

# NIH



# record

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## INSTITUTES COOPERATE IN CYSTIC FIBROSIS STUDIES

Three NIH Institutes are cooperating in an extensive program to investigate the many aspects of cystic fibrosis, an inherited metabolic disease of childhood. Appropriations totalling more than \$750,000 have been allocated to NIAID and NIAMD for expanded extramural research studies on cystic fibrosis. An NINDB-sponsored study of perinatal disorders, conducted at 15 medical centers, may yield genetic information about the disease.

Collaborative studies on cystic fibrosis are planned or under way in other Institutes and in branches of PHS and the National Cystic Fibrosis Research Foundation. Coordination of the disciplines concerned aims at more efficient research into the cause and cure of the puzzling disorder.

At present, NIAID, in cooperation with NIAMD, is investigating bacterial infection common to cystic fibrosis patients in an effort to insure effective antibiotic therapy. The expanded research grants program of NIAID will concentrate in part on epidemiological and immunologic aspects of the disease,

*(See Cystic Fibrosis, Page 4)*

## Dr. Kidd to Geneva As Advisor to WHO

Dr. Charles V. Kidd, Chief of the Office of Research Planning, recently left for Geneva, Switzerland, on detail from PHS to serve as an advisor to Dr. M. G. Candau, Director-General of the World Health Organization.

Dr. Kidd will help to direct a one-year study of WHO's role in furthering international research in medicine and public health. The study is supported by a \$300,000 PHS grant.

## NEW SECRETARY GREETS NIH EMPLOYEES



Newly appointed DHEW Secretary Arthur S. Flemming and Under Secretary Bertha S. Adkins paid their first official visit to NIH August 29. They spent most of the day touring NIH laboratory facilities and were introduced to employees at programs in the CC Auditorium. Above, Dr. Flemming and Miss Adkins greet Miss Mary Louise Burgess of the Cancer Nursing Service, while Mrs. Eileen Jones, also of the CNS, and others wait.

## BIOPHYSICAL SCIENCE STUDY PROGRAM HELD

Nine NIH scientists were among 126 of the Nation's leading biologists and physicists who recently attended a four-week study program in biophysical science in Boulder, Colo.

The study program was designed to accelerate progress in physical biology, an increasingly important field. It offered participants an opportunity to exchange information and to evaluate current biophysical research advances.

Lectures and workshop discussions covered such subjects as the fine structure and function of cells, biological effects of radiation, genetics, cellular biology, muscle and nerve structure and function, and energy coupling and

*(See Study Program, Page 4)*

## NIH GRADUATE SCHOOL REGISTRATION OPENS

The Graduate School marks the beginning of its fifth year at NIH September 22, the first day of registration for fall classes. Registration will be held near the entrance to the Main Auditorium in Bldg. 10, from 11:30 a.m. to 4:30 p.m. each day through September 26, and from 9 a.m. to 4 p.m. on September 27. Classes will begin the week of September 30.

The Graduate School, co-sponsored by the Department of Agriculture and NIH, is open to all qualified Government employees and to other qualified persons as facilities permit. Classes will be held on the NIH reservation after work hours. Tuition is \$12 a credit hour and may be paid in two installments.

*(See Graduate School, Page 3)*

# Insulin And Liver Interaction Studied

No. 213 in a Series



Dr. Glenn E. Mortimore sets up a liver perfusion system in an NIAMD laboratory.

By a simple method of liver perfusion utilizing a pump, a small motor, a glass flask in a plastic cradle, and a rat, another important clue is being contributed to the puzzle of insulin metabolism and its function as a factor in human diabetes. This apparatus, set up in the Laboratory of Biochemistry and Metabolism, NIAMD, is enabling Drs. Glenn Mortimore and Frank Tietze to observe the effects of the liver on insulin.

Although the complex chemical structure of insulin is known, the vital role that it plays in the metabolism of sugar by its action and interaction with the multitude of enzymes throughout the body is a detection problem that is gradually being solved. Previous research has suggested that slices of liver and ground-up liver cells either degrade, inactivate, or destroy insulin by means of unknown enzymes. The extent of this degradation is being revealed by NIAMD's use of the whole liver, which has the advantage of keeping the cells intact and of removing possible interference from other organs.

Essentially, the perfusion system keeps an organ alive while its metabolism is being studied. In this instance, the rat's liver is exposed and blood vessels leading to it are severed. Circulation is then maintained artificially through two thin plastic tubes connected to a flask of fresh blood from donor rats. The flask, cradled in a plastic trough connected to a windshield wiper motor, is rocked gently

back and forth to provide a constantly moving, thin film of blood through which the cells receive oxygen. One tube carries blood to be pumped through the liver; the other acts as a vein, taking blood back to the flask.

Since blood normally contains insulin in sub-microscopic amounts -- of the order of three billionths of a gram per cc. -- the addition of radioactive iodinated insulin permits the insulin to be readily followed through the perfusing chamber.

Samples of blood are taken from the circulating system at specified time intervals, and by the addition of trichloroacetic acid the plasma proteins and undegraded insulin are removed. Measurement indicates the amount of insulin captured by the liver, and the amount of degraded insulin released during each cycle.

During its first passage through the liver, approximately 22 percent of the radioactive insulin is retained by the tissue. After a short lag period the degraded insulin begins to appear. By the end of one hour, 70 percent has reappeared in a degraded form.

As yet, no one knows what the function of insulin in the liver really is. These questions still remain: what is the nature of the enzyme -- or enzymes -- that cause insulin degradation in the liver? Can it be possible that insulin plays some part in the liver's metabolism? The NIAMD studies are fitting pieces into the puzzle.

## Publication Preview

The following manuscripts were received by the SRB Editorial Section between June 7 and June 18.

### DBS

Eddy, B. E., and Stewart, S. E. Physical properties, and hemagglutinating and cytopathogenic effects of the tumor agent.

### CC

Frame, E. G. The levels of individual free amino acids in the plasma of normal man at various intervals after a high-protein meal.

### NCI

Andervont, H. B.; Dunn, T. B.; and Canter, H. Y. Susceptibility of agent-free inbred mice and their  $F_1$  hybrids to estrogen-induced mammary tumors.

Bryan, W. R. Enhancement of virus yield of Rous sarcomas.

Calabresi, P.; Arvold, N. V.; and Stovall, W. D. Cytologic screening for uterine cancer through doctors' offices. A report of 65,163 women examined over a period of ten years (1947-1955).

Hilberg, A. W. Studies of cervical cancer.

Kuff, E. L., and Dalton, A. J. Biochemical studies of isolated Golgi membranes.

Nathan, D. G., and Warren, K. S. A colorimetric method for the measurement of the brain ammonia of the mouse: The effect of glutamine on the total measurable ammonia.

Schrecker, A. W., and Trail, M. M. Aminoketones. I. The preparation of  $\alpha$ -aminoketones from di-*n*-butyl acetamidomalonic acid.

Tschudy, D. P., and Collins, A. Malonic ester synthesis of  $\beta$ -amino-levalinic acid. The reaction of *N*-3-bromoacetylphthalimide with malonic ester.

### NHI

Davis, J. O.; Kliman, B.; Yankopoulos, N.; and Peterson, R. E. Increased aldosterone secretion following acute constriction of the inferior vena cava.

Goodman, D. S. The interaction of human erythrocytes with sodium palmitate.

Tosteson, D. C., and Hoffman, J. F. Cation transport in high and low potassium sheep red cells.

Weissbach, H.; King, W.; Sjoerdsma, A.; and Udenfriend, S. Studies on the biosynthesis of indole-3-acetic acid in animals and a method for its assay. Tryptamine formation by animal tissues and human fecal bacteria.

Wright, B. E. Folic acid coenzyme forms and function.

### NIAMD

Chanock, R. M.; Parrott, R. H.; Cook, M. K.; and Bell, J. A. New viral agents recovered from the respiratory tract of infants and children.

Eagle, H. The growth requirements and metabolic activities of human and animal cells in culture.

Guinn, E. Studies of the incidence of intestinal parasitism using the zinc sulfate centrifugation flotation technique as a routine diagnostic procedure.

Huff, E., and Rudney, H. Chemical studies on 1,2-propanediol phosphate and acetol phosphate.

Huff, E., and Rudney, H. The enzymatic oxidation of 1,2-propanediol phosphate to acetol phosphate.

Olivier, L., and Barbosa, F. S. Survival and weight loss of *Australorbis glabratus* kept at controlled relative humidities in the laboratory.

Remington, J. S.; Jacobs, L.; and Kaufman, H. S. Studies on chronic toxoplasmosis: The relation of infective dose to residual infection and to the possibility of congenital transmission.

Warren, K. S., and DeWitt, W. B. Esophageal varices in mice infected with *Schistosoma mansoni*.

Young, M. D.; Jeffery, G. M.; Freed, J. E.; and Morehouse, W. G. The effectiveness of dithiazanine against worm infections in mental patients.

#### NIAMD

Bartlett, R. G., Jr.; Brubach, H. F.; and Specht, H. Demonstration of ventilatory mass flow (AVMF) during ventilation and apnea in man.

Bloch, K. J., and Bunim, J. J. A simple, rapid diagnostic test for rheumatoid arthritis - the bentonite flocculation test.

Bunim, J. J.; Black, R. L.; Lutwak, L.; Peterson, R. E.; and Whedon, G. D. Studies on hexadecadrol, a new synthetic steroid, in rheumatoid arthritis.

Lewis, M., and Sollner, K. Preparation and properties of improved protamine collodion matrix membranes of extreme ionic selectivity.

Mickelsen, O., and Anderson, A. A. A method for preparing intact animals for carcass analyses.

#### NIDR

Burstone, M. S. The relationship between fixation and techniques for the histochemical localization of hydrolytic enzymes.

Omata, R. R. Studies on the nutritional requirements of the fusobacteria. II. Requirements for pantothenate and purines.

Savchuck, W. B., and Burstone, M. S. Calcification and esterase localization in developing dentin.

Savchuck, W. B. A comparison of bone growth in normal and strontium-treated rats.

#### NIMH

Bayley, N., and Schaefer, E. S. Relationships between socioeconomic variables and the behavior of mothers toward young children.

Gladwin, T., and Sarason, S. B. Culture and individual personality integration on Truk.

Kornetsky, C.; Pettit, M.; Wynne, R.; and Everts, E. V. A comparison of the psychological effects of acute and chronic administration of chlorpromazine and secobarbital in schizophrenic patients.

Linn, E. L. Drug therapy, milieu change and release from the mental hospital.

Perry, H. S. The evolution of a potentially deviant subgroup as the result of natural changes in the work conditions of the total group.

#### NINDS

Dekaban, A. S. Arhinencephaly.

Doudoumopoulos, A. N., and Chatfield, P. O. Some effects of temperature on function of mammalian (rat) muscle.

Klatzo, I.; Gajdusek, D. C.; and Zigas, V. Pathology of the Kuru disease.

Macri, F. J. Outflow patterns of the cat eye. McKhann, G. M., and Tower, D. B. Gamma-aminobutyric acid: A substrate for oxidative metabolism of cerebral cortex.

von Sallmann, L. Studies on morphology, physiology and pathology of the lens epithelium.

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## NIH Spotlight



Dr. Marie-Jeanne LaRoche

A new country, language, and job met Dr. Marie-Jeanne LaRoche when she came to NIH from her home in Paris, France, last May. Those first few days she remembers as being "very hard, very long."

Dr. LaRoche is one of the first European scientists to come here on a postdoctoral research fellowship. The fellowship, an extension of a PHS program, has provided means of study for some 17 scientists from Europe to date. It offers a year's training in the American research institution of the Fellow's choice.

A pharmacologist from the Institut National d'Hygiene, Dr. LaRoche became interested in research opportunities at NIH through her sponsor, Dr. Bernard Brodie, Chief of the Laboratory of Chemical Pharmacology, NHI. At present, she is working on a project which involves testing the reactions of animals to barbiturates and anesthetics. She enjoys working with animals, particularly rabbits and guinea pigs. She's not used to rats, however, and mice, she says, "can bite you too quickly."

Carrot-red hair and blue eyes characterize the 'petite' doctor, as does her statement in careful English, "I have so much to learn." Some aspects of her job in the Heart Institute she has never encountered before, and she is anxious to improve her knowledge of all things pharmacological.

## NEWS BRIEFS

Dr. Ronald E. Scantlebury, Chief of the DRG Foreign Grants and Awards Office, has been appointed to the U. S. Civil Service Commission's Advisory Committee for Scientific and Technical Personnel. This committee will advise the Commission on problems of recruiting, examining, and certifying of scientists and technologists. Dr. Scantlebury is also chairman of NIH's Board of Civil Service Examiners.

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American school children should begin studying foreign languages as early as the third grade, according to educators at a recent Office of Education conference. A report by some 50 language specialists proposed that school systems provide a 10-year program of language extending through high school.

### GRADUATE SCHOOL Contd.

A total of 30 courses will be offered in the fields of biology, medicine, chemistry, languages, mathematics, statistics, and public speaking. Eight new courses have been added, including Macromolecular Biochemistry, Enzyme Induction and Activation, Thermodynamics in Biological Systems, Chemical Kinetics in Biological Systems, Elementary Practical Electronics, Introduction to Calculus, and Bacteriophages.

Courses are offered on four levels--non-credit, undergraduate, advanced undergraduate, and graduate. Students may, in most cases, transfer their credits to a degree-conferring institution by special arrangement. Most educational expenses are tax deductible.

Additional information and textbooks are available in the Clinical and Professional Education Branch, Bldg. 10, Room 13N-228, Ext. 2427.

Much of Dr. LaRoche's time is spent at work in the laboratory. But in her spare moments she hopes to learn many more names and places at NIH. Her co-workers report that Dr. LaRoche's progress in English is excellent, while she herself is obviously finding her American adventures very exciting, especially the trip she took to Ann Arbor, Mich., last month to attend her first American scientific meeting.

## NHI EXHIBIT SENT TO BRUSSELS CONGRESS



NIH employees will see some familiar faces on this panel of the new joint NHI-American Heart Association exhibit. Models for the "Face of America" montage were all NIH volunteers. Scheduled for a first showing at the IIIrd World Congress of Cardiology in Brussels, Belgium, the display will then be sent to San Francisco for the 31st annual meeting of the American Heart Association.

A 30-foot NHI exhibit entitled "Working Together to Keep Hearts Strong" will be displayed for the first time at the IIIrd World Congress of Cardiology in Brussels, Belgium, next week.

The exhibit is jointly sponsored and financed by NHI and the American Heart Association and emphasizes their cooperative effort against heart disease.

Three of the exhibit's five panels illustrate the chief areas of cooperation: research, education, and community services. Another panel, a montage, represents the "American people," who support the joint effort. The fifth panel presents a short formal statement, in five languages, giving the purpose of the two organizations.

An outstanding feature of the large exhibit is a unit comprising a pair of hands supporting a large human heart model. This unit slowly revolves on a turntable.

Eleven NHI investigators will officially attend the Congress. Scientific papers will be presented by Drs. Andrew G. Morrow, Robert P. Grant, Stanley J. Sarnoff, Parkhurst A. Shore, and Daniel Steinberg.

### NIH Alumni Association Set Up For Clinicians

An NIH Clinical Alumni Association has been organized for physicians and dentists who have left NIH after actively participating for a year or more in the CC's patient care program.

The Association's purpose is to provide continuing liaison with clinicians who leave NIH for universities, laboratories, and private practice. It provides an opportunity to follow the careers of these persons and to keep them informed of the development of clinical programs here.

Some 150 alumni have expressed interest in joining the Association to date. They will receive certificates of membership and periodic literature pertaining to NIH clinical conferences and studies. The first annual directory of NIH clinical alumni has been compiled for distribution next month.

The Assistant Director of the CC, Dr. Robert M. Farrier, will serve as Executive Secretary of the group.

## DR. BRIGGS RECEIVES 1958 BORDEN AWARD

For outstanding basic research in the area of poultry science, Dr. George M. Briggs, Chief of the NIAMD Nutrition Unit, was recently awarded the 1958 Borden Award in Poultry Science, consisting of a gold medal and \$1,000. The presentation was made at the 50th anniversary meeting of the Poultry Science Association, which sponsors the award.

Dr. Briggs received the award in recognition of his basic studies on vitamin B<sub>12</sub> and its relationship to other diet components, such as fat and amino acids. His collaborative work on microbiological assay techniques was instrumental in the isolation and discovery of this vitamin.

Other of Dr. Briggs' research accomplishments include the development of biological assay methods to isolate certain nutritional factors in chicks and other animals. Synthetic diets that he developed have made it possible to determine the effects of selected nutritional deficiencies and to study unidentified growth factors.

Dr. Briggs has been Chief of the Nutrition Unit in NIAMD's Laboratory of Nutrition and Endocrinology since 1951. He is currently serving as secretary of the American Institute of Nutrition.

### STUDY PROGRAM Contd.

transfer. Some 70 scientific papers covering all levels of biological organization were presented.

Drs. DeWitt Stetten, Jr., and Robert W. Berliner of NIH presented lectures at the conference. Other NIH scientists attending were Drs. Herbert A. Sober, Urner Liddel, John Z. Hearner, William R. Carroll, Edwin D. Becker, Murray Eden, and Irvin Fuhr.

### CYSTIC FIBROSIS Contd.

physico-chemical studies of mucus, biophysical and bacteriologic studies of pulmonary involvement, and further study of infections.

The Public Health Service and the National Cystic Fibrosis Research Foundation are carrying on related genetic research, and PHS plans a survey to determine the prevalence of cystic fibrosis.

A conference sponsored by NIAID and NIAMD is planned for this fall to allow experts in the field to review and assess research needs.