electron probe microanalysis could have an important impact in biology comparable to, if not more important than, electron microscopy."

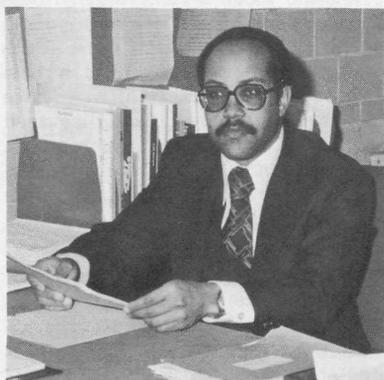
## Vincent Thomas Is EEO Coordinator for NIAID

Vincent A. Thomas, Jr., a native-born Washingtonian, has been named Equal Employment Opportunity coordinator for the National Institute of Allergy and Infectious Diseases. The NIAID EEO Office is now located in Bldg. 5, Room 141.

As EEO coordinator, Mr. Thomas will be concerned with promoting, developing, and implementing the NIH and NIAID EEO Affirmative Action Plans.

He will work with management and employees in recruitment, employee counseling, and developing activities as well as monitoring progress of the Institute's EEO program.

Mr. Thomas received B.A. and M.A. degrees in social work from Howard University. While at Howard, he attended the 1972 White House Conference on Aging as a student representative.



When he applied for the NIAID position, Mr. Thomas was serving with the U.S. Army in Berlin as plans officer with the Equal Opportunity Staff Office. While on a business trip to Europe, NIAID Director Dr. Richard M. Krause arranged to interview Mr. Thomas in Frankfurt, Germany.

## SIMOPOULOS

(Continued from Page 1)

to the Office of Recombinant DNA Activities.

Dr. Simopoulos worked at NIH from 1968 to 1971 when she left her position as staff pediatrician and, subsequently, consultant to the National Heart and Lung Institute to join the National Academy of Sciences, National Research Council.

At the NAS-NRC she held several key policy-making positions in biomedical research. Dr. Simopoulos was both executive secretary, Division of Medical Sciences, and executive director of the Board on Maternal Child and Family Health Research.

She is active in several professional societies and belongs to many scientific organizations.

She earned her B.A. degree from Barnard College, Columbia University, and her M.D. degree from Boston U. School of Medicine.

## Proteolysis and Enzyme Regulation Conf. Planned by FIC Scholars Cohen, Holzer



Dr. Cohen (l) and Dr. Holzer confer on plans for next year's Symposium. Dr. Cohen will be at NIH through May, Dr. Holzer through April.

Drs. Georges Cohen and Helmut Holzer, Fogarty International Center Scholars-in-Residence, are collaborating in planning a symposium to be held in 1978 on the role of proteolysis in the study of enzyme regulation. During their stay at NIH, both scholars are associated with Dr. Earl Stadtman's laboratory in the National Heart, Lung, and Blood Institute.

Dr. Cohen, head of the department of cell biochemistry at the Institute Pasteur in Paris, is a leading investigator in the field of enzyme regulation.

### Contributions Cited

He has made significant contributions to understanding how branched metabolic pathways are regulated and allosteric feedback inhibition of regulatory enzymes.

Dr. Cohen showed that the enzyme Aspartokinase-homoserine dehydrogenase is a multifunctional protein which catalyzes two non-consecutive steps in the biosynthesis of methionine, threonine, and iso-leucine.

He proposed that interaction between the two separate catalytic sites on the protein is the basis of a novel control mechanism regulating the biosynthesis of the products.

### STEP Seminar Tomorrow; Topic Institutional Review

Tomorrow, Wednesday, March 9 from 3 to 5 p.m. the second seminar in the Biomedical Ethics series sponsored by STEP will be held in Conference Room 5, Bldg. 31, B wing, B1 level.

Barbara Mischkin and Dr. Bradford Gray will discuss Institutional Review Board: Unresolved Issues.

The following seminar sponsored by the Staff Training Extramural Program will be March 23 on Problems of Informed Consent in Research Involving Children with Kenneth Casebeer speaker. That seminar will be held in Conference Room 4, first floor of A wing, Bldg. 31.

Before his appointment to the Pasteur Institute in 1969, Dr. Cohen held numerous research and teaching posts in France. He holds the rank of Senior Scientific Director in the National Council for Scientific Research in France.

The recipient of numerous awards, he became a laureate of the French Academy of Science in 1960.

Dr. Holzer studied biochemistry under Professor Feodor Lynen, obtaining his Ph.D. at the University of Munich in 1948. His thesis concerned the existence of respiratory chain phosphorylation in yeast cells.

In recent years he has studied the purification and properties of glutamine-synthetase, tryptophan-synthetase, and other important enzyme systems.

He has proposed models for the regulation of enzyme activity through their modification by proteinases, which will be the subject of the FIC symposium in 1978.

### Honored for Research

Dr. Holzer is the recipient of numerous awards for his research, including the Paul Ehrlich Prize in 1962 and the Otto Warburg Medal in 1975.

In 1971-72 he was chairman of the German Society for Biological Chemistry, and in 1973 he was elected to honorary membership in the American Society of Biological Chemists.

Since 1973 he has been a member of the German Academy of Sciences Leopoldina, where he is chairman of the Section on Biochemistry and Biophysics.

## Dr. May, Distinguished As Medicinal Chemist And Author, Retires

Dr. Everette L. May, chief of the Medicinal Chemistry Section in NIAMDD's Laboratory of Chemistry and a well-known authority on narcotic and analgesic drugs, has retired after more than 30 years of research at NIH.

Dr. May's basic research in medicinal chemistry has been of fundamental importance in several areas.

He has synthesized analgesics which can replace morphine and other opiates, anti-malarial compounds effective against resistant strains of type falciparum malaria, and a longer-acting methadone compound which may eventually displace methadone as one method of treatment for opiate addicts.

Dr. May also established the route to several totally synthetic series of analgesics in which analgesic activity could be clearly demonstrated to be free from the hitherto undissociable and undesired opiate side effects.

This work inspired other scientists and culminated in development of new agonist-antagonist type analgesics, including Pentazocine, which is the first drug of its kind to be approved and used clinically.

Dr. May is the author or co-author of approximately 130 scientific papers, holds six patents, and has written chapters in several textbooks which are considered major resources for researchers in his field.

Dr. May received a B.A. degree in chemistry from Bridgewater College, Virginia, in 1935 and a Ph.D. from the University of Virginia in 1939.

After leaving the University of Virginia, he worked as a research chemist with the National Oil Products Company until he joined NIH in 1941.



Dr. May has received numerous honors, including the Hillebrand Prize, the sixth Walter Hartung Lectureship at the University of North Carolina, and the DHEW Distinguished Service Medal.