

the



Record

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NATIONAL INSTITUTES OF HEALTH

Drs. Dawber and Kannel, Framingham Directors, Receive Gairdner Award

Drs. Thomas R. Dawber and William B. Kannel were recently honored with a joint award by the Gairdner Foundation of Willowdale, Ontario, Canada, for "their singular contribution to studies in the epidemiology of cardiovascular disease."

Dr. Dawber was Director of the National Heart, Lung, and Blood Institute's Framingham Heart Study—begun in 1948 in the community of Framingham, Mass.—from 1950 to 1966, and Dr. Kannel has been Director since that time.

Rewards Achievements

The Gairdner Foundation, established in 1957 by the late James A. Gairdner, a well-known Toronto stockbroker, each year rewards outstanding achievements in the field of medical science.

Both Dr. Dawber and Dr. Kannel have previously been recipients of the Lasker Award and the Dana Award in Preventive Medicine in recognition of their contributions to the Framingham Heart Study.

The project has identified risk factors for heart attack and stroke; namely high blood pressure, hypercholesterolemia, smoking, diabetes, etc., and continues to generate excellent data concerning characteristics influencing the outcome of infarcts and strokes when they do occur.

Many other epidemiological stud-



Dr. Dawber



Dr. Kannel

ies, examinations of pathophysiologic mechanisms, and prevention trials have grown out of the work done at Framingham.

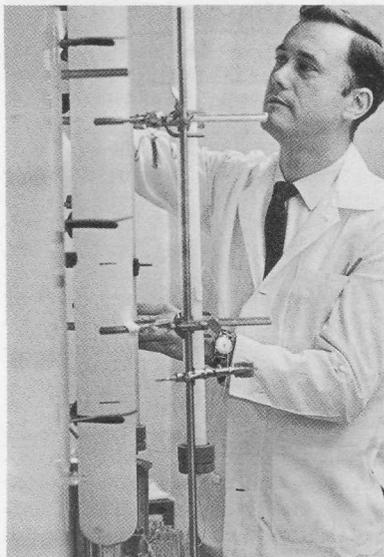
One of the more recent findings from the Framingham Study has

(See GAIRDNER AWARD, Pg. 5)

NIAMDD Grantees at Univ. of Chicago Find Precursor Molecule—Preproinsulin

University of Chicago scientists have detected preproinsulin, a precursor molecule to proinsulin, the precursor of insulin, indicating that the body produces insulin in three, rather than two stages, reports Dr. Donald F. Steiner.

As a result of studies of messenger RNA from the rat pancreas, scientists are now closer to decoding the genetic mechanism by



Dr. Steiner has received many awards for his research, including the 1976 Banting Award, the top prize of the American Diabetes Association.

which the body orders the islets of Langerhans in the pancreas to create insulin, perhaps pointing the way to genetic "engineering" to correct inborn errors in insulin synthesis.

Some day the genetic material (DNA) responsible for creating preproinsulin, proinsulin, and insulin may be fabricated in the laboratory and inserted into "islet" cells of diabetics, says Dr. Steiner. They would then be able to produce correct amounts of their own insulin, and would not require animal insulin.

Study of the structure of the gene for insulin as a model system of genetic regulation in higher organisms may help increase our understanding of derangements underlying malignancy as well as diabetes.

Dr. Steiner discussed prepro-

(See PREPROINSULIN, Page 6)

Dr. Shannon Honored; Friends Present Bust

On Nov. 23 a bronze bust of Dr. James A. Shannon, Director of NIH from 1955 to 1958, was unveiled at a ceremony in Wilson Hall, Bldg. 1.

Dr. Shannon and his son and daughter-in-law, Mr. and Mrs. James Anthony Shannon, were present for the ceremony in which Dr. DeWitt Stetten, Jr., NIH Deputy Director for Science, and NIH Director Dr. Donald S. Fredrickson took part.

The sculptor, Elaine Pear Cohen, unveiled the likeness "presented by his friends."

Mrs. Catherine Filene Shouse, whose portrait bust at Wolf Trap Farm National Park for the Performing Arts was sculpted by the same artist, was among those present.

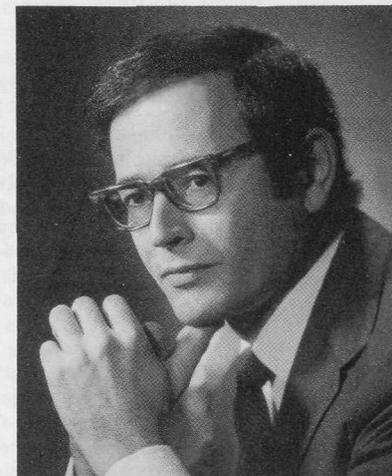
Notables Attend

The many notable guests included: Dr. William H. Sebrell, NIH Director from 1950 to 1955, Drs. Philip Handler, Luther Terry, Theodore Cooper, James Dickson, Dorland Davis, Ralph Knutti, Roger Black, Robert Berliner, John Sherman, Tom Kennedy, John Heller, and Mrs. Florence Mahoney.



The life-size portrait bust of Dr. Shannon will be displayed in the foyer of Bldg. 1.

Dr. Edelman to Discuss Cell Surface Modulation At NIH Lecture Dec. 8



Dr. Edelman, winner of the Nobel Prize in Physiology or Medicine in 1974, has for many years received grant support from both NIAMDD and NIAID.

Dr. Gerald M. Edelman, Vincent Astor Distinguished Professor at Rockefeller University, will present the 1976 NIH Lecture on Wednesday, Dec. 8, at 8:15 p.m. in the Masur Auditorium.

Dr. Edelman will discuss Cell Surface Modulation.

Thus far, the exact nature of the molecular structures responsible for coordinating cell growth, movement, and cell-cell recognition has eluded investigators.

Recent progress, however, in the molecular analysis of diffusible surface receptors (sensory terminals which respond to various stimuli) embedded in the cell's fluid membrane has provided some clues to these structures.

Receptors' Movements Altered

While the movement of receptors throughout the membrane may be random, it appears that a number of modulating events can alter their movements as well as fundamental features of cell recognition and growth control.

Dr. Edelman will describe recent experiments aimed at defining the nature of cell surface modulating and control mechanisms in a variety of systems.

The early research interest of Dr.

(See DR. EDELMAN, Page 8)

the  **Record**

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Dr. Burton Lectures in Poland On Dialysis, Artificial Kidney

Dr. Benjamin T. Burton, NIAMDD associate director for Program and chief of the Institute's Artificial Kidney-Chronic Uremia Program, recently gave a series of lectures in Poland on dialysis treatment and artificial kidney technology.

Invited by the Polish Academy of Sciences, Dr. Burton was their guest during a week of traveling and lecturing before nephrologists, research workers, and physicians at local medical schools on the latest developments at NIH and in Western countries.

Earlier this year, he organized and chaired a German-language symposium on kidney dialysis in Wiesbaden, Germany.

What's Your Type, Group?

Have you always wanted to know, but been afraid to ask? If you're curious to know your blood group and type, the CC Blood Bank can give you the answer.

Drop by the Blood Bank, Bldg. 10A, Room 1E-33, any weekday between 3 and 4:45 p.m., or call Wanda Chappell, Ext. 61048, to schedule a blood grouping and typing test. It takes only a few minutes and the results are ready within 10 days.

Foreign Nurses to Visit CC Under New Program To Exchange Ideas, Care

A select group of foreign nurses will soon be invited to the Clinical Center to exchange ideas and nursing care practices in a research setting under a recently instituted Foreign Exchange Nurse Visitor Program.

The exchange program, sponsored jointly by the Clinical Center and the National Cancer Institute, is a first between research hospitals.

Create International Cadre

It will create an international cadre of expert nurses, according to CC Nursing Department chief Vernice Ferguson. She and NCI clinical director Dr. Vincent T. DeVita, Jr., will coordinate the program.

Authorization for the exchange came after months of development and review involving the U.S. State Department and the Maryland State Board of Examiners of Nurses.

Dr. DeVita says that this new endeavor, similar in structure to the NIH Visiting Scientists Program, represents a new dimension in international biomedical cooperation and will lead to world wide improved patient care and nursing practice.

Ski Club Holds Election Dec. 9, Plans Trips; Newcomers Invited

The R&W-sponsored NIH Ski Club will meet Thursday, Dec. 9, at noon in Wilson Hall, Bldg. 1, to elect officers and discuss forthcoming ski trips.

Everyone is welcome. Persons already members of R&W may join at the meeting. For further information, contact Allen Lewis, Ext. 64506.



Margaret Oliver (I) of DAS smiles right through a swine flu shot deftly administered by Jan Markland of Occupational Medical Services. The program to immunize NIH employees—which began Nov. 15 and continues through Dec. 3 in the Bldg. 13 Health Unit—had completed more than 6500 inoculations as "the NIH Record" went to press last week. In addition 468 NIH'ers participated in the initial vaccine trials. Both monovalent and bivalent vaccines will continue to be available in the health units after the scheduled immunizations.

Clinical Electives Program Offers Unusual Training

Applications for NIH's Clinical Electives for Medical Students Program for 1977-78 will be accepted from Jan. 1 through March 1, 1977.

These courses offer medical students unusual opportunities for training in the following subspecialties: computers in clinical medicine, endocrinology / metabolism, gastroenterology, genetics, immunology, infectious diseases, nuclear medicine, oncology-hematology, psychopharmacology, and surgical oncology.

Contact For Information

For further information, current catalogs, and application procedures contact: Associate Director for Medical Education, NIH, Clinical Center, Bldg. 10, Bethesda, Md. 20014, Ext. 62167.

USDA's Winter Schedule Lists a Wide Variety Of Upcoming Courses

Hundreds of daytime, evening, and correspondence courses are listed in the USDA Graduate School's *Winter Schedule of Classes*, which may be obtained in Room 1031, South Agriculture Bldg., or by calling 447-4419.

Catalog Available

The Graduate School's new 1976-78 catalog is also available.

Most classes meet one night a week for 10 weeks starting Jan. 15.

The extensive curriculum of moderately priced courses covers such career-related subjects as editing, computer sciences, graphic arts, accounting, management, secretarial skills, library techniques, statistics, personnel administration, and many more.

Students can work toward a Certificate of Accomplishment in these fields.

In addition to the regularly scheduled courses, the winter schedule includes a number of new courses such as Calligraphy, Paralegalism, Debugging System 360/370, Pattern Making and Pattern Adjustment, and Drugs and Society.

Offer Courses in Newspapers

Two new courses will be offered through the newspaper: *Oceans: The Continuing Frontier*, and *Moral Choices in Contemporary Society*. Details are in the schedule.

There is also a wide variety of hobby courses—Interior Design, Vegetable Gardening, Plants in the Home, Genealogy, Leaded Stained Glass, Photography, House Renovation, Antique Furniture, Oil Painting, and Pottery.

Mail registration concludes Dec. 17. In-person registration will be held Jan. 3-8 in the USDA Patio, 14th & Independence Ave., S.W., Washington, D.C.



Dr. Robert A. Whitney, Jr., chief of the Veterinary Resources Branch, Division of Research Services, was recently installed as president of the American Association for Laboratory Animal Science at the association's 27th annual meeting in Houston, Tex. He has been at NIH since 1971 when he joined the Division of Research Resources. The following year he assumed his present post.

Conferees Suggest Plans To Revise Future Policy On Nat'l Immunization

The recent 3-day National Immunization Conference held at NIH was organized by HEW Assistant Secretary for Health Dr. Theodore Cooper to help formulate future national policy on vaccines and immunizations.

In addition to encouraging public participation, the Public Health Service solicited formal presentations with panel discussions. Participants were from a wide range of fields, including scientists from government, academia, and business; members of the legal profession, and representatives from the news media, insurance, and consumer groups.

Council Will Be Appointed

At the concluding session, Dr. Cooper said that, following the public discussion, a council will be appointed and meet for the first time later this month to review suggestions made. Recommendations of the Council will be submitted to the President and Congress later.

Also, Dr. Cooper noted areas in which he felt a general consensus had been reached.

First, there was an affirmation of the need for an immunization program. Dr. Cooper said he was delighted with this because it "affirms a commitment to preventive medicine."

Dr. Cooper Comments

Stressing the responsibility of the media not only to criticize but to perform, Dr. Cooper indicated that the participants had also agreed upon the need for more credibility and better disclosure through an improved health education system.

Further, there was a consensus on the need for: new information and data on health research; some national program of compensation for varieties of individuals; and the need to let people have the best information available as well as total revision of the present system.

FAES Loans Foreign Visitors Furniture and Household Items

A program to aid foreign visitors when they arrive at NIH is being sponsored by the Foundation for Advanced Education in the Sciences.

Furniture and household items have been purchased for temporary loan to visiting fellows or scientists to ease their initial relocation problems.

FAES is also accepting donations of such items in good condition for this program. Donations are tax deductible.

To donate items or to arrange to borrow furnishings, call Nancy Baucom, Ext. 65273.



FIREARMS TRAINING (top to bottom): Lt. Howard S. Davenport demonstrates a weapon during classes at NIH. Mr. Wright discusses details of the training with Otis Watts, assistant director of DAS, and Ralph Stork, chief

NIH Special Police Undergo Exacting Firearms Training

Special Police officers at NIH may receive four types of training in a program patterned on one recommended by the International Association of Chiefs of Police, including a study of jurisdictional differences between State, County, and Metropolitan (D.C.) police.

Basic training consists of 4 weeks of indoctrination and a survey of law and law enforcement, administration of justice, community relationships, traffic supervision, investigation of crimes, emergency services, and communications.

Advanced training reviews the same topics in greater depth. Some personnel continue with supervisory and command courses, also 4 weeks long.

Efforts are being made to obtain credits through community colleges for training completed.

During the year several seminars lasting 2-5 days cover topics such as investigation of theft, traffic direction, and accidents. Military or FBI instructors have also given special courses on recognition and handling of explosives.

Officers are hired from the Civil Service Register. Many are retired from military service or other police forces.

Firearms training has recently been incorporated in the ongoing Special Police Training Program at NIH. Eight of the 92 officers in the NIH Special Police qualified as firearms instructors in July upon completion of a comprehensive weapons instructor training course at the National Rifle Association's Marksmanship Center at Camp Perry, Ohio.

The firearms course stresses safety in handling weapons, as well as accuracy in firing different types of weapons. Particular attention is given to the individual officer's responsibility and conduct while carrying a weapon. For example, crowded conditions and safety may prevent use of a weapon even though a situation might otherwise warrant the use of arms.

Under direction of William C. Wright, NIH Special Police Training Chief, the eight weapons experts are conducting 60 hours of firearms training for the entire force. The Maryland Small Arms Range in Prince George's County is the site for the live firing exercises.

Officers must qualify on a 50-foot course before being issued a firearm. Minimum qualifying score is 210 of 300 points. A marksman scores 225-255, a sharpshooter 256-280, and an expert over 281.

Among the challenges facing the Special Police, says Chief Wright, are the size of the reservation and the large numbers of employees including some who must come and go at odd hours to tend animals or check on experiments around the clock.

Movable laboratory equipment valued at more than \$60 million, office equipment worth more than \$5 million, and 2200 laboratories with chemicals, drugs, wastes, and animals that must be safeguarded create formidable logistics in security planning for NIH.

The Clinical Center alone has more than 40 entrances and over 17 miles of hall space—very difficult to maintain security or find intruders.

The size of the parking lots and numbers of cars also invite thefts. Items frequently reported missing include CB radios, tires, and batteries.

"I don't believe our theft rate here is greater than in any other buildings," Chief Wright continues, "but here a missing piece of vital equipment may halt a laboratory's business."

of the Security Management Branch. Capt. Rush and Mr. Watts inspect firearms, issued to officers when necessary. Officers Edward Toms and John H. Oldfield, Jr., check equipment to be taken to the firing range for drills. Eight NIH Special Police Officers received training as firearms instructors at Camp Perry, Ohio, this past summer: (rear, l to r) Harold Wyman, Ofcs. Spivey, Toms and Oldfield, Chief William C. Wright; (front, l to r) Ofc. Phillip G. Muise and Lt. Davenport. Captain Floyd D. Rush was not present for the photo.

Seminar for Science Writers Explores Current Topics in Cardiology Research

At an NIH Science Writers Seminar on Cardiovascular Diseases, presented Nov. 10 by the Intramural Scientists of NIH and the Division of Public Information, four scientists from the National Heart, Lung, and Blood Institute discussed current research topics.

Dr. Jeffrey S. Borer of the Cardiology Branch, NHLBI, explained radionuclide cine-angiography, a new technique to identify persons with coronary artery disease and to assess myocardial ischemia physiologically. Dr. Borer and Michael V. Green developed the technique with Dr. Stephen L. Bacharach of the Clinical Center's Nuclear Medicine Department.

Patient Not Uncomfortable

The technique permits viewing the heart by computer-based movies during and immediately after exercise, with relatively little discomfort to the patient. Serum albumin tagged with a small amount (10 millicuries) of a radioactive label (^{99m}technetium) is injected into a peripheral vein.

A few minutes later an instrument to measure radioactivity is placed on the patient's chest. Emissions localized by a computer while the patient is at rest or exercising are displayed simultaneously as a motion picture and as a time-activity curve indicating precise changes in left ventricular volume with time.

Using this new method during exercise, the investigators have been able to detect abnormalities diagnostic of coronary artery disease even in asymptomatic patients who have normal cardiac function at rest.

In persons with known coronary artery disease, they have been able to assess the degree of functional impairment caused by specific coronary artery lesions, and to evaluate the effects of therapy.

In studies performed at NIH in



Francine V. Little has been appointed budget officer of the National Eye Institute. Ms. Little, who joined NIH in 1970 as a management intern, is a graduate of Howard University. She served as administrative assistant in NIAMDD before coming to NEI as a budget analyst in 1972.

over 150 patients, the radionuclide cine-angiography technique has proved to be both sensitive and accurate in assessing abnormalities in myocardial function, at rest and during exercise.

Dr. Borer noted that the procedure offers less risk than cardiac catheterization, and unlike the latter method, can be performed during exercise.

Moreover, he cited its advantages over the exercise electrocardiogram, which lacks predictive value in asymptomatic persons and is only moderately sensitive in symptomatic patients.

Dr. H. Bryan Brewer, Jr., chief of NHLBI's Molecular Disease Branch, discussed High Density Lipoproteins as a Risk Factor in Atherosclerosis.

A high cholesterol level in the blood (hypercholesterolemia) is a well-established risk factor for the development of hardening of the arteries (atherosclerosis) and the coronary artery disease associated with heart attacks.

Cholesterol Levels Elevated

The hypercholesterolemia associated with these cardiovascular diseases is characterized by elevations of cholesterol carried by one of three lipoprotein fractions of the blood:

- very low density lipoproteins (VLDL)
- low density lipoproteins (LDL)
- high density lipoproteins (HDL)

It is well-known that high cholesterol associated with the low density lipoprotein (LDL) fraction of the blood plays an important role in cardiovascular diseases.

However, recent retrospective analysis of cholesterol levels in patients with cardiovascular disease has also established that persons with low cholesterol levels in their high density lipoproteins (HDL) are also at risk for coronary artery disease. That is, in persons with any given level of LDL cholesterol, the probability of coronary artery disease increases as HDL cholesterol decreases.

Two mechanisms have been postulated to explain the role of HDL in the prevention of cardiovascular disease. The first mechanism by which HDL may prevent atherosclerosis is the apparent ability of HDL to remove cholesterol from the vessel wall and to transport it to the liver for metabolism and removal from the body.

An alternative possibility is that HDL may inhibit the uptake of

Dr. Richard Finkelstein, NIAID Grantee, Honored For Cholera Research

NIAID grantee Dr. Richard A. Finkelstein, professor of microbiology at the University of Texas Southwestern Medical School in Dallas, has been named co-winner of Germany's Robert Koch Prize for biomedical science of public health importance.

He will receive the Prize, one of Germany's highest honors in the medical sciences, for his work in cholera.

Dr. Finkelstein shares the Prize with Dr. Mark Richmond of the University of Bristol, who is being honored for his work on antibiotic resistance.

The awards, to be presented by the German Ministry of Health in Bonn on Dec. 7, include a medal and about \$12,000 for each scientist.

Dr. Finkelstein is being honored

LDL cholesterol by the vessel wall, thereby preventing deposits of cholesterol which result in atherosclerosis.

The establishment of elevated LDL and lowered HDL as independent risk factors for the development of atherosclerosis now necessitates determination of these cholesterol fractions individually in patients at risk for cardiovascular disease.

Merely measuring total blood cholesterol is no longer an adequate index to the risk of developing heart disease.

Fractionation Improved

To date, techniques for lipoprotein fractionation have been expensive, time-consuming, and limited to specialized laboratories. A rapid, simple, and inexpensive method for the fractionation of lipoproteins in the blood has recently been developed.

With this approach, cholesterol is determined by a new Beckman cholesterol analyzer, and the blood lipoproteins are fractionated with a new, relatively inexpensive air-driven ultracentrifuge, permitting determination of LDL and HDL by ordinary clinical or hospital laboratories.

Dr. Harry R. Keiser, clinical director of NHLBI's Division of Intramural Research, discussed research on the various vasoactive systems and their interactions on the origin and regulation of high blood pressure, particularly four biochemical systems: catecholamines; the renin-angiotensin-aldosterone system; the kallikrein-kinin system; and prostaglandins.

Dr. Stephen E. Epstein, chief of NHLBI's Cardiology Branch, discussed recent findings in the use of nitroglycerin in the treatment of acute myocardial infarction (heart attack).



Dr. Finkelstein (c) chats with Dr. James C. Hill (l), NIAID, and Dr. John B. Robbins, BOB, during a recess at a symposium on New Bacterial Vaccines held here last spring.

for his fundamental work on the cholera organism.

The cholera vibrio causes disease by entering the upper bowel, sticking tightly to the lining, and reproducing so rapidly that, in highly magnified electron micrographs, the bowel lining looks like a shag rug.

The vibrios then excrete toxin, stimulating indiscriminate production of "cyclic AMP," a regulator of intestinal water secretion.

Dr. Finkelstein was responsible for the purification and crystallization of the "exo-enterotoxin" and a related toxoid which the organism secretes, and has done extensive research on the significance of cholera antigens in the immunology of cholera infections.

He first became interested in cholera while working towards a Ph.D. in 1955 at the University of Texas in Austin. This work led to development of a culture medium for vibrios now in wide use.

After postdoctoral training in virology at Southwestern University, Dr. Finkelstein worked on cholera at Walter Reed Army Institute of Research.

In 1964, he joined the SEATO medical research laboratory in Bangkok for 3 years, and then returned to Southwestern, where, with Dr. Joseph LoSpalluto, he isolated the toxin protein which produces cholera.

Many Study Toxins

The toxin and its components have been given to more than 200 other investigators for studies.

Because currently available vaccines are relatively ineffective against cholera, Dr. Finkelstein and several other investigators supported by the National Institute of Allergy and Infectious Diseases are seeking new means for immunization against the disease.

The Robert Koch Prize is named for that country's pioneer in bacteriology who made multiple contributions to medicine.

Dr. Koch identified the cholera vibrio during an epidemic in Egypt and India in 1883, and verified transmission of the disease through contaminated food and water. In 1905 he was awarded a Nobel Prize in Medicine.

Dr. Ernest Johnson Is New Grants Associate

Dr. Ernest W. Johnson, former assistant professor of physiology, University of Colorado Medical Center, has joined the NIH Grants Associates Program for a year of training in health science administration.

Dr. Johnson, a graduate of Muhlenberg College, Allentown, Pa., received his Ph.D. degree in physiology and biophysics from the University of Vermont in 1969. He attended the U.S. Military Academy at West Point from 1961 to 1962.



Dr. Johnson

Background Noted

He held an NIH Postdoctoral Fellowship at the University of Vermont and the Marine Biological Laboratory, Woods Hole, Mass., from January to September 1970, before joining the University of Colorado Medical Center where he continued as a Fellow until February 1972 when he was appointed assistant professor in the department of physiology.

Dr. Johnson was principal investigator of a research grant awarded by the National Institute of Neurological and Communicative Disorders and Stroke to the University in 1974.

Teaches Special Course

A member of the Educational Affairs Committee of the Executive Faculty of the University Medical School, he also taught for 3 years a course in the Denver Public Schools designed to interest minority students in careers in medicine.

His research interests are in the general area of cellular neurobiology, including both pre- and postsynaptic aspects of synaptic transmission, the pharmacology of neuromuscular blockade and receptor desensitization, the physiology and biochemistry of transmitter release, and the cellular biology of neurotrophic regulation.

During the past year, he was a Congressional Science Fellow sponsored by the American Association for the Advancement of Science, working on science policy matters in the U.S. Senate.

Pianist Ruth Laredo Will Play Dec. 5 in FAES Concert Series

On Sunday, Dec. 5, at 4 p.m., in the Masur Auditorium, Ruth Laredo will give a piano recital including music by Beethoven, Scriabin, Rachmaninoff, and Ravel.

This is the second of seven concerts in the 1976-77 series sponsored by the Foundation for Advanced Education in the Sciences. Admission is by ticket only.

GAIRDNER AWARD

(Continued from Page 1)

been the identification of key risk factors which have a high degree of predictability for coronary heart disease (CHD) in middle aged and older persons up to age 80.

While cigarette smoking and total serum cholesterol are unrelated to CHD risk at older ages, HDL and LDL cholesterol, triglycerides, systolic blood pressure, ECG-LVH, relative weight and diabetes are each related to subsequent CHD incidence in women over 50.

The key risk factors for men over 50 were HDL and LDL cholesterol, systolic blood pressure, and ECG-LVH.

When these factors were combined into a CHD risk profile, less than 2 percent of the subsequent CHD cases were found in the lowest risk decile, whereas 25 percent of the cases for men and 37 percent for women were found to have occurred in the highest decile.

Dr. Dawber received his M.D. from Harvard Medical School in 1937, and while at Framingham, earned his M.P.H. from the Harvard School of Public Health in 1957.

Since leaving the study in 1966, he has been with the Boston University Medical Center, where he is now professor of medicine and the University's principal investigator for the NHLBI's Multiple Risk Factor Intervention Trial.

Dr. Kannel received his M.D. *summa cum laude* from the University of Georgia School of Medicine in 1949, and did postgraduate work

NIH Visiting Scientists Program Participants

11/5—Dr. Arvid Hope, Norway, Laboratory of Kidney and Electrolyte Metabolism. Sponsor: Dr. Maurice B. Burg, NHLBI, Bg. 10, Rm. 6N307.

11/5—Dr. Najma Malik, Pakistan, Developmental Pharmacology Branch. Sponsor: Dr. Ida S. Owens, NICHD, Bg. 10, Rm. 13N250.

11/5—Dr. Krzysztof Andrzej Sobiech, Poland, Section on Molecular Pathology. Sponsor: Dr. George G. Glenner, NIAMDD, Bg. 10, Rm. 3N112.

Dr. Wurtz Is Sponsor

11/8—Dr. Stuart J. Judge, United Kingdom, Laboratory of Neurobiology. Sponsor: Dr. Robert Wurtz, NIMH, Bg. 36, Rm. 1D02.

11/8—Dr. Ngozi Alachewe Nwoko, Canada, Section on Human Biochemical Genetics. Sponsor: Dr. Elizabeth F. Neufeld, NIAMDD, Bg. 10, Rm. 9N238.

11/9—Dr. Takahiko Mitani, Japan, Laboratory of Molecular Biology. Sponsor: Dr. Ernst Freese, NINCDS, Bg. 36, Rm. 3D02.

11/11—Dr. Koji Araki, Japan, Laboratory of Molecular Aging. Sponsor: Dr. Joseph Rifkind, NIA,

Dr. DeVita Receives First Gottlieb Memorial Award

Dr. Vincent T. DeVita, Jr., director of the NCI Division of Cancer Treatment, recently received the first annual Jeffrey A. Gottlieb Memorial Award at a ceremony held in the M.D. Anderson Hospital and Tumor Institute, Houston, Tex.

The award will be given each year to a physician who has made significant contributions to cancer research.

At the presentation ceremony, Dr. Robert C. Hickey, Director of the Houston hospital, said, "It is fitting that the first annual Jeffrey A. Gottlieb Memorial Award should be presented to Dr. DeVita.

"His contributions to the field of chemotherapy have made a profound impact on cancer care throughout the world."

Dr. Gottlieb was a chemotherapist who pioneered several successful drug therapies for sarcomas and thyroid cancer. He contributed much to the improved use of the drug Adriamycin.

At the time of his death from cancer in July 1975 at age 35, Dr. Gottlieb was chief of Anderson's chemotherapy service.

in cardiology through Harvard University. He also earned a Master of Public Health degree from the Harvard School of Public Health in 1957.

In addition to directing the Framingham Heart Study, Dr. Kannel has been on the faculty of the department of preventive medicine at the Harvard Medical College since 1952.

Gerontology Research Center, Baltimore, Md.

11/11—Dr. Hana Gadasi, Israel, Laboratory of Cell Biology. Sponsor: Dr. Edward D. Korn, NHLBI, Bg. 3, Rm. 318.

Visitor From India

11/12—Dr. Rajen Koshy, India, Laboratory of Tumor Cell Biology. Sponsor: Dr. Robert Gallo, NCI, Bg. 37, Rm. 6B04.

11/14—Dr. Mieczyslaw Smialek, Poland, Laboratory of Neuro-pathology and Neuroanatomical Sciences. Sponsor: Dr. Igor Klatzo, NINCDS, Bg. 36, Rm. 4D02.

11/15—Dr. Adnan Akay, Turkey, Environmental Biophysics Branch. Sponsor: Dr. Reginald O. Cook, NIEHS, Research Triangle Park, N.C.

11/15—Dr. Guiragos K. Poochikian, Lebanon, Analytical and Product Development Section. Sponsor: Dr. James C. Cradock, NCI, Blair Bg., Rm. 416, Silver Spring, Md.

11/16—Dr. Tsuneyuki Oikawa, Japan, Cell Biology Section. Sponsor: Dr. Charles Boone, NCI, Bg. 37, Rm. 1C08.

Hugh Jackson Dies; Had Long and Notable Career In Features, News Field



Hugh Jackson

Hugh Jackson, who retired from NIH 2 years ago, died of emphysema Nov. 10 in Chevy Chase.

At the time of his retirement, Mr. Jackson was chief of the National Heart and Lung Institute's Office of Public Inquiries and Reports. His Civil Service career spanned 33 years—23 of them at NIH.

Honored for Performance

In addition to serving as information officer for NCI, NIAMDD, and NHLI, he also was chief of the NIH Features Branch. For his work there, he received a Sustained Superior Performance Award.

Later, he played a key role in making the award-winning NIH film, "To See, To Teach, To Heal."

A graduate of Northwestern University, Mr. Jackson was editor and publisher of a sports magazine following several years of newspaper work. During World War II he worked for the Civil Service Commission and later the Navy Department before joining NIH.

Memorial services were held on Nov. 13 at the Chevy Chase United Methodist Church.

Mr. Jackson is survived by three daughters, Jeanne Deming, Flint, Mich.; Janet Moore, Severna Park, Md.; and Judith Gamble, Wilmington, Del.; a sister, Mrs. Douglas Beers, Rochester, N.Y.; and four grandchildren.

The family suggests that expressions of sympathy be made by donations to the Emphysema Memorial Fund of the Washington, D.C., Lung Association.

11/17—Dr. Yona Keisari, Israel, Laboratory of Immunobiology. Sponsor: Dr. Tibor Borsos, NCI, Bg. 37, Rm. 2B15.

Only a stomach that seldom feels hunger scorns things common.—Horace.

PREPROINSULIN

(Continued from Page 1)

insulin in a featured report to the British Diabetes Association meeting Sept. 17 at Guilford, Surrey, and at the meeting of the Federation of European Biochemical Societies at Middlesex Hospital, London, Sept. 20.

Shu Jin Chan, a graduate student and researcher in biochemistry at The University of Chicago, was the principal author of a report on the synthesis and characterization of preproinsulin in the *Proceedings of the National Academy of Sciences*, June 1976.

Co-authors were Pamela Keim, a research technician in biochemistry, and Dr. Steiner, the A. N. Pritzker professor and chairman in the department of biochemistry and professor in the department of medicine and the undergraduate college at the University.

NIAMDD Funds Center

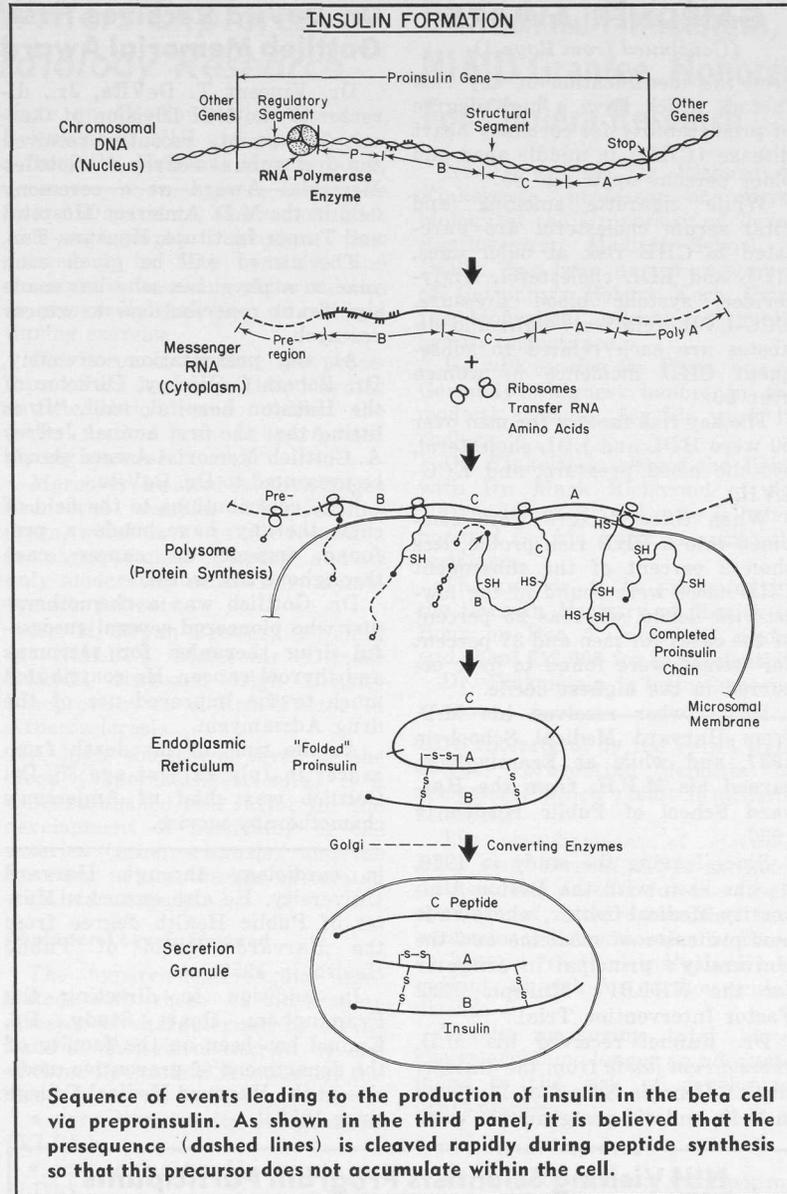
Dr. Steiner, who directs The University of Chicago Diabetes-Endocrinology Center, which is funded by a grant from the National Institute of Arthritis, Metabolism, and Digestive Diseases, discovered proinsulin in 1967.

The discovery of proinsulin opened up a new biochemical field of hormone precursors, a number of which have since been discovered by other researchers.

Discovery of preproinsulin indicates that many hormones may have two precursors rather than one, consisting of a "pre-protein" that is reduced to a "pro-protein," which is in turn reduced to the final hormone.

The University of Chicago team took advantage of recent improvements in methods for large-scale isolation of pancreatic islets, from which small amounts of messenger RNA (mRNA) were prepared.

Messenger RNA (ribonucleic acid) is the means by which DNA (deoxyribonucleic acid), the genetic code, is copied for protein synthesis. The mRNA feeds, some-



what like a typewriter ribbon, into small cellular organelles known as ribosomes. The ribosomes assemble various amino acids in mRNA-coded combinations into proteins.

The research used another technique by which ribosomes from wheat germ can be used with the mRNA to synthesize cell-free pro-

teins encoded by the mRNA.

Mr. Chan, Ms. Keim, and Dr. Steiner found—through gel chromatography and electrophoresis, two analytical processes—that the resultant molecule specified by the mRNA was larger than proinsulin.

By labeling various amino acids with radioactive materials, they located 23 additional amino acids in preproinsulin and partially identified the amino acid sequence.

In addition to correcting genetic "mistakes" in the islets of Langerhans of diabetics, genetic engineering might be able to turn other living organisms, such as bacteria, into insulin-producing "factories."

Insulin has been synthesized in Germany and the U.S. as well as in

mainland China, but not by a commercially feasible process. Diabetics now rely solely on animal insulin. While the number of diabetics in the world is increasing, the supply of slaughtered animals is not increasing proportionately.

Soon there may be an urgent need for synthetic insulin, Dr. Steiner points out in an article on perspectives in Diabetes Research in the *Bulletin of the International Diabetes Federation* (London).

In recent research by the German scientists Drs. Brandenburg and Wollmer, based on his proinsulin concept, the A and B chains of insulin are combined by a non-peptide connecting moiety which guides the correct folding and disulfide bond formation.

Could Lead to Shortcut

He notes further research by Drs. Busse, Hansen, and Carpenter (*Journal of American Chemical Society*, 1974) on abbreviated "mini-proinsulins" that might help shortcut the synthesis process.

This suggests, says Dr. Steiner, "that other complex polypeptides could be built up without necessarily synthesizing the entire peptide sequence . . . insulin itself might be made smaller when the active topography is identified."

In an editorial in the *New England Journal of Medicine*, Dr. Steiner comments on the discovery by Dr. Gabbay et al. of a family with a genetically determined abnormally high proinsulin output (*Diabetes*, 1975).

He comments that such experiments of nature provide excellent opportunities for defining and extending our knowledge of normal and abnormal cell physiology.

Since techniques now exist to read the code sequences in mRNA, Dr. Steiner says scientists can also look for genetic defects in the code for insulin synthesis.

The code "reading" is done in the recently developed Beckman sequencer.

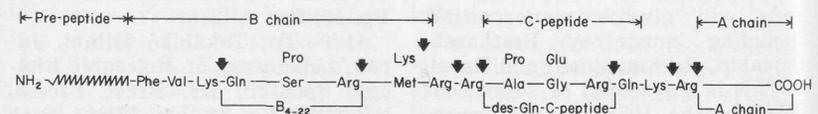
Synthesis Scenario Seen

Here is the new "scenario" for the synthesis of insulin, as seen by the Chicago researchers:

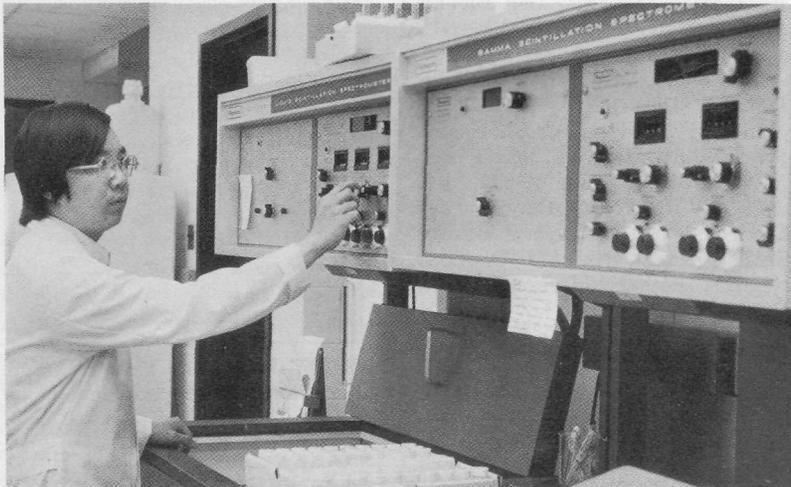
—mRNA coded for preproinsulin codes a preinsulin molecule of a molecular mass of about 11,500 daltons, about 27 percent greater than proinsulin. The N terminal of the molecule contains a side chain that is attracted to membranes,

(Continued on Page 7)

Structure of Rat Preproinsulins



Schematic diagram of the structure of the rat preproinsulins. The prepeptide, shown as an amino terminal extension (saw-toothed line) is 23 residues long.



Mr. Chan adjusts a liquid scintillation spectrometer during some of the studies of preproinsulin.

3 NIGMS Grantees Named Recipients of American Chemical Society Awards

Three National Institute of General Medical Sciences grantees are among those named to receive awards at the 173rd American Chemical Society National Meeting in New Orleans next March.

Each of these awardees will be presented with a \$2000 honorarium for outstanding accomplishments in chemistry.

Dr. Marjorie G. Horning, selected as the outstanding American woman chemist of the year, will receive the Garvan Medal.

She is professor of chemistry in the Institute for Lipid Research and the department of biochemistry at Baylor College of Medicine, and grantee of the NIGMS Pharmacology-Toxicology Program.

Studies Drug

Dr. Horning was chosen for her research in drug metabolism and toxicological effects of drug transfer to newborn babies that has led to important new concepts and knowledge useful in the development of safer drugs.

A Goucher College graduate, Dr. Horning received her Ph.D. in biochemistry from the University of Michigan in 1943. She did research at Michigan, the University of Pennsylvania, and the National Heart Institute before going to Baylor in 1961. She is a former member of NIGMS' Pharmacology-Toxicology Research Program Committee.

Dr. Barry M. Trost will be pre-

(Continued from Page 6)

the positioning of the nascent proinsulin chain within microsomal cisternae (small cell organelles).

—The N-terminus is sloughed off within seconds or minutes, so that only traces of preproinsulin can be found in intact beta cells, the specialized "islet" cells responsible for insulin secretion.

—The remainder of the molecule, known as proinsulin, is a long molecule whose two ends fold up parallel to each other.

—A portion of the proinsulin is sloughed off as C peptide, leaving two parallel chains—the A and B chains—chemically linked by sulfide bonds.

—The insulin and C peptide move to the Golgi region of the cell for "packaging" and storage.

Further research—supported by grants from NIAMDD and the Lolly Coustan Memorial Fund—at The University of Chicago by Dr. Lernmark et al., seeks to locate glucose receptors in beta cells.

Presumably glucose is a stimulus to insulin synthesis. Faulty receptor mechanism might cause faulty insulin synthesis. Islet cell enzymes and antigens are also being studied.



John Blamphin, Director of the Office of Public Affairs, PHS, discussed public information services in his office and introduced colleagues from other PHS agencies: Mildred Lehman, ADAMHA; Morton Lebow, HRA; Jack Walden, FDA; and Patricia Schoeni, HSA. The NIH Information Training Committee sponsored the panel discussion on Interaction of Public Affairs Offices at NIH and Other Health Agencies, held Nov. 10.

sented with the Pure Chemistry Award, which is sponsored by Alpha Chi Sigma Fraternity. He is professor of chemistry at the University of Wisconsin, and also a grantee of the Pharmacology-Toxicology Program of NIGMS.

Hormone Synthesis Cited

Dr. Trost is cited for his proof and total synthesis of the structure of Cecropia moth juvenile hormone—used for the biological control of insects—and for his highly imaginative approach to synthesis of complex structures.

A graduate of the University of Pennsylvania in 1965, Dr. Trost received his Ph.D. from M.I.T. and joined the chemistry department at Wisconsin. He has served on advisory boards at NIH.

Dr. George G. Guilbault will receive the Fisher Scientific Award in analytical chemistry. He is associate professor at the University of New Orleans, and supported through the Biomedical Engineering Program, NIGMS.

Dr. Guilbault Honored

Dr. Guilbault is honored for his work on enzyme electrodes and on a solid surface fluorescent monitoring system—both methods for the direct assay of clinically important substances.

He received his B.S. degree in chemistry from Loyola in New Orleans in 1958 and his M.S. and Ph.D. in analytical chemistry from Princeton University in 1960 and 1961, respectively.

Dr. Guilbault, formerly a research chemist for the Department of Defense, has been in his present position since 1966.

Am. Cancer Society Honors Epidemiology Pioneer Dr. Selikoff

Dr. Irving J. Selikoff of Mount Sinai School of Medicine, N.Y., a noted epidemiologist, was recently given the American Cancer Society's National Award at its Annual Dinner.

Dr. Selikoff was honored with the Society's highest award along with the distinguished biochemist Dr. Elwood V. Jensen, Director of the Ben May Laboratory for Cancer Research of the University of Chicago, and Lawrence Welk, the TV star and a leading ACS volunteer.

Dr. Selikoff is also Director of the National Institute of Environmental Health Sciences' grant-supported Environmental Health Sciences Center at Mount Sinai, professor of medicine, and co-director of the ACS Environmental Cancer Research Project.

He was cited for "his pioneering exploration of the relationship between the environment and cancer and cancer in humans, for developing new approaches to check potential carcinogens, and for continually advocating the need to safeguard the lives of workers."

In the early 1960's, the pioneering investigations of Dr. Selikoff in association with Dr. E. Cuyler Hammond, ACS vice president for Epidemiology and Statistics, established the link between asbestos and pulmonary cancer among industrial workers.

Since then Dr. Selikoff has constantly warned of the danger of cancer-causing agents in the environment, testified before numerous Governmental agencies, and advised industries and unions on safety measures.

In 1972, at the Seventh National Cancer Conference in Los Angeles, Dr. Selikoff cautioned that as many as 225,000 of the more than 3.25 million men and women still living who worked in U.S. shipyards during World War II might develop mesothelioma, a rare cancer of the

NICHD Booklet Focuses On Malnutrition Effects In Learning, Behavior

Children who do not get enough to eat, in addition to being smaller and sick more often than better-fed children, may also be less able to learn, according to a new publication of the National Institute of Child Health and Human Development.

Malnutrition, Learning and Behavior (DHEW Publication No. NIH 76-1036) brings together recent research findings on the relationship of severe malnutrition and chronic undernutrition to learning and behavior.

Severe malnutrition affects one to two percent of the world's children, many of whom die during the first few years of life. A far greater number, up to half the children of the world, suffer from chronic undernutrition.

Single free copies are available on request from the NICHD Office of Research Reporting, NIH, Bethesda, Md. 20014. Telephone (301) 496-5133.

Recent studies outlined in the publication indicate that prolonged severe malnutrition during gestation and early infancy, when the brain undergoes a rapid growth spurt, brings about specific and often irreversible effects on motivation, attention span, and arousal.

The effects of moderate or chronic undernutrition are not as clearly understood. However, a number of studies show that chronically undernourished children tend to lag in behavioral development.

chest lining associated with the breathing of asbestos fibers then widely used in building ships.

A native New Yorker, who earned his medical degree at the Royal College of Scotland, Dr. Selikoff has been a professor of community medicine at Mount Sinai since 1968 and professor of medicine there since 1969.



Greeting Dr. D. Carleton Gajdusek (c), at the Nobel Prize Celebration held Nov. 17 in the Masur Auditorium are (l to r): Dr. Christian Anfinsen of NIAMDD, 1972 Nobelist in Physiology or Medicine; Dr. Gajdusek's co-worker Dr. Clarence J. Gibbs, Jr.; Dr. Theodore Cooper, HEW Assistant Secretary for Health, and Dr. Donald S. Fredrickson, NIH Director. Following tributes by these speakers, Dr. DeWitt Stetten, Jr., NIH Deputy Director for Science, and Dr. Donald B. Tower, NINCDS Director (not in photo), Drs. Gajdusek and Gibbs showed slides and movies recounting highlights of the research on kuru, scrapie, and slow viruses for which Dr. Gajdusek shares the Nobel Prize to be awarded in Stockholm on Dec. 10.

Cholestyramine May Bind Kepone, Aid Its Elimination, Say Richmond Researchers

Investigators are in the midst of a 4-month study to determine if the drug cholestyramine can help eliminate the pesticide Kepone from the body. The clinical trial follows a preliminary study which suggested that the drug, often used as a cholesterol lowering agent, also can increase Kepone elimination.

Information on the initial study and current clinical trial was presented Nov. 4 at a meeting of the American Association for the Study of Liver Diseases in Chicago by Dr. Philip S. Guzelian, a liver specialist at the Medical College of Virginia, Richmond, the health sciences division of Virginia Commonwealth University.

According to Dr. Guzelian, seven patients given cholestyramine for 1 week produced almost seven times more fecal elimination of Kepone as compared to patients not given the drug. Dr. Guzelian and his colleagues are now studying to find out why cholestyramine induced the increased elimination.

Dr. Guzelian explains that possible flaws in the methods of measuring Kepone quantities may make it appear that more Kepone is being eliminated although actual body levels of the pesticide do not significantly change. He also says that none of the seven patients in the earlier study showed any improvement in their symptoms while taking cholestyramine.

"It might just be a chemical phenomenon," the researcher says. "We just don't know. We only gave



Dr. Guzelian conducts precise measurements of body samples in the special Kepone Research Laboratory. Both the preliminary study and the current clinical trial have been carried out in the Clinical Research Center of the Medical College of Virginia, one of 82 such centers funded by the Division of Research Resources.

the drug for 1 week to see if it would have any effect. We were encouraged by the results, so we began this clinical trial."

Access Impeded, Parking Available for Blood Donors

Because the construction underway between Bldgs. 10 and 10A has made it very difficult to reach the Blood Bank from the usual entrance, donors are advised to use either the front lobby or the cafeteria entrances to Bldg. 10 to reach the Blood Bank.

Parking in lot 10F behind Bldg. 10A is still available to donors until further notice.

The current study involves 32 patients who have been exposed to large quantities of Kepone for 4 weeks up to 1 year while working at a now-closed Hopewell, Va., plant that produced the pesticide.

The patients all exhibit common manifestations of Kepone poisoning—tremors, mild liver problems, and decreased sperm production. Most are being treated as outpatients, according to Dr. Guzelian.

During a year of research conducted under an NIH contract which calls for finding a method to rid the body of Kepone, Dr. Guzelian and his colleagues discovered that about 10 percent of the Kepone entering the intestine in bile from the liver was eliminated in the patients' stools.

"The big question is where did the other 90 percent of the Kepone go," he says. "Something in the intestine may have modified the Kepone into another component, or the Kepone may have been reabsorbed in the blood stream where it would again enter the liver and return to the intestine.

"We believe cholestyramine stimulated the elimination of Kepone by binding the pesticide in the intestine to prevent its absorption. We have not yet ruled out the possibility that the drug prevented the metabolism of Kepone into another component in the intestine or that it altered chemical measurement of Kepone."

May Apply to Other Poisons

If cholestyramine does prevent the reabsorption of Kepone from the intestine into the blood stream, the drug may accelerate depletion of Kepone from tissue stores in the body and thus may provide a means of detoxification for Kepone poisoning and perhaps poisoning from similar pesticides, Dr. Guzelian explains.

During the current clinical trial, which will end in January, half of the patients are receiving cholestyramine, while the other half receive a placebo.

The investigators are interested in finding out whether increased Kepone elimination continues in patients receiving the drug, what causes the increased elimination, and whether the patients demonstrate signs of recovering from the illness.

DR. EDELMAN

(Continued from Page 1)

Edelman, the 1972 Nobel prize winner for Physiology or Medicine, was in the structure and genetics of immunoglobulins.

More recently his work has dealt with the study of cell surface receptors, cell interaction and control of cell division. In the field of protein research, he is currently investigating the use of fluorescent spectroscopy and X-ray crystallography in the study of proteins and nucleic acids, and the determination of the amino acid sequence of proteins.

A graduate of the University of Pennsylvania School of Medicine in 1954, Dr. Edelman received the Ph.D. degree in immunology from the Rockefeller Institute in 1960.

Dr. Rall Is Host

After 6 years at that institution, he became a full professor and in 1974 assumed his present title of Vincent Astor Distinguished Professor.

Dr. Joseph E. Rall, scientific director of the National Institute of Arthritis, Metabolism, and Digestive Diseases, will be the official host for the Lecture.



Discussing their presentations during a recent conference in Atlanta commemorating the 100th anniversary of the birth of Dr. Robert M. Yerkes, founder of the Yerkes Primate Research Center, are (from l) Dr. Geoffrey H. Bourne, Director of the Yerkes Primate Research Center; Dr. George Haslerud; and Dr. Harold Coolidge, both early associates of the late Dr. Yerkes. The Center, associated with Emory University, is one of seven primate research centers in the U.S. funded by DRR.

Dr. Guzelian points out that such research is ideally suited for the clinical research center facility where the drug under study can be properly administered, body samples carefully analyzed in special laboratories, and the patients' health continuously monitored.

Doctors had feared that Kepone poisoning was irreversible and, in addition, that Kepone could cause cancer when stored in human tissue since it already has produced liver cancer in rodents during laboratory studies.

NIH Reaches 90 Percent of Its CFC Goal

NIH Combined Federal Campaign workers collected more donations this year, \$210,029.96, than last year (\$204,326), but fell short of the increased quota as the campaign ended on Nov. 12.

Final figures show that NIH reached 90 percent of its goal of \$234,194. The overall average gift per person was \$36.34, with 5,784 (57 percent) of all NIH employees participating.

Of the 19 B/I/D's comprising NIH, 13 exceeded 100 percent of their quotas, three were over 75 percent, and three others topped 50 percent. Eight units exceeded 70 percent participation.

The Institute with the largest number of employees, NCI, collected the most money, \$36,024.75. In contrast, the smallest Institute, NIA, had the largest percent of quota, 479 percent, and the best participation record, 300 percent.

Final campaign figures are listed below:

Unit	Total \$ Collected	Percent of \$ Quota	Average Gift	Number of Contributors	Percent of Participation
CC	\$ 14,400.70	51	\$20.60	699	44
DCRT	6,755.75	103	57.25	118	44
DRG	12,139.50	136	41.43	293	75
DRR	2,364.50	144	36.95	64	100
DRS	8,432.15	78	23.75	355	66
FIC	2,491.50	213	57.94	43	105
NCI	36,024.75	75	39.54	911	49
NEI	2,193.00	67	33.74	65	52
NHLBI	17,155.50	89	49.02	350	48
NIA	1,120.50	479	33.95	33	300
NIAID	9,965.35	93	33.67	296	67
NIAMDD	17,145.80	111	74.87	229	40
NICHD	9,840.00	104	53.66	187	52
NIDR	8,521.50	114	47.08	181	68
NIGMS	4,918.50	140	36.17	136	100
NINCDS	12,691.75	99	34.04	373	75
NLM	11,519.50	129	43.47	265	73
OA	24,423.46	73	23.28	1,049	63
OD	7,826.25	176	56.71	138	93
TOTAL	\$210,029.96	90	\$36.31	5,784	57