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NEWS AND NOTES 1985, VOL.16, NO.5

The Rockefeller University

THE ROCKEFELLER UNIVERSITY

news and notes

JUNE-JULY 1985
VOLUME 16 NUMBER 5

Ph.D. Awarded to 21; François Jacob Receives Honorary Degree at 27th Commencement

Commencement, June 13. Seated left to right, Purnell Choppin, David Rockefeller, François Jacob, Norton Zinder, Joshua Lederberg, William O. Baker, Mary Rifkin, David Luck. On the steps, Ph.D. recipients and their presenters.

President Lederberg presented the Ph.D. degree to 21 graduates on June 13 at the University's 27th commencement ceremonies and conferred an honorary doctor of science degree on geneticist and Nobel laureate François Jacob of the Pasteur Institute.

In keeping with the University's custom, the afternoon's program was limited to talks by faculty presenters who explained the significance of the work of the degree recipients to an audience of families and friends assembled in Caspary Auditorium. Dr. Jacob was presented by Norton D. Zinder, John D. Rockefeller Professor and head of the University's genetics laboratory.

Professor Purnell W. Choppin, vice president for academic programs and dean, opened the ceremonies at which he and Professor David J. L. Luck served as marshals, placing the University's blue-and-gold-trimmed hoods on the graduates' shoulders. Associate Dean Mary R. Rifkin assisted in the proceedings. Also participating were Dr. William O. Baker, chairman of the board of trustees, and David Rockefeller, chairman of the board's executive committee.

François Jacob, a native of Nancy, France, and a hero of the Free French forces during World War II, holds a medical degree and a doctorate in science from the Sorbonne. He joined the Pasteur Institute in 1950 and has been head of the Department of Cell Genetics since 1964. His studies of the genetic mechanisms of bacteria and bacterial viruses, particularly the information transfer and regulatory systems in the bacterial cell, earned him the Nobel Prize in Physiology or Medicine in 1965, shared with Andre Lwoff, his early mentor, and Jacques Monod. His publications include a history of the development of biology from the 16th century. He presented his views on the mechanisms of evolution in the book *The Possible and the Actual*, published in 1981.

Dr. Jacob presented the Rockefeller University Lecture the day after commencement. His subject was Molecular Genetics and Mouse Development.

Condensations of the presenters' remarks follow on page 2. The degree recipient's name appears first. □

New Residence Breaks Ground

Groundbreaking ceremonies were held on June 21 for the Scholars Residence, a 244-unit, 38-story housing facility that will span the FDR Drive at 63rd Street.

Being built in cooperation with Memorial Sloan-Kettering Cancer Center, which will lease 40 percent of the apartments, the Scholars Residence "will play an indispensable role in the orderly development of the community and in our respective institutions' ability to attract and retain scientists of the highest possible caliber," stated President Lederberg, who officiated at the ceremony.

"A new residence has become a matter of great urgency," added David Rockefeller, chairman of the executive committee of the University's board of trustees. "Without functional, affordable housing, a great many people are not able to come to the Rockefeller or must live long distances away."

(continued on page 7)

THE PRESIDENT'S COLUMN

As is traditional, this issue of *news and notes* features the achievements of our new graduates—a bumper crop this June—to whom we all extend our warmest congratulations. Like their predecessors, they and their mentors bring honor to our University.

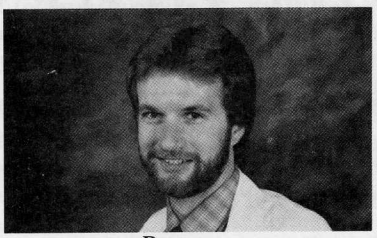
We have much to be proud of this year. The awarding of the Nobel Prize to Dr. Merrifield dramatized to the world once again the value of basic research and the importance of ongoing support for it. And as the Hospital celebrates its 75th anniversary, we can take pride in the many contributions of Rockefeller scientists to clinical research.

This year saw another kind of celebration on campus, The Founder's Ball, a festive evening that brought pleasure to its participants and $350,000 to the Univer-

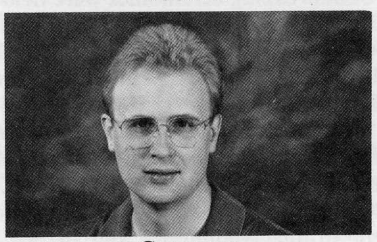
(continued on page 7)

At the Founders Ball, May 23. President Lederberg, right, congratulates the first members of the newly established Founder's Society, David Rockefeller and Brooke Astor. (See President's Column.)

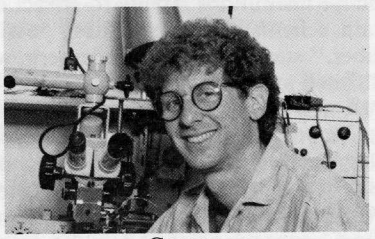
AOKI



BUCALA



CLAYTON



COHEN

CHIYE J. AOKI

Philip Siekevitz

In most mammals, some parts of the nervous system are still developing after birth. Chiye Aoki's thesis problem was the biochemical events occurring during development of the visual system in the cat. Years ago, Torsten Wiesel, now here at Rockefeller, laid the background of the problem, defining a critical period during development when the visual cortex of the brain is still capable of altering its neuronal connections and is still plastic. In the cat, this period extends from the first to the third month after birth, but can be postponed if the animal is kept in the dark from birth on. The biochemical experiments were based on the findings of Kasamatsu that the neurotransmitter, norepinephrine, and the second messenger, cyclic AMP (cAMP), may be involved in the plasticity. Aoki compared cats kept in the light throughout the critical period with cats kept in the dark and with cats kept in the dark and then exposed to light. She studied the binding of norepinephrine and of adenosine in different layers of the visual cortex, the enzymes in the visual cortex involved in the synthesis and degradation of cAMP, the protein kinase enzyme which is cAMP-dependent, and the phosphorylation of the protein substrates of this enzyme. Her significant finding was that the phosphorylation of a cytoskeletal protein, MAP2, is altered only in the visual cortex among the three sets of cats, and that there was a correlation between these changes and the condition of plasticity in the visual cortex. Phosphorylation of MAP2 alters its binding to microtubles and to actin, proteins which are part of the cytoskeletal structure of the nerve cell. The inference is that changes in the neuronal connections during the critical period are coupled to changes in the cytoskeletal architecture of the cell that may be occurring during that period, and that the phosphorylation of MAP2 is a key element in regulating these changes. When Chiye Aoki came to me several years ago asking if she could do biochemical experiments on visual cortex plasticity, I replied, "What is visual cortex plasticity?" She was a perfect graduate student, for I learned as much from her as I hope she learned from me. She will be continuing her work in neurobiology on a postdoctoral fellowship at Cornell University Medical School.

RICHARD J. BUCALA

Anthony Cerami

Richard Bucala came to my laboratory as an M.D.-Ph.D. student from Yale University with an extraordinary background in biochemistry. This understanding, coupled with his technical prowess in the laboratory and his creative and organized efforts, made it possible for him to pursue three distinct projects at the same time. All three involved the possible pathological consequences of the chemical addition of small molecules with important biopolymers of the body. In the first case, in collaboration with Drs. Manabe and Cottlier of the Department of Ophthalmology of Cornell, he was able to show that one of the main side effects associated with the chronic administration of steroid drugs was attributable to the addition of these and therapeutically important steroids to the proteins in the lens of the eye and their accumulation. In what will undoubtedly become a classic toxicological study, he was able to demonstrate that the attached steroid molecules caused the aggregation of lens proteins and the lens opacity. In a second project, in collaboration with Drs. Fishman and Lahita of the Rockefeller Hospital, Rick demonstrated that another steroid, 16-hydroxyesterone, could also attach to body proteins. This sex steroid is of interest because of its noted elevation in patients afflicted with the autoimmune disease systemic lupus erythematosus, a malady more common in young women than men. The increased attachment of steroids to proteins presents a possible explanation for the cause of this disease. The attached steroids could act as haptens and induce antibody formation, or bind irreversibly to specific receptors in immune cells eliciting an immune dysfunction. Analysis of the blood of lupus patients revealed in fact that many had antibodies to steroids attached to proteins. Surprisingly, Rick also found similar antibodies in women who had previously taken oral contraceptives, while normal men and women who had not taken oral contraceptives had no evident antibody. Whether these antibodies play a role in the pathogenesis of SLE or cause the problems associated with oral contraceptive usage is not clear, but Rick's findings will undoubtedly stimulate additional research. The third area Rick opened and explored was the attachment of simple sugars to DNA. This work, done in collaboration with Drs. Peter Model and Marjorie Russel, showed that the attached sugar interfered with the functioning of the DNA and could induce mutations within the genome. This previously unrealized reaction offers a mechanism for the changes of the genetic material noted in older individuals. In effect, time and sugar can induce changes in the genes in a manner similar to that seen with carcinogenic agents. These results, which could also explain the age-dependent increase in the incidence of cancer, are particularly sobering. It is one thing to consider removing carcinogens from the environment, but quite another to remove essential sugars from the body. The identification of sugars as a mediator of the aging of genetic material will assuredly stand as a milestone in the understanding of aging. Rick now returns to Cornell University Medical College to finish his M.D. degree.

DAVID F. CLAYTON

James E. Darnell, Jr.

Each year, the University's faculty has the pleasure of interviewing prospective students. I saw David Clayton in this connection in 1980, and immediately we began to discuss his life goal of studying the molecular biology of the nervous system. His organized mind had already brought him to the now widely held idea that the new techniques of gene cloning would be an important driving force for progress in neurobiology. Further, he already recognized that some problems in neurobiology were similar to problems in the development of any organ—how do specific cells manage to be directed to form specific organs? Many organs are easier to study than the brain. Therefore, it was a short step for David to join us in our work toward understanding how liver cells are designated to become and remain liver cells. After a brief period of acclimatization, he was off and running, and it was soon clear that discussions with him brought as much to the mentor as they provided him. Perhaps his most important attitude in studying an organ from the mammalian body was to be as alert to the biologic side of the problem as to the molecular side. In so doing, he has established what we feel is a very important fundamental principle, that proper and complete differentiated cell function requires participation in the cellular community and environment of the organ. Signals to the cell nucleus that this environment is intact or has been disrupted are apparently an important element of proper liver function. This finding makes life complicated, for if experimentalists are to take further steps in understanding organ function, these signals must be maintained. But how much more important it is to know what to look out for than to hope things will be easy. Having earned his spurs as a gene jockey, David is now ready to turn to his first love, the nervous system. He is joining Professor Fernando Nottebohm's group, which studies song learning in canaries and other birds.

MARK S. COHEN

Susan Schwartz-Giblin

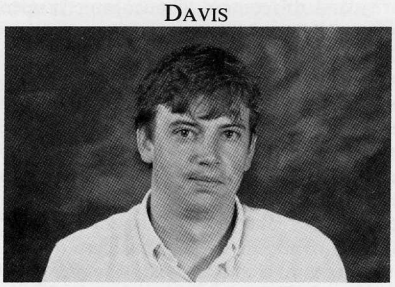
The back muscles are involved in postural regulation and in specific behaviors, and in the female rodent they execute hormone-dependent responses to somatosensory input. Mark Cohen decided to investigate the responsiveness of the back muscles, lateral longissimus, to stimulation of the pudendal nerve, which is electrically excited during reproductive behavior. While in the lab, he developed an expertise with microcomputers, which enabled him to design a program for on-line electrophysiological analysis, and he generously shared his expertise with many of us in the lab and elsewhere on campus. He used the program efficiently to measure responses of the deep back muscle nerves to various experimental manipulations, and was able to demonstrate several parallels between his neuronal circuit and the entire reproductive behavior. For both, cutaneous information carried by A beta afferent fibers was sufficient to evoke the characteristic response. For both, the throughput of the system was markedly facilitated by *bilateral* pudendal nerve excitation. Both also depended on activation of the brainstem reticular formation, which communicates with the spinal cord through the ventrolateral spinal columns. As a true colleague, Mark has laid the foundation for physiological analyses which have as their ultimate goal understanding the mechanisms of the interface between hormones and the nervous system. Mark plans to begin a career in research and development of biomedical instrumentation.

NICHOLAS G. DAVIS

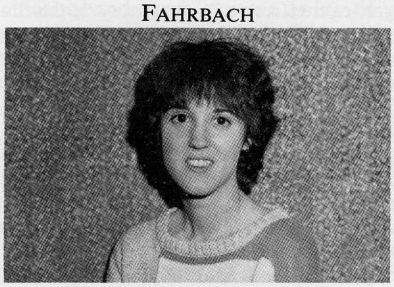
Peter H. Model

Nicholas Davis came to our lab with a strong background in eukaryotic molecular biology, but little direct experience with microbes in general or *E. coli* and bacteriophage f1 in particular. In the light of these obviously dreadful failings, it seemed appropriate for him to take up what seemed then to be a rather focused problem. He started by asking in detail what the minimum elements are that retain a bacteriophage protein in the cell membrane. The results of very careful deletion and mutagenesis experiments suggested to him that there might be little or no sequence specificity to membrane anchoring, that what determined whether a protein segment stayed in the membrane was simply the sum of the hydrophobicities, or degree of greasiness, of the individual amino acids. He constructed synthetic hydrophobic regions and found that wherever he put them, that's where the protein stuck in the membrane; and on one occasion, when a protein stuck which should not have, he reasoned that during the experimental manipulations involved in gene reconstruction, he must have inadvertently created a greasy region. On further investigation, it turned out that this is just what happened. Nick has carried out enough different constructions so that with the use of hydrophobicity values for the individual amino acids, it is possible to predict with reasonable accuracy whether a given protein segment will anchor in a membrane. As one might expect, the physical chemists love the idea. What you must know, however, is that Rockefeller is the mecca for those who believe that specific signals govern most membrane interactions. It is a tribute both to the subtlety of design and elegance of execution of Nick's experiments, and to the scientific tolerance of the true believers in specific membrane signals, that they have been able to accept his results, albeit with some reservations. What Nick has done is to take a rather specific problem, and with ingenuity, careful attention to the details, and a great deal of thought, turn his protein into a paradigm for all membrane proteins of simple topology. He will be remaining in our lab for a while.

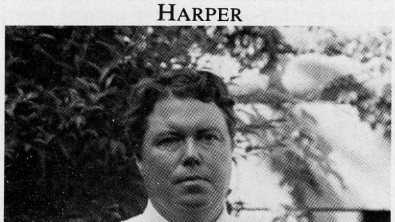
DAVIS



FAHRBACH



HARPER



SUSAN E. FAHRBACH

Joan I. Morrell

Susan Fahrbach graduated *summa cum laude* from the University of Pennsylvania, with a B.A. in psychology. She then received a Thouron Fellowship and continued her work at St. Hilda's College, Oxford University, where she earned a second B.A., in physiology and psychology. Her work at Rockefeller has been directed toward understanding the mechanisms through which steroid and peptide hormones precisely regulate certain neural circuits. Such hormonal influences are key to the regulation of certain behaviors, reproductive behaviors being the best understood. We need to know more about the neural circuits in which steroid hormone-receiving neurons are found. Susan used fluorescent dyes for retrograde neuroanatomical tracing, combined with steroid autoradiography, in order to identify the estradiol-receiving neurons in the preoptic area of the rat that send their axons to the midbrain. Thus, she discovered the neurons that send their estrogen-influenced signals over circuits that underlie estrogen-dependent maternal behavior in the rat. In other experiments on maternal behavior itself, Susan showed that exogenously administered oxytocin can induce very short-latency maternal behavior in estrogen-primed virgin female rats. She went on to prove, in a particularly well-designed experiment using antibodies directed against oxytocin, or analogue antagonists of oxytocin, that the onset of short-latency maternal behavior depends on oxytocin as well as estrogen. Throughout her graduate work, I have been impressed by Susan's ability to integrate large numbers of facts in the formation of creative hypotheses, and to execute the complicated experiments demanded by our field. She has taken a postdoctoral position in the laboratory of Dr. James Truman at the University of Washington, in Seattle. She will be studying the steroid-regulated events that lead to neuronal development and survival in the tobacco hornworm.

HARRY W. HARPER

Marion E. Frank

Adsorption of molecules to receptor sites on taste cell membranes has been assumed to be the initial step in taste transduction. To account for differences in stimulatory effectiveness of salts, it has been postulated that cations and anions bind to separate excitatory and inhibitory sites. Harry Harper demonstrated experimentally, with beautifully controlled electrophysiological recordings from the hamster's chorda tympani nerve, that binding of salts to taste receptors is not necessary to explain the neural taste responses. His meticulous studies showed that previous analyses of responses to salts included systematic errors in the measurement of both stimulus concentration and neural response, which he rationally corrected. He then proceeded to develop a new theory of salt taste stimulation that does not require binding and is rigorously supported by neural data. Whenever two different ionic solutions are brought into contact, a liquid junction potential results, dependent on the relative conductances of anions and cations. Harry developed a precise method for calculating liquid junction potentials and demonstrated experimentally that variation in responses of the hamster chorda tympani nerve to salts with the same cation but different anions was completely accounted for by these diffusion potentials. Furthermore, he found that neural responses attributable to cations were directly related to their Nernst potentials, which are simply dependent on concentration and permeability in ion-specific channels. Harry's scholarship, his concern for controlling all relevant variables, his use of information from many disciplines, his dedication to resolving technical difficulties, and his valuing of scientific advancement over personal gain characterize his career. His excellent thesis reflects his interests in the gustatory system, his insights into sensory transduction, as well as his many productive interactions with colleagues.

ALLAN L. HARRELSON
(Degree granted *in absentia*)

Bruce S. McEwen

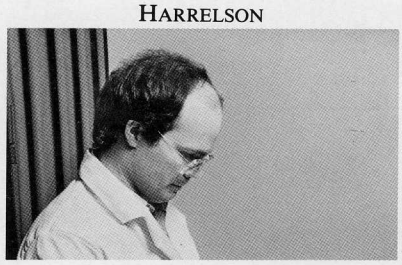
In 1968 we discovered that the part of the brain known as the hippocampus contains large numbers of receptors for the adrenal stress hormone, corticosterone. The hippocampus is important in attention, memory, and emotional responses, and the stress hormone receptors in this brain structure are ones which enable the hormone to alter gene expression in the cell nuclei of nerve cells. The problem Allan Harrelson tackled for his Ph.D. thesis was how stress hormones act via these receptors to alter the ability of hippocampal nerve cells to conduct their business of neurotransmission and electrical communication. He found that stress hormones alter the ability of three different neurotransmitters to stimulate the formation of an intracellular second messenger, cyclic AMP, which has many important functions inside the cell. He also uncovered an unsuspected role of the pituitary hormone, ACTH, in stress hormone action on hippocampus. Allan's work thus provides the important link we were seeking since 1968 between hormone receptors in hippocampus and nerve cell function, and it appears that his discovery may have considerable generality as a mechanism of sex and stress hormone action on the brain. His thesis is also a triumph of personal dedication and hard work, because his experiments were not easy ones. In fact, Allan had to develop and validate procedures for producing and working with tiny slices of the hippocampus so that he could generate cyclic AMP reproducibly in a test tube. In spite of the long hours and many frustrations, Allan's attitude was always positive and cheerful and he made an enormous personal contribution to the spirit of the laboratory. Allan is currently a postdoctoral fellow at Stanford University, where he is working on problems of neural development and differentiation.

HUNG-TEH KAO

Joseph R. Nevins

Hung-Teh Kao came to Rockefeller in 1981 already possessing an M.D. degree and with a desire to enter biomedical research. Specifically, he was very interested in delving into the world of modern molecular genetics. Since he had a desire to maintain a tie to his medical background, he saw our work in oncogenic transformation by adenovirus as a way to accomplish this. He set out to try to define and isolate the cellular genes that contributed to the characteristics of the adenovirus-transformed cell. Such genes do exist, but they are rare compared to the total complement in the cell, and to find them

HARRELSON



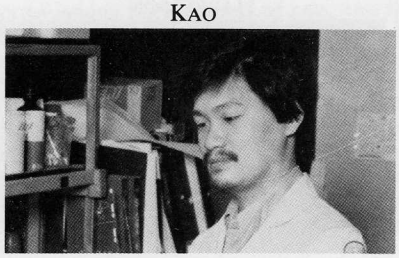
becomes a form of "needle in a haystack" search. However, such a problem is accessible through the powerful techniques of modern molecular biology, utilizing recombinant DNA methods. Hung became highly proficient at this and was subsequently able to clone and study a number of cellular genes whose expression was characteristic of the oncogenic state. The regulation of the expression of one of these genes formed the bulk of his studies. This gene was previously known as one that is regulated in all cells by certain stressful stimuli, most notably heat shock. Hung clearly demonstrated that one of the adenovirus-transforming genes specifically activated this heat-shock gene. His further studies demonstrated that the gene was regulated in tumor cells in a cell-cycle-dependent manner, which suggests that a part of the transformation process might be to alter the transcriptional regulation of cellular genes normally expressed at specific times in the cellular growth cycle. His future plans are to join the laboratory of Dr. Harold Weintraub at the Fred Hutchinson Cancer Center in Seattle as a postdoctoral fellow.

LISA B. KOLE

James E. Darnell, Jr.

In biology, decisions are constantly being made to start new activities. In developing embryos, new functions by the hundreds begin and continue to accumulate as the animal develops. And after birth, there is growth. Less well recognized, but critically important, are decisions by certain cells to call a halt to previous activities. One dramatic case of this type was chosen for study by Lisa Kole (who recently made a new decision herself and is now Lisa Kole Graves). Lisa investigated the changes that occur as the progenitor of the red blood cell gets ready to perform the highly specialized functions of a red cell. This robust, actively growing precursor cell, in a period of three to four days, becomes a ghost of its former self. It forsakes almost all else in life except the production of hemoglobin, the protein-iron complex that gives blood its color. The preparation to become a red blood cell is one of life's most important tasks because each day we must replace 300 million worn-out red cells with the correct number of fresh ones to keep ourselves healthy. Lisa found some important secrets of the preparation process through which all red-cell precursors traverse. The secret in stopping all non-red-cell functions does not, in this case, lie in the cell nucleus—the storehouse of the genes—but, rather, in the cytoplasm. It is clear from her work that the cell simply decides to throw away all or most non-red-cell messenger RNAs rather than go to the complicated task of specifically stopping their synthesis, an apparently wasteful but somehow simplifying decision. Lisa's work is of a truly fundamental and original kind that uncovers a new biologic phenomenon phrased in precise enough terms so that others who follow will have the opportunity to understand in molecular terms a new type of cell reaction—controlled destruction. Lisa has returned to Cornell University Medical College to complete the last part of her M.D.-Ph.D. training.

KAO



DAVID A. LEPAY

Ralph M. Steinman

David Lepay's interest was resistance to the protozoan parasite, *Leishmania*, which causes a disfiguring skin disease or a severe systematic illness. He asked why *Leishmania* could grow within macrophages, the white cells that normally kill the organisms they ingest. He chose to study liver macrophages, or Kupffer cells, since the liver is the main site of parasite growth clinically. The choice was demanding, since the macrophages were hard to isolate, but it proved worthwhile considering what he was to find. He discovered that Kupffer cells were deficient in forming hydrogen peroxide and superoxide, important reactive oxygen intermediates involved in microbial killing. Killing capacity could not even be raised with immune interferon, which normally activates other types of macrophage. However, the host could circumvent the Kupffer cell deficit by forming a cell-mediated immune response. The young phagocytes entered the liver from the blood stream and were oxidatively active. Therefore, parasite resistance requires an influx of new macrophages that are qualitatively different from those normally resident in liver and, most likely, other organs. The thesis was lovely in many ways: the demanding technical expertise, the scholarly approach to the field, and the constant pursuit of the broader implications of experiments. David has returned to Cornell University Medical College to complete the joint M.D.-Ph.D. degree.

JAMES G. McCARTHY

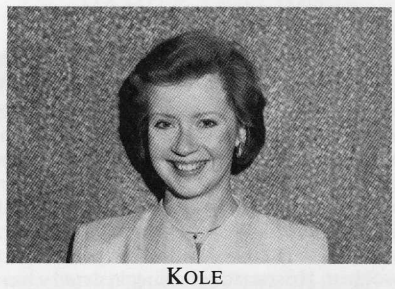
Heinz R. Pagels

The study of the very early universe—the period of the hot "big bang," when the universe was a uniform gas of quantum particles—involves combining cosmology, the science of the macrocosmos, with quantum field theory, the science of the microcosmos. Through this combination, physicists are able to model mathematically the properties of our universe at the time when it was only minutes and seconds old. For even earlier times, before the big bang, they conjecture that the space of the universe underwent an immense expansion. The quantum theory of this expansion, which is called the "inflationary universe," is the first part of James McCarthy's research, done in collaboration with Dr. Mark Evans. They showed that quantum theory severely limits the initial condition and properties of the universe for which such an inflation may occur. The second part of his dissertation research is a mathematical investigation of the general theory of relativity. He shows how the geometry of space and time, governed by Einstein's equations, can be built up out of a fundamental gauge field whose existence is a consequence of symmetry requirements. In the fall, James will continue his work at the Institute for Theoretical Physics at SUNY, Stony Brook.

WENDI S. NECKAMEYER

Lu-Hai Wang

An outstanding feature of acute sarcoma and leukemia viruses is the presence of oncogenes in their genomes. These viral oncogenes all have counterparts in normal cellular DNA. Avian sarcoma virus UR2, standing for University of Rochester isolate 2, is the virus most recently found by us to contain a new sarcomagenic sequence, called *ros*. Wendi Neckameyer came to our laboratory from Cornell University a little over four years ago, when we had just initially characterized the UR2 virus. She set out to study its primary genetic structure in order to understand the molecular basis underlying the similarity and differences of oncogenic properties among UR2 and other avian sarcoma viruses. She has molecularly cloned the virus and sequenced its entire genome. By comparing the amino acid sequence of the transforming protein encoded in the UR2 genome with those of other viruses, she demonstrated that the oncogene of UR2 codes for a tyrosine-specific protein kinase closely related to the products of several other oncogenic viruses. However, the UR2-transforming protein has certain distinctive structural characteristics which may have a significant effect on its interaction with cellular substrates during the process of transformation. She then went on to analyze and sequence the cellular counterpart proto-oncogene of the UR2 *ros* sequence. Her data show that the UR2 *ros* sequence is distributed in nine segments on the cellular *ros* DNA, and that certain structural differences between viral and cellular *ros* gene products may account for the oncogenic potential of UR2. Her data also suggest strongly that the cellular *ros* gene codes for a growth factor receptor molecule. Wendi's work sets a firm stage for further pursuit of the normal function of the cellular *ros* gene, the mechanism for its conversion to an oncogene, and the process of cellular transformation. She will continue her research career in Dr. William Quinn's laboratory at M.I.T., studying the molecular basis for the behavior of *Drosophilia*.



KOLE

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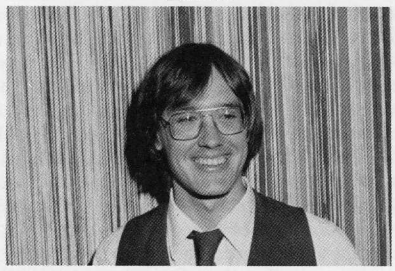
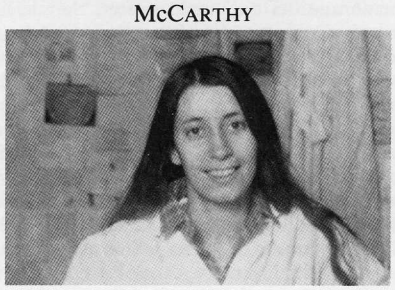


McCARTHY



NECKAMEYER

CONSTANTINOS PANAGIOTAKOPOULOS

Mirza A.B. Bég

Constantinos Panagiotakopoulos—Costas to most of us—came to Rockefeller at a very opportune time. In the summer of 1983, I decided to utilize the formalism of the renormalization group in an ongoing study of the consistency of unified electroweak theory at the fundamental level. This strategy entailed a search for fixed-point solutions of a pair of differential equations that follow from the theory. One of these I was able to solve exactly; for the other, I succeeded in showing that no solution was possible in terms of known functions. Having just learned Fortran 77, I started to write a program that would yield solutions in various regions of parameter space and identify the ones that went to a fixed point. The going was very, very slow. Nevertheless, I managed to arouse the interest of Professor Sirlin of New York University, who wisely decided not to trust my newly acquired knowledge of Fortran. With incredible patience and fortitude, he began grinding out solutions on a hand calculator. At this point, Costas showed up. Within 48 hours, he had written a bug-free program that actually worked. We quickly found that the requirement of consistency implied bounds on the masses of heavy quarks and the Higgs boson. Publication of our work led to a small industry dedicated to the extension of our results. Soon after finishing this project, Costas embarked by himself on a study of the problem of defining topological charge in lattice gauge theories. He described his findings in a couple of neat papers. He also found time to do a phenomenological analysis of proton decay in SU(5)-based grand unification. The thesis that resulted from his travails is impressive for its breadth and scope. Worthy of note are the remarkable work habits that enabled him to accomplish so much in less than two years. I have asked Costas to stay on as a research associate.

JOSEF SEDLMAIR

David Mauzerall

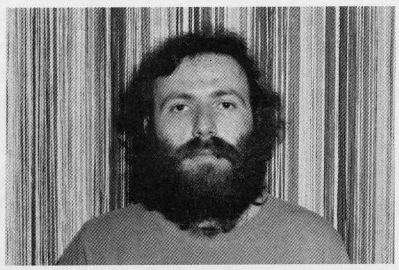
In the course of attempting to measure redox changes of manganese during the formation of oxygen in photosynthesis, Josef Sedlmair devised a method of measuring an absorption spectrum in ten billionths of a second. Since most of what we know about biochemical molecular mechanisms has been obtained through study of fast absorption changes, the device has general usefulness. The lack of a suitable measuring light source had previously prevented the use of modern technology, such as diode arrays, for measuring absorption spectra between the times of a few trillionths of a second and milliseconds. Josef solved this problem by the novel use of fluorescent dyes as a light source. He can tailor the light source to complement the absorption spectra. The resulting measurement is close to that of the ideal photon-limited measurement. A high degree of technical ingenuity and analytical expertise was required for this success. Josef used the photocycle of bacteriorhodopsin as a benchmark for his Diode Array Pulsed Spectrometer. Several intermediates in the photocycle occur on time scales from picoseconds to milliseconds. He obtained the spectra of most of the intermediates in one afternoon. Previous single-wavelength measurements of these spectra had taken several man-years of tedious labor. Josef has since applied his "DAPS" to many problems of electron transfer reactions with excellent results. (But the manganese problem is still there. Such are the turns of research.) In addition to his scientific abilities, Josef has a remarkable way with words. Although German is his mother tongue, his fluency in English continually amazed us. His fluency extends to that most modern of languages, computerese. He "computerized" the lab by showing us how easy it all was, at least for him. He will be joining the management consulting firm, McKinsey, in Munich.

ROSALIND A. SEGAL

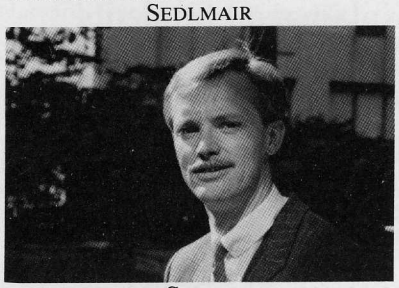
David J. L. Luck

Rosalind Segal made an early commitment to graduate education. At age three, when left alone with her mother's recently awarded Ph.D. degree, she converted it with characteristic efficiency and determination—into scrap paper! It was clear that the only way to replace it was to earn her own. At Harvard, where she started as an English major, she studied biochemistry in depth and spent her summers in a number of research laboratories. Fortunately for us, these included the Edelman-Cunningham laboratory here. This experience probably led to her choice of this graduate program. It certainly led later to her choice of spouse. For her thesis topic, Roz chose to study the unicellular alga *Chlamydomonas*, a model system in which genetic analysis can be used as a powerful research tool. She studied the organism's avoidance of high light intensity, a response known to be mediated by changes in calcium concentration. The mechanism resides in the flagella, motile structures that propel the cell forward most of the time. In the avoidance reaction, flagella change their beat pattern and reverse the cell's direction. Roz characterized a group of mutants that are permanently fixed in the reversal response. Studying isolated mutant flagella, she identified a group of flagellar proteins that appeared to mediate the reversal response, and showed that calcium-stimulated phosphorylation of one of these proteins may act as a switch, altering the form of flagellar bending. Her work has so far led to two papers in *The Journal of Cell Biology*, and has brought much interest for its possible relevance to many biological situations in which calcium acts as a stimulus operating through mechanisms of protein phosphorylation. More important for Roz, this in-depth analysis of a behavioral phenomenon carried to the level of molecules has involved a variety of biochemical, genetical, and cell biological techniques applied with professional skill. She has been imaginative, critical, and fearless in her research. When she completes medical training at Cornell, she intends to study genetically determined diseases of the nervous system.

PANAGIOTAKOPOULOS



SEDLMAIR



SEGAL

CHENG-KON SHIH

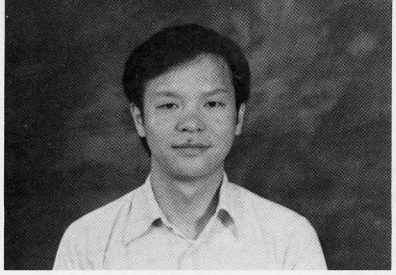
William S. Hayward

Soon after arriving in the laboratory, Cheng-Kon Shih became interested in the acute avian retrovirus, MC29. This interest led him into an extensive study of the function and molecular structure of the oncogene of this virus, v-*myc*, and its cellular counterpart, c-*myc*. Using both hybridization and nucleic acid sequencing techniques, he was able to identify an upstream, noncoding exon in the avian c-*myc* gene, and to identify important recognition signals utilized for the synthesis and processing of the c-*myc* mRNA. He also showed that a sequence of 12 bases, present in the v-*myc* gene, was derived from the first intron of c-*myc*. In other studies, he demonstrated that the c-*myc* gene is expressed differentially in normal tissues, with the highest level of expression occurring in hemopoietic tissues of young chickens. He then set out to determine whether the known mutations within v-*myc* play an essential role in transformation. For this purpose, he constructed a series of recombinant retroviruses carrying v-*myc* or c-*myc* sequences in place of the v-*src* gene of Rous sarcoma virus. These studies demonstrated that the c-*myc* gene, when placed under the control of viral regulatory sequences, is capable of transforming chicken embryo fibroblasts with the same efficiency as the v-*myc* gene. These data provide important support for the idea that the oncogenic potential of the normal c-*myc* gene can be activated by altering the control of its expression, and does not require a change in the c-*myc* gene product. He will now do postdoctoral research on yeast genetics at Memorial Sloan-Kettering Cancer Center.

MARIE C. SIMON

William S. Hayward

Marie Celeste Simon received a master's degree from Ohio State University, where she studied murine retroviruses. After arriving at Rockefeller, she turned her attention to an avian retrovirus, ringnecked pheasant virus (RPV), which exhibits unusual pathogenic properties. She showed that long-latency tumors induced by this virus (lymphomas, fibrosarcomas, nephroblastomas, and carcinomas) are clonal, and are apparently caused by insertional activation of cellular proto-oncogenes. In B-cell lymphomas, and in one colon carcinoma, the activated proto-oncogene was found to be c-*myc*. However, she identified a potentially "new" proto-oncogene in fibrosarcomas induced by RPV. Furthermore, she showed that certain rapidly appearing tumors in the lung are not clonal, and apparently arise by a novel mechanism. By constructing large numbers of recombinant retroviruses, she was able to demonstrate that the short-latency lung tumors were induced only by viruses carrying the subgroup F envelope gene of RPV. These experiments also revealed an unusual fibrosarcoma that was induced by certain recombinants carrying a mixture of RPV and ALV sequences, but not by either of the parent viruses. These studies have provided important new insights into the mechanisms of viral-induced neoplasia. She will continue her research as a postdoctoral fellow at Rockefeller, working with Professor Joseph Nevins.



SHIH

BARBARA C. SORKIN

Bruce A. Cunningham

Barbara Sorkin has characterized chemical features of two molecules that are critical in embryonic development, the neural cell adhesion molecule, N-CAM, and the liver cell adhesion molecule, L-CAM. These large glycoproteins mediate adhesion between cells in early embryos and in adult tissues. Their binding activity and their distribution in embryonic cells suggest that they may be pivotal in molding embryonic form and tissue development. Barbara's studies reveal a number of specific features that describe the overall topography of each molecule. These features include sites that may be crucial for regulating the appearance and activity of N-CAM and L-CAM. Her experiments were carried out with enthusiasm and great skill despite the fact that she often had to work with minuscule amounts of material. She faced a number of adversities, but retained her good humor and her energy to do a superb job. Her work has opened many new areas for investigation. She will therefore continue with us next year as a postdoctoral fellow to explore further the relationship between CAM structure and function.

ANNA SZURO-SUDOL

Carl F. Nathan

Our highest expectation of a graduate student is that he or she open up new areas and gain new knowledge. But rarely is so much so new embraced in such a short time as in the case of Anna Szuro-Sudol. From Poland, she came to this, her new country, not as a student, but as the new wife of a Rockefeller student. She spent a year teaching herself a new language, then formed a new set of goals, and entered the Ph.D. program herself. Here she encountered a new freedom, heady, but at times almost overwhelming, as it often is for anyone privileged to live in a democracy and to be a scientist. Anna soon gravitated to the macrophage, a cell with two seemingly magnetic attractions. First, its ability to kill invading microorganisms embodies a primordial element of survival. Second, its extraordinary responsiveness to regulatory signals from other cells provides a fascinating and biomedically important opportunity to study cellular adaptation. At that time, we were engaged in identifying factors that enhance macrophage antimicrobial activity and its biomedical correlates, including the ability to secrete molecules that are powerful oxidants. Anna focused on a factor with the opposite effect, a suppressor of macrophage activation. She found that tumor cells, and some nonmalignant cells, release a protein that somehow weakens the grip of a key macrophage enzyme on its substrate, leading to markedly diminished production of oxidizing equivalents during ingestion of parasites and a corresponding impairment in their killing. This macrophage-deactivating factor may play a role in the tumor-host relationship. Its discovery has opened the way to further studies on how to contain the destructive potential of the activated macrophage, a potential which can contribute to undesirable inflammatory changes as well as protective ones. Anna's interest in tumor biology will flower further as she begins her fellowship with Dr. Furth at Sloan-Kettering.

HEATHER WILLIAMS

Fernando Nottebohm

Heather Williams came to Rockefeller University in 1979 after undergraduate training at Bowdoin College. Her thesis work focused on the neurophysiology of the song control system of birds. She discovered that parts of the song control system thought to be strictly motor also respond to sound. This responsiveness to sound extends to the very hypoglossal motorneurons that innervate the syrinx, the vocal organ of birds. The group of motorneurons that respond to sound depends on the nature of the sounds presented. Thus, sounds heard may selectively engage pathways required to produce these sounds, possibly providing a special motor decoder for signals used in communication. Activity from the hypoglossal motorneurons excited by sound is transmitted back to the forebrain. Heather relates her findings to the motor theory of speech perception. This theory argues that knowledge of the motor commands necessary to reproduce a speech sound is necessary for phonetic decoding of speech. Animal sounds used in communication may be fully comprehensible only to conspecifics that are able to repeat them. Heather Williams is staying at The Rockefeller University as a postdoctoral fellow.

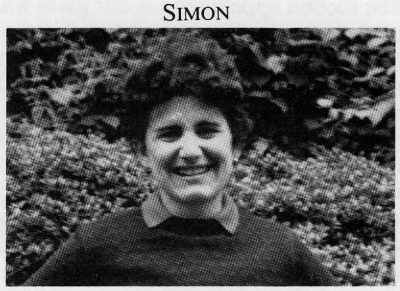
HONORARY DEGREES

FRANÇOIS JACOB

Norton D. Zinder

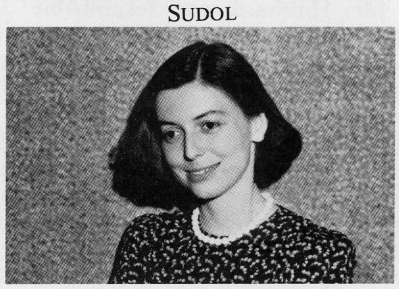
One can follow the development of molecular genetics by reading sequentially the volumes of the Cold Spring Harbor Symposia. For 1946, 1947, and 1951, there are a few papers in each volume which, though embedded in a matrix of classical genetics, epitomize the new emerging genetics. 1953 is of course known for the Watson-Crick model of DNA; but suddenly, as if to provide a showcase for the DNA structure, almost all of the papers in that volume are classics of the new genetics. It was at this symposium that we first met François Jacob. From work done in Andre Lwoff's lab, he presented a detailed paper on the genetics and physiology of the then barely understood prophage. François Jacob's medical studies were interrupted by World War II. In June of 1940, when through only his second year of medical study, he left France to join the army of the Free French. He served as a medical aide in North Africa until, after joining the invasion of France, he was severely wounded in Normandy. His wounds were such that he was unable to practice surgery, as he had desired, and he turned to biology instead. In 1950, after study in the Sorbonne, he joined Andre Lwoff's laboratory at the Institut Pasteur. For some years thereafter, François had a highly productive collaboration with E. Wollman. First they helped explain prophage organization, and then they explained the mechanism of bacterial conjugation, a matter of great interest to both President Lederberg and myself. If their explanation of a sequential linear transfer of the bacterial chromosome from donor to recipient was elegant, the technique for demonstrating it was ingenious. For the second time, a Waring blender had entered the history of molecular genetics. A Waring blender had been used by A. Hershey to separate phage heads from infected bacteria, thereby showing that only the DNA entered. It was now being used to separate pairs of mating bacteria, showing that they did not fuse. Were we scientists or milk shakers? Later, when François contemplated the genetic control of the development of lysogenic phages and other episomal elements, he was struck by its similarity to the control of the synthesis of the enzyme beta-galactosidase. The regulation of synthesis of this enzyme was under intense study elsewhere in the Pasteur, in the lab of Jacques Monod. François' genetics and Jacques' biochemistry amalgamated to produce between them almost all of the concepts for the regulation of gene action with which we are now familiar: the phenomena of repression and induction and their relationships to regulatory and structural genes, operators and promoters and repressors and inducers, and allosteric proteins—a powerful set of elements and an even more powerful set of ideas. Other experiments on mRNA, teratocarcinoma, and mouse development followed. There is a story as to how François would begin each day. The lab contained a six-foot table. On this table, before he arrived, the technicians would arrange the dishes from the previous day's experiments. François would walk around the table, stop now and then to pick up a stack of plates, interpret them, and then, with a grunt, provide the directions for the next set of experiments. When all of the plates had been studied, it was clear to those watching that, though not in medicine, François had made his rounds. François has written two books, each singular. The first is a somewhat chauvinistic history of biology touching on the structure, the organization, the molecule, and the gene, as these concepts developed in the past and have progressed today. His second book, *The Possible and the Actual*, is one in which he teaches us that evolution is a tinkerer rather than an engineer. In moving forward, it makes do with what already exists, modifying components rather than creating new ones from optimum plans. This idea, simple in concept, is ever so important in explaining evolutionary detail.

SIMON

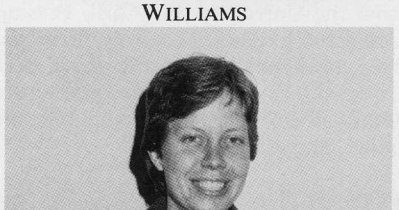


SORKIN

SUDOL



WILLIAMS



PRESIDENT'S COLUMN (continued from page 1)

sity's research programs. We extend our heartfelt gratitude to the members of the volunteer committees, headed by Mrs. Samuel Reed, Mrs. Sid Bass, Mrs. Gordon Getty, and Mr. and Mrs. Steven Rockefeller, Jr., who worked so hard to assure the ball's success, and to the good friends of the University, among them, David Rockefeller, Ralph Ablon, P. Roy Vagelos, and Richard Furlaud, for their help in underwriting the expenses. It was my particular pleasure at that gala event to announce the establishment of The Founder's Society. Its first members, Brooke Astor and David Rockefeller, admirably personify the evening's theme of "enlightened beneficence."

The evening was enlightened quite literally, as all our evenings will be henceforth, by new landscape lighting, the gift of Mr. Rockefeller and Mrs. Reed, through whose generosity our campus is now as lovely by night as it is by day. In response to those who have expressed concern, we are assured by the company that regularly cares for our beautiful trees that the lights will not damage them.

I also want to extend my thanks to all the members of this community who worked so hard and long that night and for many days and nights before, to make the campus shipshape, and, very importantly, secure. Our concern for the safety and well-being of so many distinguished visitors was heightened by the arrival of a group of animal-rights protesters making their second appearance at our gates within a month. While we respect their right to their convictions, however misguided and ill-informed, I do not believe that the stated aim of this particular group—the abolition of all research involving animals (no matter how critical to scientific and medical advance)—can be supported as the final conclusion of most responsible people. We hope they will all understand the policy of this University to conduct our research under stringent controls that assure prudent and humane treatment of animals in our laboratories.

A good summer to all. □

ARTHUR HUBBARD DIES

Arthur Hubbard, who served in the treasurer's office for twenty-three years, died on June 22 at the age of 63.

Mr. Hubbard was responsible for maintaining the records of the University's investments, loan programs, and donor lists. He joined the University as an accountant in 1962 and, in 1969, as deputy assistant treasurer, played a major role in establishing the treasurer's office, formerly a trustee function, as a full-time, on-campus service. He became assistant treasurer in 1972.

At Mr. Hubbard's retirement dinner from the University last April, President Lederberg characterized him as a dedicated member of the Rockefeller University community, a conscientious administrator and a devoted husband, father, and grandfather. □

HONORS & AWARDS

Professor **Hidesaburo Hanafusa**, Viral Oncology, has been elected a foreign associate of the National Academy of Sciences. Rockefeller alumnus **David Sabatini**, professor of cell biology at New York University School of Medicine, was elected a member of the Academy.

Dr. **Olli A. Jänne**, Senior Scientist at the Population Council, received the Ernst Oppenheimer Memorial Award of The Endocrine Society at its 67th annual meeting, held in Baltimore, June 19-21. The award is given "in recognition of meritorious accomplishments of an investigator in the field of basic and clinical endocrinology who has not reached his 41st birthday before the award is presented."

President Lederberg received an honorary doctor of medicine degree from Tufts University at its commencement, May 19.

Professor **Bruce Merrifield**, Biochemistry, was inducted into the Chicago Museum of Science and Industry's Nobel Hall of Science, and was presented with the museum's Albert A. Michelson Award, on April 3. He also received an honorary degree from Fairleigh Dickinson University at its commencement on May 25.

Professor **Neal E. Miller**, Physiological Psychology, received an honorary doctor of science degree from Rutgers University on May 23.

The Rockefeller University Press received an award from Graphic Design: USA for the logotype designed for the 25th anniversary reunion in June 1984. The Press was also awarded a certificate of special merit at the 42nd annual graphic arts exhibition of Printing Industries of Metropolitan New York, Inc., for the design of the University's presentation folder, originally prepared for the development office, and used by a number of departments.

McMaster Lecture

The Philip D. McMaster Memorial Lecture was delivered by Drs. Ruth Sonntag Nussenzweig and Victor Nussenzweig of the New York University School of Medicine, who spoke on Development of a Malaria Vaccine, in Caspary Auditorium on May 3.

Ruth Nussenzweig is professor and chairman of the Department of Medical and Molecular Parasitology, and Victor Nussenzweig is professor of the Department of Pathology. Their research has earned numerous awards, including the Bernhard Nocht Prize of the Institute of Tropical Medicine, Hamburg, in 1984, and the Paul Ehrlich Prize in 1985.

The lecture honors the late pathologist and physiologist Philip D. McMaster, who worked at Rockefeller for more than half a century. □

Dress Named VP; Changes in Public Information

Barry W. Dress, a member of the University's development office since 1975 and an associate vice president since 1983, has been appointed vice president for university relations.

In the newly created post, Mr. Dress assumes responsibility for the activities of the university's fund-raising and public information programs, working with Associate Vice President Robert Van Valer, the University's senior development officer, and Judith N. Schwartz, public information officer since 1975, who has been appointed director of public information. Mrs. Schwartz succeeds Fulvio Bardossi, who retired on June 30.

Marc S. Kaplan, a former public relations officer at Technion-Israel Institute of Technology and editor at *Omni* magazine, has been appointed public information officer. Catherine I. Rogers, administrative secretary for public information since 1975, has been promoted to public information assistant. □

GROUNDBREAKING (continued from page 1)

The groundbreaking, which was symbolic rather than actual since construction is already under way, was held in the playground of Faculty House. In attendance were representatives of both institutions, including, from Memorial Sloan-Kettering, Honorary Chairman Laurance S. Rockefeller, Chairman of the Board Benno C. Schmidt, and President Paul Marks.

Also in attendance were Max Abramovitz, of Abramovitz, Harris & Kingsland, architects for the facility, and Irwin Miller, president of Tishman Construction Company of New York, builders for the project.

Air rights extending from 62nd to 68th Street over the FDR Drive were awarded to Rockefeller in 1972. They will allow the University to grow without intruding on the neighborhood west of York Avenue. As part of the agreement with the City of New York, the University will construct and maintain a new pedestrian bridge over the Drive and will upgrade the existing pedestrian walkway between the Drive and the East River. □

Scholars Residence groundbreaking, from left, Paul Marks, Joshua Lederberg, David Rockefeller, Laurance Rockefeller, Benno Schmidt.

One of the magic moments from the Children's School May 31st production of "Wild Island," adopted from the original tale and directed by teachers Catherine Nardi and Betsy Cox, with music and lyrics composed by music teacher Ruth Alperson, choreography by movement teacher Toni Smith, sets by the students, and costumes by students, teachers, and parents. Bravo to all!

Field and Franklin Award Presented

The first Frank H. Field and Joe L. Franklin Award for Outstanding Achievement in Mass Spectrometry was awarded to A. O. C. Nier of the University of Minnesota, in recognition of his 50 years of contributions to the field. It was presented on May 2 at the 189th national meeting of the American Chemical Society, held in Miami Beach.

The award was established by the Society in 1983 to honor the work of Professor Frank H. Field, head of the University's laboratory of mass spectrometry and gaseous ion chemistry, and the late Joe L. Franklin, his colleague for many years at Humble Oil and Refining Company in Texas, and later Robert Welch Professor of Rice University.

For more than 30 years, Dr. Field has worked to improve and extend the uses of mass spectrometry—a technique by which atoms and molecular fragments are separated by weight and charge—for the analysis of complex substances.

Dr. Field presented a lecture at a symposium organized in connection with the award, on Mass Spectrometry in Chemistry. □

New Programs at P.S. 183

Representatives of Rockefeller, Memorial Sloan-Kettering Cancer Center, and New York Hospital-Cornell Medical Center have been involved in a collaborative effort to help develop P.S. 183 as a science theme school.

Manhattan school district #2 has allocated supplemental funds to provide a coordinator and staff training and new programs at the school. The emphasis is on science as an investigatory process, with attention focused on the individual talents of each child and on children who speak English as a second language.

As part of this effort, the Scientists in the Schools Project, previously directed by Professor David Gadsby and now by Postdoctoral Fellow William Jack of the University's laboratory of biochemistry and molecular biology, will be expanded and diversified. Those willing to contribute one to five hours to the project during the coming school year should call Dr. Jack at extension 7608. □

Neuroscience Symposium

The Adaptable Brain, a symposium for science and medical writers sponsored by the University and Nova Pharmaceutical Corporation, was held on campus on May 10, presenting an overview of recent research in neuroscience.

Professor Paul Greengard, the meeting's co-chairman, spoke on Chemical Heterogeneity in the Brain; Professor Bruce S. McEwen, also co-chairman, on Diversity of Regulatory Interactions Involving Hormones; Professor Gerald M. Edelman on Cell Adhesion Molecules in Morphogenesis; and Professor Fernando Nottebohm on Plasticity of the Vertebrate Brain. Trustee David A. Hamburg, president of the Carnegie Corporation of New York, was the luncheon speaker, on Brain, Behavior, and Survival.

Other participants included Solomon Snyder of The Johns Hopkins University, Julius Axelrod of the National Institute of Mental Health, Floyd Bloom of the Scripps Clinic and Research Foundation, Richard Axel of Columbia University, Edward Furshpan of Harvard University, and Maxwell Cowan of the Salk Institute. □

Council Honors Hospital

The May 17 meeting of The Rockefeller University Council was dedicated to the celebration of the 75th anniversary of The Rockefeller University Hospital.

After welcoming remarks by trustee David Rockefeller, chairman of the Council, several of the University's researchers presented talks on the Hospital. Professor Maclyn McCarty spoke on A Historical Perspective: Highlights of the Hospital's First 75 Years; Professor Edward H. Ahrens, Jr., on What Is Clinical Research at The Rockefeller University Hospital?; and Professor Attallah Kappas, Vice President and Physician in Chief, on The Rockefeller University Hospital Today.

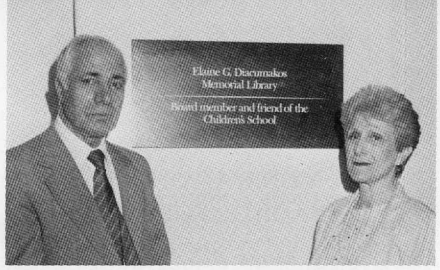
Three of the Hospital's researchers reported on some of the conditions currently under study in their laboratories: Professor Michael Brownlee on diabetes; Professor Robert G. Lahita on arthritis and systemic lupus erythematosus; and Professor Howard M. Fillit on Alzheimer's disease.

President Lederberg also presented a talk, The Hospital in The Rockefeller University Context. □

Kalamazoo Students Try Research

Four biology students from Kalamazoo College in Michigan recently spent 10 weeks learning about research firsthand in the University's laboratory of biochemical genetics as part of their school's career development program.

The students, Daniel Caruso, Cindy Lamerson, Lisa De Roo, and Daniel Sheesley, were volunteer control subjects in metabolic tests conducted by Dr. Margo Denke and participated in studies of genetic determinants of atherosclerosis supervised by Professor Eliot Brinton. □



Barbara Adams and James Chimonides at the dedication of the Elaine G. Diacumakos Memorial Library at the Children's School.

Children's School Library Honors Elaine Diacumakos

The Rockefeller University Children's School Library was dedicated on May 8 in honor of the late cell biologist Elaine G. Diacumakos. Dr. Diacumakos was an ardent supporter of the school and had served on its board for a number of years until her death in 1984.

Speakers at the ceremony included Vice President David J. Lyons, Barbara Adams, the school's educational director, Professor Thomas Gentry, chairman of the parents' association, and Jill Carter, wife of Professor D. Martin Carter and head of the library committee. They expressed to her husband, James Chimonides, their appreciation for Dr. Diacumakos' dedication to the school.

A plaque, made by the University's instrument shop, was unveiled. It reads, "Elaine G. Diacumakos Memorial Library, Board Member and Friend of the School." □

Reception Celebrates McCarty Book

A reception honoring Professor Maclyn McCarty and his new book, *The Transforming Principle*, was held in Abby Aldrich Rockefeller Lounge on June 17.

Published as the first volume in the new Commonwealth Fund Book Program by W. W. Norton & Company, the book describes Dr. McCarty's work in the 1940s with Oswald T. Avery and Colin MacLeon, at the Rockefeller Hospital, on the experiments that led to the first demonstration that DNA is the substance that transmits hereditary information.

Speaking at the reception were Trustee Lewis Thomas, president emeritus of Memorial Sloan-Kettering Cancer Center and editor of the book program, Margaret Mahoney of the Commonwealth Fund, Edward Barber of W. W. Norton & Company, and President Lederberg. □

At the reception in his honor, Maclyn McCarty, left, inscribes a copy of his new book for Research Associate Rafael Mira y Lopez and his wife, Judy Thomas, daughter of Trustee Lewis Thomas, right.

Tuition Loan Program

Help is always welcome when financing one's educational needs or those of one's family. Did you know that the University provides interest-free tuition loans?

Through the program, full-time employees can obtain up to 10 percent of their annual gross salary for payment of school tuition for themselves, their spouses, or their children, and pay it back through regular payroll deductions. The loans can be used for day care centers, nursery, elementary, and secondary schools, junior college, college, and technical or vocational training. (Legal restrictions prevent The Rockefeller University Children's School from qualifying for this program.)

Many members of the University community have taken advantage of the program since it went into effect in December 1982. Yolanda Alvarez, Controller's Office, chief accountant, used it to help finance her degree studies at St. Peter's College in Jersey City. She already held an associate degree in accounting. After attending night and weekend classes, she received her B.S. in business administration in June 1984. She intends to continue studies for a master's degree.

Nancy Clark, a nurse at the Hospital, has taken continuing education courses in nursing at Hunter College for the last two years. Pharmacist Philip Manning, who holds a B.S. degree in pharmacy, is working toward an M.S. in hospital pharmacy management. Barbara Taylor, a draftsperson in plant operations, began studies last year at Pratt Institute to complete the necessary coursework for her bachelor's degree in architecture.

Employees' families also benefit. Assistant Laboratory Safety Officer Paul Manske's wife, Caryn, teaches speech-impaired and emotionally disturbed children. She is currently working toward an M.S. in education at Adelphi University.

Toby Fishman, assistant controller for administrative data processing, used the plan to send her three sons, Henoch, Yehuda, and Mordechai, to parochial school. Asneth Kloesman, a darkroom technician in the cell biology laboratory of Professor Philip Siekevitz, used it to help her son graduate from Harvard. He is now a computer analyst in Washington, D.C.

The tuition loan program is currently administered through the office of Vice President and General Counsel William Griesar. Those interested in learning more or in applying for the plan should call Eva Strausmsnes, on extension 8071. □

APPOINTMENTS

Roger W. Rusack, Experimental High-Energy Physics, as assistant professor, effective July 1.

John W. Taylor, Bioorganic Chemistry and Biochemistry, as assistant professor, effective July 1.

IN PRINT

The spring issue of SIPIscope, published by the Scientists' Institute for Public Information, was devoted to an interview with **William O. Baker**, chairman of the University's board of trustees, on The Supercomputer Race: Where Do We Stand?

Modern Science and Human Values by **William W. Lowrance**, senior fellow and director of the University's Life Sciences and Public Policy Program, has been published by Oxford University Press. Drawing upon a wide range of authorities and recent case histories, Dr. Lowrance analyzes the influences of science and technology on social thought and public policy, and proposes ways technical experts can provide stewardship extending beyond traditionally defined responsibilities. Dr. Lowrance's previous book was *Of Acceptable Risk*.

Taste, Olfaction and the Central Nervous System, edited by Professor **Donald W. Pfaff**, Neurobiology and Behavior, has been published by The Rockefeller University Press. The collection of 13 papers honors Dr. **Carl Pfaffmann**, who became emeritus in 1983 and who played a major role in shaping the field of behavioral neuroscience. The essays, presented at a symposium at Rockefeller, describe current research in the areas of taste receptors, neurophysiological coding of taste information, mechanisms of behavioral responses to taste, neurophysiological coding of olfactory information, and olfactory determination of social behaviors.

Blue Cross/Blue Shield Symposium Held at RU

A symposium on Health Care Financing for New Yorkers: The Next 50 Years, sponsored by Blue Cross/Blue Shield of Greater New York as part of its 50th anniversary celebration, was held in Caspary Auditorium on June 4.

The program featured welcoming remarks by Executive Vice President Rodney W. Nichols and a panel discussion of health care policy.

Panelists included Howard Berman of the American Hospital Association, Richard A. Berman of New York University Medical Center, Theodore Bernstein of the AFL-CIO, John Thomas Dunlop of Harvard University, Judith Miller Jones of the National Health Policy Forum, Marc J. Roberts of the Harvard School of Public Health, Bruce C. Vladeck of the United Hospital Fund, Dr. Kenneth W. Woodward of Xerox Corporation, and moderator Sander Vanocur, senior political correspondent of the ABC Television Washington bureau.

Among the background papers discussed by the panelists was The Ethics of Access to Health Care: Who Will Get Cared For, How Well, and At Whose Expense?, by William W. Lowrance, senior fellow and director of the University's Life Sciences and Public Policy Program.

York Avenue Bus to Run Sundays

The New York City Transit Authority has agreed to a six-month trial of Sunday bus service on the M31 York Avenue line, which began June 23. Service is offered from 10 A.M. to 6:45 P.M., with buses running every 15 minutes. Adequate ridership could lead to permanent Sunday service.

Physics Reaches Southward

From 1969 to 1981, Professor M.A.B. Bég made several speaking trips to Mexico. As a result of these visits, Arnulfo Zepeda and Miguel Pérez came to Rockefeller to earn Ph.D.s, in 1972 and 1977, respectively, under Dr. Bég's supervision. Both soon became full professors in Mexico, and, according to Dr. Bég, "have been instrumental in training an entire generation of physicists in their country."

Last December, Dr. Bég, accompanied by Professor Burt Ovrut and Adjunct William Marciano, lectured in Mexico again at the invitation of the Mexican Physics Society, and this spring Dr. Bég went to Chile at the invitation of the Universidad Tecnica Federico Santa Maria, in Valparaiso, under a program sponsored by the Comisión Nacional de Investigación Científica y Tecnológica, of Chile, and the National Science Foundation. He also spoke at the Pontificia Universidad Catolica de Chile and visited the Centro de Estudios Cientificos de Santiago. □

Speakers at AAAS

Trustee David A. Hamburg, president of the Carnegie Corporation of New York and the American Association for the Advancement of Science, delivered the President's Lecture, Brain, Behavior, and Health, at the Association's annual meeting, held May 26-31 in Los Angeles.

Rockefeller scientists who participated in symposia at the meeting were Gerald M. Edelman and George N. Reeke, Jr., on Advances in Cognitive Science; Bruce W. Erickson, on Protein Engineering; and Peter R. Marler, on Convergence of Neuroscience, Ethology, and Cognitive Psychology. Executive Vice President Rodney W. Nichols led a week-long series of meetings on arms control and spoke at a session entitled Starts (Strategic Arms Reduction Talks), Stops, and Star Wars: Report on Current Negotiations. □

PARENT-CHILD CLASSES

Registration is now in progress for the fall semester of the Rockefeller University Children's School's special classes for infants and toddlers and their parents. For information call Ellen Ziman, extension 8580.

BRIEFS

Professors **Christian R. de Duve**, Biochemical Cytology, **Vincent P. Dole**, Biology of Addictive Diseases, and **David J. L. Luck**, Cell Biology, were elected fellows of the American Association for the Advancement of Science at its annual meeting, held in Los Angeles, May 30. Trustee **Lewis Thomas**, President Emeritus of Memorial Sloan-Kettering Cancer Center, and Adjunct Professor **Heinz Pagels**, executive director of the New York Academy of Sciences, were also elected.

Professor **Richard Harlan**, Neurobiology and Behavior, was an invited speaker at the Endocrinology and Metabolism dinner at the annual meeting of the Federation of American Societies for Experimental Biology, held in Anaheim, California, April 21-26. His topic was Immunoreactive Prolactin in the Brain.

Professors **Nathaniel Heintz**, Biochemistry and Molecular Biology, **Ellen Pure**, Cellular Physiology and Immunology, and 1978 Rockefeller graduate **Jeffrey V. Ravetch**, assistant professor of molecular biology and molecular parasitology, Memorial Sloan-Kettering Cancer Center, were among 20 junior faculty members from 17 medical schools and research institutions selected as the first Pew Scholars in the Biomedical Sciences by The Pew Memorial Trust of Philadelphia. **President Lederberg** served on the 13-member national selection committee.

President Lederberg has been elected to the board of directors of the New York City Partnership, Inc., of which Trustee **David Rockefeller** serves as chairman. He has also been named to the Council of Scholars of the U.S. Library of Congress.

Professor **Bruce S. McEwen**, Neuroendocrinology, spoke on Stress, Adrenal Steroids, and Their Action on the Brain, at the 5th Annual Conference of The Institute For Child Development Research, entitled Neuroimmunology: Crossroads Between Behavior and Disease, held in New York, April 15-16.

Professor **Neal E. Miller**, Physiological Psychology, was an invited speaker at the New York Academy of Sciences on May 13, where he spoke on the Wide Role of Learning in Clinically Significant Physiological Functions. He also lectured on Current Research in Behavioral Medicine, to the members of the Psychology Department, the Counseling and Personal Development Service, and the Psi Chi chapter of Pace University, on May 20.

Professor **Joan I. Morrell**, Neurobiology and Behavior, organized a symposium, *In Situ* Hybridization with Nucleotide Probes—A Histochemical Tool, for the 36th annual meeting of the Histochemical Society held in Washington, D.C., May 3-5. Professor **Brenda D. Shivers** and Postdoctoral Fellow **Joseph T. McCabe** of the laboratory spoke on Combining Immunocytochemistry and *In Situ* Hybridization in the Same Tissue Section, and *In Situ* Hybridization for the Study of Gene Expression in the Brain, respectively.

Professor **Abraham Pais**, Theoretical Physics, spoke at an international symposium, Particle Physics in the 1950s: Pions to Quarks, held May 1-4 at Fermilab, Batavia, Illinois. His topic was From the 1940s into the 1950s.

Trustee **William Perry**, managing partner of Hambrecht & Quist Technology Partners, was a panelist at a media round-table on National Security and Scientific Inquiry, held May 3 at the National Press Club in Washington, D.C. It was the first in a series of meetings on policy questions in basic research, conducted as part of the Media Outreach Project sponsored by the Scientists' Institute for Public Information, the American Association for the Advancement of Science, and the Association of American Universities.

Carmen D. Schmidt, assistant director of nursing, conducted a workshop on New Advances in the Management of Diabetes, at a conference on Pediatric Nursing: Current Trends and Issues, co-sponsored by the University of Maryland School of Nursing and the George Mason University Department of Nursing, April 25, in Baltimore.

President Emeritus **Frederick Seitz** has been elected a member of the board of trustees of the Scientists' Institute for Public Information.

Professor **James P. Tam**, Biochemistry, was a plenary speaker at the Fifth International Washington Spring Symposium on the Physiological Effects of Transforming Growth Factor, held May 28-30 in Washington, D.C.

Professor **William Trager**, Parasitology, served as Honorary President of a Conference on Malaria in Asia and the Pacific, held in Honolulu, April 20-27, under the auspices of the University of Hawaii and the United States Agency for International Development. Dr. Wasim A. Siddiqui, president of the conference and chairman of the Department of Biology, University of Hawaii, was a postdoctoral fellow in Dr. Trager's laboratory from 1963 to 1965.

PERSONALS

Born, June 22, to **Joyce Dlugatch**, senior radiology technologist, and her husband, Douglas, a daughter, Laura Beth, their first child.

Administrative Secretary **Gladys Roberts**, Mass Spectrometry and Gaseous Ionic Chemistry, was married to Bruce McMilleon, who works for the Archdiocese of New York, on April 19.

PROMOTIONS

Sebastian A. White, Experimental High-Energy Physics, to associate professor, effective June 1.

Mary R. Rifkin, Medical Biochemistry, and **Lu-Hai Wang**, Viral Oncology, to associate professor, effective July 1.

Bruce Beutler, Medical Biochemistry, and **Kevin F. Jones**, Bacteriology and Immunology, to assistant professor, effective July 1.

Danisi Sends Thanks

Friends and colleagues gathered at the Faculty and Students' Club on June 7 to celebrate the retirement of Nicholas Danisi, a member of the University's Controller's Office for 30 years.

Mr. Danisi has asked *news and notes* to convey his appreciation to "all my friends on campus for making my retirement party such a joyous and memorable occasion." □

1985-86 RU Concerts

The Rockefeller University Concerts for the 1985-86 season will be presented in two series, A and B, in Caspary Auditorium at 8 P.M. on Wednesday evenings, with the exception of Thursday, October 31, Tuesday, November 12, and Monday, May 12.

Series A: Orpheus Chamber Orchestra (October 9); Vienna Chamber Ensemble (October 31); Aspen Wind Quintet (November 20); Alexander Toradze, pianist (December 18); I Solisti di Zagreb (February 5); Chamber Music Society of Lincoln Center (March 12); Ricci Rosen Pennario Trio (April 9); Guarneri String Quartet (May 21).

Series B: John Browning, pianist (October 16); Lynn Harrell and Rudolf Firkusny, pianist and cellist (November 12); Muir String Quartet (December 4); Kathleen Battle, soprano (January 29); The Canadian Brass (February 26); Dmitry Sitkovetsky, pianist (March 26); Dresden Chamber Orchestra (April 23); Chicago Pro Musica (May 12).

Tickets may be purchased for either series, at $75, or both, at $150. (There are reduced rates for Rockefeller students.) For information and order form call Michelle Britton at the concert office, extension 8437.

Margo Denke, center, a member of the biochemical genetics laboratory, has been appointed employee health office physician. Here with the Registered Nurse Eileen Mullen, left, who joined the office in May, and Supervisor Deborah Buley.

news and notes is published five times a year from October through July. This is Volume 16, Number 5. Suggestions for articles are welcome and may be sent to *news and notes*, Box 194, phone extensions 8968 or 8970. Photographs, page 1, top left, Lloyd Edwards and George Byron; page 1, bottom right, Star Black; pages 2, 3, 4.