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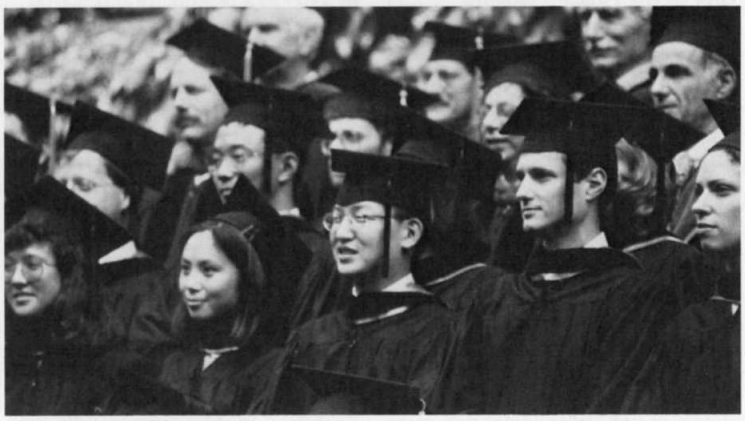
The Rockefeller University

news & notes

June 21, 1996 Volume 6, Number 32 — *The Rockefeller University*



Rockefeller University granted 25 doctorates and two honorary degrees at its 38th commencement Thurs., June 13. See pages 3-7.

Lifetime trustee Brooke Astor receives university's David Rockefeller award

The university bestowed the second David Rockefeller Award for Extraordinary Service to The Rockefeller University on civic leader, philanthropist, and RU life trustee Brooke Astor at a dinner following the 38th convocation Thurs., June 13.

The award, established and first presented to David Rockefeller in June 1995 in recognition of his 55 years of distinguished service on the Board of Trustees, honors an individual from the university community whose service exemplifies his commitment to the institution.

"Brooke Astor's truly remarkable commitment to the university has spanned more than two decades," said David Rockefeller, honorary chairman of the Board of Trustees. "It gives me great pleasure to participate in an evening to honor my dear friend. She has been a dedicated volunteer, tireless advocate, and a generous benefactor of this institution and has played a critical role in transforming the university's graduate program."

Firdaus Dhabhar, a member of the 1996 graduating class, also spoke at the dinner, thanking Mrs. Astor on behalf of all students for the exceptional interest she has taken in the graduate program.

Presenting the award, Chairman of the Board of Trustees Richard Furlaud said, "Brooke is very much like a scientist in her approach to investing in projects. Time and again, recipients of Astor Foundation grants have marveled at her ability to grasp the basic issues underlying the need for funding. That is because, like a scientist, she has done the research. She has taken the time, followed the leads, made the appropriate inquiries, employed her imagination and creativity, and weighed the risks—all the while remaining optimistic."

See ***Astor****, page 2*

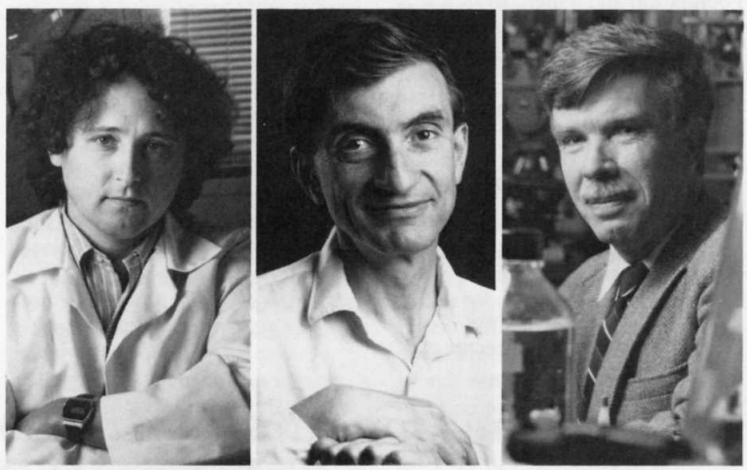
Trustees approve appointments

At their meeting Thurs., June 13, the Board of Trustees named Professor Joel Cohen to the Abby Rockefeller Mauzé Professorship and Professor Fernando Nottebohm to the newly established Dorothea L. Leonhardt Professorship, promoted head of lab and associate professor Michel Nussenzweig to full professor, and promoted three assistant professors—Giorgio Apollinari, Philip Mélèse, and Haicang Ren—to associate professor. The board also approved the appointment of Professor Emil Gotschlich as vice president for medical sciences.

"It is always a great pleasure to be able to recognize distinguished members of our faculty. The named professorships to Joel Cohen and Fernando Nottebohm reflect the university's appreciation and high esteem," said President Torsten Wiesel. "Michel Nussenzweig is a leading and widely recognized young immunologist, ready to become a member of the university's eminent senior faculty. Emil Gotschlich, as vice president, will provide leadership in medical sciences and the university hospital."

"With the promotions of Giorgio Apollinari, Philip Mélèse, and Haicang Ren, we recognize three outstanding scientists," Wiesel contin-

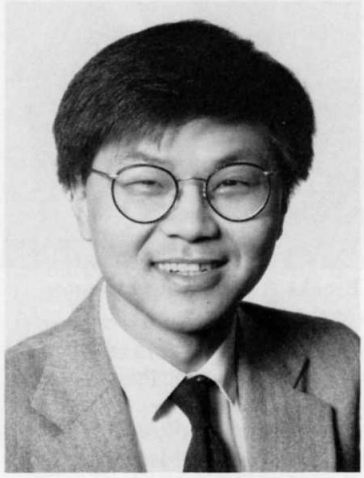
See ***Trustee****, page 2*



Trustees promoted Michel Nussenzweig (*left*) to professor and appointed Joel Cohen (*center*) as Abby Rockefeller Mauzé Professor and Fernando Nottebohm as Dorothea L. Leonhardt Professor.

Aaron Diamond AIDS Center affiliates with RU

Paul Schneck



Director of the Diamond Center David Ho has joined RU as professor.

The Aaron Diamond AIDS Research Center for the City of New York, the largest private HIV/AIDS research center in the world, has affiliated with the university in accord with a plan voted on by the university's Board of Trustees Thurs., June 13.

Under the terms of affiliation, the two organizations remain financially independent, but the university provides administrative space for some Diamond Center faculty and staff members as well as infrastructure support for the Diamond Center's patient-oriented investigations conducted at the Rockefeller University Hospital.

At a meeting Wed., Mar. 20, RU trustees approved the appointment of David D. Ho, the scientific director and chief executive officer of the Diamond Center, as professor. Ho will retain his positions with the Diamond Center and begin his RU professorship Mon., July 1. Other Diamond Center scientists are being considered for university faculty appointments.

"The severity of the worldwide AIDS epidemic requires a multidisciplinary approach to HIV/AIDS research. We intend for the affiliation between the Diamond center and the Rockefeller University to be a productive partnership of highly skilled and talented scientists that might lead to new knowledge, improved therapies for patients, and a safe, effective vaccine," said

See ***Diamond****, page 8*

Trustee actions

(continued from page 1)

ued. "They have made important contributions to their fields and to the strength of experimental and theoretical physics on campus."

Joel Cohen, Abby Rockefeller Mauzé Professor

Head of the Laboratory of Populations since 1975, Cohen studies problems in demography, epidemiology, ecology, and population genetics to develop concepts helpful for understanding populations. He recently published *How Many People Can the Earth Support?*, an analysis of calculations of the planet's carrying capacity.

Cohen has been a fellow of the Center for Advanced Study in the Behavioral Sciences, the John Simon Guggenheim Memorial Foundation, and the John D. and Catherine T. MacArthur Foundation as well as director's visitor at the Institute for Advanced Study. He is a trustee of the Russell Sage Foundation and a member of the American Philosophical Society and the American Academy of Arts and Sciences.

The late faculty members Igor Tamm and Henry Kunkel previously held the Abby Rockefeller Mauzé Professorship, established in 1976.

Fernando Nottebohm, Dorothea L. Leonhardt Professor

Head of the Laboratory of Animal Behavior and director of the Rockefeller Field Research Center for Ethology and Ecology, Nottebohm joined the university in 1967 as an assistant professor. The primary focus in his lab is the neural basis of song learning and memory in birds.

Nottebohm was elected to the National Academy of Sciences in 1988 and to the American Philosophical Society in 1991. Other honors include a MERIT Award from the NIMH, the Kenneth Craik Research Award of St. John's College, Cambridge University, and the 1992 Charles A. Dana Award for Pioneering Achievement in Health.

Established in 1996 to support a neuroscientist, the professorship is companion to the Frederick Henry Leonhardt Professorship, held by Jan L. Breslow.

Michel Nussenzweig, professor

Nussenzweig studies the development and regulation of B lymphocytes, antibody-secreting cells. One of his lab's primary goals is to learn in detail how the B cell's immunoglobulin receptor functions to regulate both antibody production and B cell development.

Nussenzweig earned a doctorate from RU in 1981, and in 1982, he completed an M.D. at New York University. He was an intern, a resident in medicine, and a clinical fellow in infectious diseases at Massachusetts General Hospital. His postdoc was in genetics with Philip Leder at Harvard. He came to Rockefeller in 1989 as assistant professor and head of lab. In 1990, he was appointed assistant investigator in the Howard Hughes Medical Institute. In 1994, he was promoted to associate professor at RU, and in 1995, he became an associate HHMI investigator.

Giorgio Apollinari, associate professor

Apollinari is project leader for the plug upgrade project of the CDF collaboration at Fermilab, a collaboration in which RU's Laboratory of Experimental High Energy Physics participates. He was a visiting scientist at Fermilab for two years, beginning in 1986, when he obtained his doctoral degree in physics from Pisa University. From 1988 until 1990, he held positions at the Italian National Institute for Nuclear Physics. He joined RU in 1990 as assistant professor in the Goulianos lab.

Philip Mélèse, associate professor

Mélèse is also a member of the Goulianos lab and a contributor to the CDF collaboration at Fermilab. He is developing a detector component that will improve data quality in the search for the "Centauro phenomenon," a class of exotic events never observed in particle accelerators. His work has encompassed designing, building, and testing prototype components for the Superconducting Supercollider.

After earning a doctorate in 1988 at UCLA, working with Robert Cousins, Mélèse joined RU in 1989 as a postdoctoral research associate. He was promoted to assistant professor in 1991.

Hai-ceng Ren, associate professor

Ren's work covers high energy and condensed matter physics. He has focused in particular on lattice formulations of QCD and on theoretical mechanisms of high temperature superconductivity.

Ren joined the RU Laboratory of Theoretical Physics as a research associate in 1987 after completing his Ph.D. at Columbia University, working with Nobel laureate T.D. Lee, and holding positions at the Institute for Advanced Study and the Institute of Theoretical Physics of the Chinese Academy of Sciences. He was promoted to assistant professor in the Khuri lab in 1990.

Emil Gotschlich, vice president for medical sciences

The key responsibilities of the vice president for medical sciences are to plan future developments in scientific research based in the Hospital and to oversee Hospital operations.

Gotschlich joined RU in 1960 as an associate physician and guest investigator. Rising through the ranks, he became professor and senior physician in 1978. Gotschlich received the Albert Lasker Award for Clinical Medicine in 1978, and the Institute of Medicine of the National Academy of Sciences elected him to membership in 1988.

Astor honored for extraordinary service to university

(continued from page 1)

Mrs. Astor joined the Rockefeller University Board of Trustees in 1972 and was elected the institution's first life trustee in 1983. In addition to her active service on the board, in 1974 she established two Vincent Astor Professorships, now held by Professors Paul Green-gard and James E. Darnell, Jr. In 1980, she established the Vincent and Brooke Astor Professorship, held by President Torsten Wiesel. Mrs. Astor has also been a dedicated supporter of RU's graduate student programs. In honor of her support, in 1994 the university renamed a renovated student lounge in Sophie Fricke Hall the Brooke Astor Student Life Center.

Brooke Astor is president of the Vincent Astor Foundation, which was founded by her husband, Vincent Astor, who died in 1959. Since its establishment in 1948, the foundation has given away more than $165 million in some 2,400 grants to New York institutions and programs including the New York Zoological Society, the New York Botanical Garden, the Pierpont Morgan Library, the South Street Seaport, and the New York Public Library, for which she serves as honorary chairman. She is also a dedicated patron of the Metropolitan Museum of Art.

Rockefeller University benefactor Brooke Astor received tributes from David Rockefeller and others at the award dinner.

Among Mrs. Astor's other honors are the U.S. Presidential Citizen's Medal, given to her in 1988 by President Ronald Reagan, and the National Medal of the Arts from the National Endowment for the Arts. The New York Public Library named her an honorary Literary Lion in 1993.

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Torsten Wiesel, President
Ingrid Reed, Vice President for Public Affairs and Corporate Secretary
Marion E. Glick, Director of Communications

Kay Locitzer, Editor
Joseph Bonner, Associate Editor
Robert Reichert, Photography
Media Resource Service Center, Processing

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Convocation 1996
Advisors present fellows, extol past deeds, herald future triumphs

The summer storm clouds parted during a week of rain to allow the university to begin its 38th convocation ceremony with the traditional procession up the 66th Street drive. Lining the sun-dappled course, applauding well-wishers and security guards in white gloves watched as trustees, faculty, and graduates marched toward Caspary Auditorium in full academic regalia.

The university conferred 25 doctorates at the convocation, held Thurs., June 13, and awarded the doctor of science, honoris causa *to biologist Sydney Brenner and neuroscientist Viktor Hamburger. As is Rockefeller tradition, each degree recipient received a personal tribute. Research advisors recounted the adversities faced and accomplishments won by the young scientists in their labs. They disclosed scientific arguments and practical jokes, described quirks and conquests, and displayed, by turns, pride, wistfulness, and joy.*

Graduates rose one by one after the presentations, bent at the knee as marshals Professor Mary E. Hatten and Assistant Professor Ulrike Gaul bestowed their gold and blue hoods, then stood again, a bit taller. Most are continuing their education as medical students and postdocs.

Following are excerpts from the proceedings.

Opening line. **The convocation procession begins on the cobblestone drive between Caspary Hall and Caspary Auditorium.**

Receiving degrees in absentia *were Brian Douglas Guenther, Christopher P. Marshall, and Xiaodong Wu.*

Miriam E. Berman

Miriam threw herself into her work—literally. One of my first duties as her mentor was to extract one of her eyelashes from the cell pellet.

We study PECAM in my lab, a cell adhesion molecule involved in inflammation. Miriam's thesis defined a novel and distinct adhesion mediated by PECAM: an adhesion molecule cascade. When PECAM on a leukocyte was engaged, as it might be during the cell's passage out of a blood vessel, it sends an intracellular signal within the leukocyte to activate another adhesion molecule. Miriam's studies put the cascade on firm footing in the immunology literature.

It was exciting to see Miriam's data, but it was rewarding to watch her develop as a scientist. Her ability to design the right experiment and to discuss results in the context of other work is outstanding.

Miriam thrived in the lab as a triple threat mother/wife/student while maintaining a great sense of humor, while training her keen scientific mind, and while amassing the largest collection of fluoresceinated monoclonal antibodies in North America.

—William A. Muller

Claudio Bertuccioli

I have a tremendous respect for Claudio, and his achievements in the lab reflect a deep intelligence and passion for scientific work—not work that will lead to the flashiest publication, but work that will nail down the profound meaning of an observation. He spent the years in the lab developing a most sophisticated in vivo assay, which ultimately allowed him to define how his favorite protein was acting. This long and careful analysis led to exciting results, and Claudio's thesis is beautiful scientific work.

Claudio is a New Yorker, and I could not have defined him as such if he had spent his entire time in the lab. Claudio and two or three of his colleagues have been an integral part of the New York social scene. Not the social scene of salons and cocktail parties, but the artsy scene, which does not begin before 2:00 A.M. and takes place on the Lower East Side or some isolated pier. Claudio never dared to take me to these places, but I can imagine the kind of sophisticated people who met there to remake the world.

Now Claudio has decided on a more pragmatic approach to life and has joined a small banking firm where he will use his scientific knowledge and critical mind to evaluate the fate of small biotech companies. I know that he will excel in this work with his intelligence, warm personality, and broad knowledge of science.

—Claude Desplan

Sandy Chang

By the age of 12, Sandy had independently repeated Galileo's observations. At the Bronx High School of Science, he built a 10-inch photoelectric telescope. His first scientific paper, published at 18, concerned the discovery of a variable star and won a Westinghouse award.

Sandy majored in molecular biophysics and biochemistry at Yale. He fell in love with Rockefeller when he volunteered in the Hanafusa lab. I interviewed him when he applied; he says it did not go well. What I remember is being blown away by an eager young man with a passion for science. I wrote on the interview form, "This one is special, grab him."

Sandy's thesis dealt with the cytoskeleton's participation in cell motility, neurosecretion, and development. He focused on a key regulator of the actin cytoskeleton, a protein named MacMARCKS. Sandy demonstrated that it regulates the actin cytoskeleton during neuronal growth cone formation. He also found that MacMARCKS aids neurons in transmitting information. With a colleague, he found that functional deletion of the MacMARCKS genes in mice leads to anencephaly, a devastating birth defect that occurs in one in a thousand human pregnancies. His studies have provided insights into mechanisms of brain formation.

One day, a crestfallen Sandy placed a *Cell* paper on my desk. It seemed we had been scooped by a competitor. With the whole lab watching, I gathered myself and encouraged him to take the long view. With this, Sandy and the others burst into laughter. The paper was a hoax; Sandy had spent a night engineering a near-perfect fraud.

—Alan Aderem

Sek-Jin Chew

Sek first got his M.D., then his board certification in ophthalmology, then completed a masters in basic science in ophthalmology. Having thus sharpened his vision, Sek did the obvious next thing, which was to study how songbirds remember the sounds they hear.

Sek made discoveries that I believe will change the way in which we think about memory. He showed that neurons in the avian brain that remember familiar sounds remember different classes of sound for different lengths of time. Interestingly, blockage of gene expression and protein synthesis during the narrowly defined periods when some classes of sound are forgotten interrupted other longer lasting memories.

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Greg Vimont

All the appurtenances thereof. **Graduates, faculty, and university officers assemble on the steps of Founder's Hall for the traditional class portrait.**

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Blockage of gene expression and protein synthesis at other times had no effect on memory. The two observations suggest that what appears a seamless, long-term memory for a familiar sound is, really, a succession of briefer memory segments, each activated by a new episode of gene expression and protein synthesis. We believe the number of these episodes determines the quantal duration of memory, and that this discovery will revolutionize the way we think about memory.

—Fernando Nottebohm

Wendy Kay Chung

This ceremony is about intellectual child rearing. So, picture a delivery room. When the fetus—already a Westinghouse winner—is born, an amazing thing happens. She grabs the Kelly forceps, clamps her own umbilical cord, and bounds down the hall toward the DNA sequencing facility.

Wendy confronted a remarkable range of challenging problems in molecular genetics and molecular physiology. She also somehow found time to pursue her thesis. In collaboration with Streamson Chua, she identified over 20 rodent genes that convey susceptibility to adult-onset diabetes mellitus. From her work has come the first complete molecular map of the regions of the genome that contain the genes responsible for so much human suffering. I am convinced this map will help guide the way to the conquest of this disease.

The string of publications and awards to Wendy is impressive.

Wendy has so much experimental work under way that she has decided to delay her return to medical school for a while. Frankly, I am surprised she took time off to attend graduation.

I have described briefly the scientific output of a perambulating neonate. The baby is now a postdoc. Imagine what lies ahead!

—Rudolph L. Leibel

Firdaus S. Dhabhar

At Dartmouth College, Firdaus studied engineering, biology, and international relations. Biology won out, and Firdaus was recruited by several graduate schools. I was delighted when he decided on Rockefeller.

Firdaus has shown how the physiological response to stress can actually help the immune system protect the body. Immune responses to counteract viruses, bacteria, and cancer cells may be enhanced, rather than suppressed as was previously feared, by exposure to life's daily hassles and stresses. In this creative and novel work, Firdaus has shown outstanding technical ability and a solid understanding of immunology and neuroscience.

Firdaus undertook many responsibilities to facilitate student life, and he became a very effective intermediary between the students and the university's administration and trustees. I am particularly pleased that Firdaus' parents and sister have traveled from Bombay to celebrate this day. A word to them: I know you are very proud of Firdaus and so are we.

—Bruce S. McEwen

Athanasios George Dousmanis

Thanos quickly mastered the most difficult techniques in the lab and was soon able to eavesdrop on the behavior of individual ion channels, one at a time. For his thesis work, Thanos made a major contribution to our understanding of how one particular class of ion channels, called cystic fibrosis chloride ion channels, open and close. This is important because we know that dysfunction of those chloride channels causes the debilitating symptoms of cystic fibrosis, the most common lethal inherited disease in North America.

Thanos' approach to life may be summed up by a line from Alfred Lord Tennyson's poem *The Lotus Eaters*: "...let us drink life to the lees...." We translate this to "Work hard and play hard," and Thanos certainly does both! I doubt any other Rockefeller student has skills in squash, ice hockey, and curling to match Thanos'. And he rarely misses a new concert or opera at the Met, or the opening of some hot new bistro.

Fortunately, he will spend next year across the street, finishing his medical training, and we await his next move with bated breath!

—David Gadsby

Carole Elizabeth Landisman

Carole unraveled how the neurons in the brain that participate in the process of color vision are organized. We have in our eyes three classes of cones: red, green, and blue. Carole was particularly interested in how the cone types mixed and contrasted their output to yield the seemingly unlimited spectrum of colors that we perceive. Her work has made significant contributions to our understanding of how color vision works and led to a new view of the architecture of 'color processing in the brain.

We will miss the sight of Carole, wrapped in her favorite green blanket, trying to catch a few precious minutes of sleep during a long overnight experiment. We will also miss the regular and irregular parade of Carole's colorful clothing and shifts in hair color, which we suspect Carole used to find new color stimuli for her experiments.

But mostly we will miss Carole's enthusiasm and expertise, as she ventures to her new position at Brown. This past year saw important milestones in Carole's life, both professional and personal, and on behalf of our lab, we hope her time with us represents some of the brightest memories and experiences—I know it has for us.

—Daniel Ts'o

Xiao-Lin Liu

From the moment she arrived in my lab, Xiao-Lin evidenced creativity, spurring us to carry out in vitro and in vivo implantation studies with mouse neurological mutant *weaver* cells. Thereafter she focused on how the timing of nerve cell development is regulated, cloning a mouse Notch2 homolog from the cerebellar granule cell cDNA libraries and showing that the expression of this Notch regulates the onset of nerve fiber formation by the embryonic cells. This is an important discovery, as it shows for the first time a role for Notch in delaying murine CNS precursor cell development.

Xiao Lin has been a wonderful, quiet presence. We have learned to listen carefully to her as she has the rare gift of a creative imagination. Well versed in the arts and science, she has coped not only with the struggles of bringing molecular approaches to purified populations of precursor cells in the brain, but with the arrival of her son, Ian.

—Mary E. Hatten

Arthur Maghakian

How are the quarks and gluons that make up a proton put together? At Yerevan University in Armenia, Arthur wondered about this mystery, and understanding proton structure became his passion and his thesis topic.

How does one look inside the proton? It is quite simple: create a beam of antiprotons, set them in orbit in a giant particle accelerator together with a beam of protons circulating in the opposite direction, accelerate the two, and bring them to a head-on collision. The collisions between the quarks and gluons of protons and antiprotons create high energy photons. By measuring the angle and energy of these photons, one gets a picture of where exactly they come from, a picture of the quark and gluon structure. Arthur found some discrepancy from expectations in the energy distribution of the gluons in the proton, which triggered an ongoing intense theoretical debate.

Arthur's daughter, Jessica, has already started using computers and, no doubt, one day will try to

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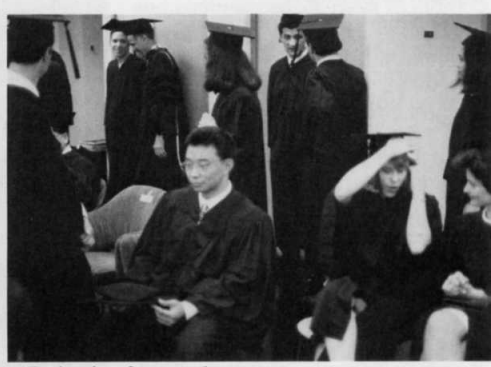

Backstage. **From left to right: Professor Brian Chait gets organized with help from Marta Delgado, financial administrator in the Dean's Office. Graduate Lori Zeltser, former Associate Professor Alan Aderem, Professor Mary Elizabeth Hatten, and Assistant Professor Ali Hemmati-Brivanlou reveal the various stages of the robing process. All dressed up and ready to go, candidates while away their last few predoctoral moments.**

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find what is inside of what is inside the proton!

—Konstantin Goulianos

Robert Brian McGrath

Bob's thesis addressed the mechanisms by which phytochrome transmits its signals and the manner in which different signal transduction pathways interact to regulate gene expression. Using a pharmacological approach, he found that sucrose has strong effects on the expression of phytochrome-regulated genes, independently stimulating the expression of anthocyanin biosynthetic genes and repressing photosynthetic genes. The signaling pathway used by sucrose to stimulate gene expression required cGMP, and was sensitive to the tyrosine kinase inhibitor genistein, implicating a role for phosphorylation in sucrose signal transduction. Bob demonstrated that sucrose did not utilize the reciprocal control cross-talk mechanism of phytochrome to achieve its effects.

Bob exploited the pharmacological sensitivity of the phytochrome signaling pathway to the cGMP phosphodiesterase inhibitor zaprinast to develop a novel method for detecting phytochrome pathway activity. In the presence of zaprinast, *Arabidopsis* seedlings possessed a very striking phenotype that was phytochrome dependent. Bob also exploited this phenotype in a genetic screen to isolate mutants that are resistant to the effects of zaprinast and are presumably deficient in phytochrome signaling. Mutants representing a single complementation group were isolated, and physiological characterization indicates that they possess defects in phytochrome signaling. Moreover, characterization of previously isolated mutants that also showed resistance to zaprinast allowed the identification of a genetic locus whose gene product is required for the proper integration of signals from phytochrome and sucrose.

Bob will move on to investigate the mechanism of ethylene perception by plants in the laboratory of Joe Ecker at the University of Pennsylvania, under an NSF postdoctoral fellowship.

—Nam-Hai Chua

Christina Ramsaur McKittrick

After two years at Schering-Plough Research Institute in New Jersey, Christina came to Rockefeller to study how the brain responds to stress and how antidepressants work in relation to stressful experiences.

What she accomplished in her thesis work was the first characterization of how the brain responds to psychosocial stress. When five male rats are placed with two females in something called a visible burrow system, the males establish a hierarchy related to who controls access to food and water and to the females. Christina found that brains of the dominants and subordinants produce different amounts of chemicals associated with the stress response and differ from each other and from the brains of rats living in a regular laboratory cage. The chemical changes in the subordinant rat brains are reminiscent of what is thought to occur in the human brain during depressive illness. In fact, one of Christina's experiments showed that the well-known antidepressant Prozac caused some subordinant rats to challenge the dominant rat.

Christina will join a laboratory at Rutgers University for postdoctoral work, which will enable her to learn new methods to pursue her interest in how stress affects the brain.

—Bruce S. McEwen

Kwan-Hong Christopher Min

In 1620, Francis Bacon described inductive science as "a form which may solve experience, may separate things, and, by means of due exclusions and rejections, conclude necessarily." Experimentation is key, extending our natural senses, which may fail or deceive us. It is rare and heartening to see a young person like Chris, a natural at science who can devise and carry out elegant and careful experiments.

Chris joined my lab to work on the biochemistry of vision in the rod cell of the retina—an exquisite detection system in which a single photon of light can result in the closure of 1,000 membrane ion channels. Chris's thesis added important knowledge regarding the light-dependent regulation of the visual enzyme transducin.

Chris is also an accomplished musician who has performed the violin in orchestras around the city, and a solid athlete who ran the New York City marathon and played on a national championship club soccer team during his graduate school years. He is also a kind and caring individual.

Chris's name has become known by many top investigators in the field. I welcome him to the ancient order of scholars.

—Thomas P. Sakmar

Cocktails and cordial words. **At a reception for graduates and guests in the President's House, Dean George Cross (*top, left*) spoke with graduate Jun Qin and his family. The family of graduate Firdaus Dhabhar (*below, center*) traveled from India for the ceremony and were welcomed by President Torsten Wiesel (*left*).**

Junona Moroianu

In 1991, while working toward a Ph.D. degree in Bucharest, Junona obtained a research fellowship from Harvard University Medical School. There, doing essentially postdoctoral work, she published four first-author papers. In the fall of 1994 she joined the Rockefeller University. She never requested credits for her previous graduate training. She succeeded in doing her Ph.D. work in a record time of two years. During this time, she published five first-author papers and one senior author paper, all first rate. This is a spectacular record, not likely to be matched.

What was the secret for this success? No doubt, Junona came extremely well prepared and therefore needed to spend little time on the learning curve. More than that though, she approached her work with dedication and passion.

To describe her extensive scientific accomplishments here would take too much time. Suffice it to say that her characterization of macromolecular traffic into and out of the cell's nucleus is and will remain among the classics of contemporary cell biology.

—Günter Blobel

Dimitar B. Nikolov

Entering science as a physicist, Dimitar came to Rockefeller and made a highly successful study of two transcription factors that are essential for messenger RNA synthesis. In collaboration with Professor Robert Roeder, he solved the three-dimensional structure of the TATA box binding protein—work which immediately catapulted him to fame. Also in collaboration with Professor Roeder, he solved the structure of a complex of the TATA box binding protein with DNA and transcription factor IIB. Dimitar's work provided the first atomic resolution view of these proteins and explained how they act by forming critical partnerships and recognizing DNA. These studies represent significant firsts that were of great technical difficulty and of signal importance in the fields of structural molecular biology and gene expression.

Dimitar will join the Sloan-Kettering Institute, where he plans ambitious research on the proteins guiding axon growth.

—Stephen K. Burley

Estela V. O'Brien

Equipped with degrees in physics from Harvard and astrophysics from Rensselaer Polytechnic Institute, Estela decided to explore at Rockefeller one of the best studied pieces of the brain, the visual cortex. She applied to it a relatively new tool, optical imaging, augmented by mathematical analysis techniques. Armed with these, she improved our understanding of the nature of the optical signal that can be recorded from the cortex

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and discovered an important new feature of cortical organization: cells that prefer a certain stimulus size cluster together. Estela is gentle and soft-spoken, but was fearless in relying on the quantitative nature of her work to challenge accepted views.

Estela showed an amazing talent for marshaling resources, convincing various companies and institutions that it would be in their best interest to loan her equipment and facilities. Estela also found time for charity work and for making sure that birthdays were properly celebrated. She is embarking now on two important projects: She is completing her medical education and getting married. We wish her success and happiness in both.

—Ehud Kaplan

Jun Qin

Jun trained in physics, chemistry, and mathematics before coming to my laboratory. Upon his arrival, I suggested that he design and construct a new tool that would accurately weigh pieces of proteins. He quickly did so, and in a brilliant set of experiments, optimized its performance to the point that it became a tool of unique power. Not satisfied with this substantial accomplishment, he went on to use the instrument to identify a slew of new accessory protein components of the biological machine in yeast that transcribes DNA into RNA.

I watched Jun's development as a scientist with the thrill of someone watching an epic sports contest full of dark periods of despair, ingenious maneuvers, and wonderful moments of triumph. A key to his success has been the exceptional support of his wife, Yi, and the inspiration of his cheerful son, Leo.

Jun had a gaping hole in his education—namely biology. Professors Miklós Müller and Peter Model offered Jun personal tutelage, and today Jun is developing enviable interdisciplinary skills. Jun will join the NIH, where I believe he will nucleate exciting progress in mass spectrometry applied to biology.

—Brian T. Chait

Arthur Tinkelenberg

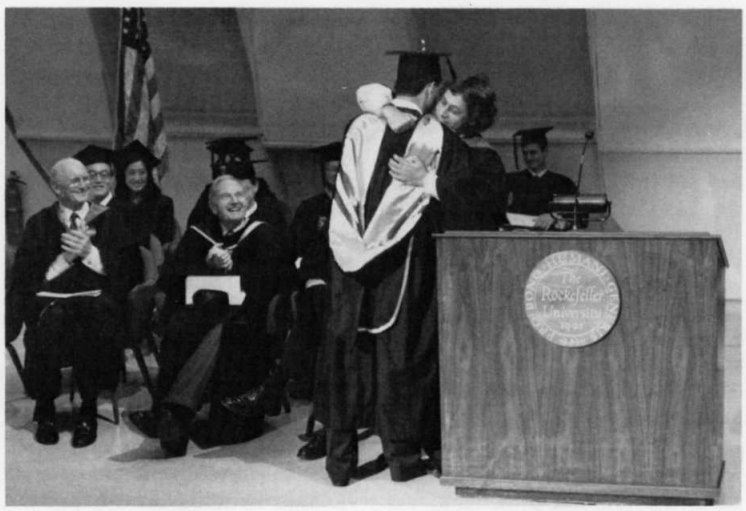
Arthur came to my lab nearly seven years ago with a strong interest in plant biology and ecology. He worked on collecting mutant yeast defective in various aspects of cell division.

In doing so, he used a method originated by Tom Sawyer. As you may recall, when Tom was assigned to whitewash a fence, he induced his friends to ask as a favor to whitewash the fence, while Tom supervised from a shady spot. Arthur mentored a series of high school and undergraduate students who very effectively isolated mutants under his supervision. Arthur was an excellent instructor in yeast genetics, so the students learned a lot while producing useful material.

Arthur then moved to the characterization of the mutants to gain insight into the process and control of yeast cell division. We made a good deal of progress with this.

Arthur has moved on to postdoctoral work at Columbia University, to learn about heart disease by studying yeast. This sounds improbable but actually makes a lot of sense; you'll have to ask Arthur to explain it to you.

—Frederick Cross



The big goodbye. **Graduate Sandy Chang received a bear hug from advisor Alan Aderem as chairman of the Board of Trustees Richard Furlaud (*left*) and David Rockefeller, honorary chairman, applauded.**

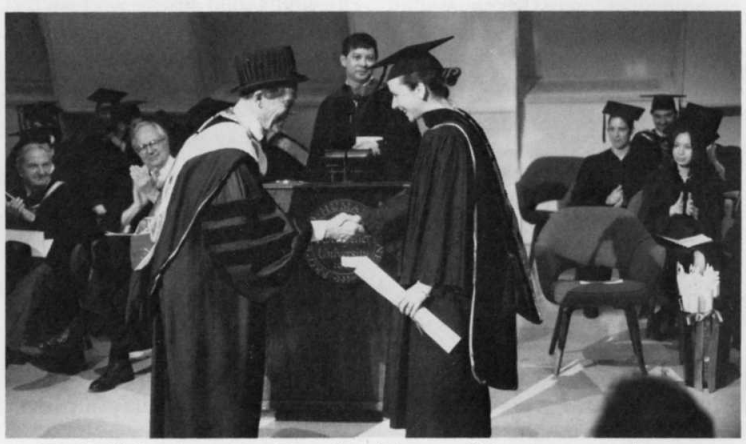
G. Edward Vates

Ed joined my laboratory after completing his first two years of training at Cornell. He was interested in the biology of learning and chose a combination of anatomical and neurophysiological techniques to better understand the circuits for vocal learning in birds, what we call the "song system."

Ed's work has revealed that the song system of birds has diverse reafferent circuits that inform it of what it is singing and what it has sung, and perhaps this constant and compulsory record keeping is what we call consciousness. Ed discovered, too, a new source of auditory input to this much studied system, which allowed him to challenge the preexisting logic of how vocal learning occurs. Taken together, Ed's discoveries call for a conceptual rethinking of how birds perceive sounds, how they learn to imitate some of these sounds, and how they remember these imitations.

I want to thank you, Ed, for the impeccable standards you brought to the art of circuit tracing and for all the beauty and complexity you revealed in the brain of songbirds. I want to thank you, too, for your constant good cheer, excellent judgement, and the helpfulness and kindness that you showed to everyone in the lab. I know that you will continue to make us all proud as you return to your medical studies. Visit us often. When you come, you can tell us about a doctor's view of the human brain and we'll tell you song stories.

—Fernando Nottebohm



With all due formality. **President Torsten Wiesel presented Carole Elizabeth Landisman with a diploma, a smile, and a bow after advisor Daniel Ts'o described her accomplishments.**

David S. Wilson, Jr.

David is truly unique and has brought to my lab much more than his expert and beautiful work, which has given him well-established international recognition. When he joined the lab, I could see that he was obviously smart and well read. With his partner Jonathan, he got his big coup with the publication of *Cool*, a parody of *Cell*. It was full of humor, and a good example of a perfectly managed PR operation. It was also incredibly perceptive for first year graduate students and extremely well documented.

David spent several years developing his tools for analyzing the homeodomain. This culminated in the publication of a powerful report that opened the black box of homeodomain specificity. This also answered questions as to how the homeodomain was achieving the dimerization function. All predictions from previous structural models were telling us that what we observed was impossible. David came out with a creative model, which suffered mostly from the fact that it was only a model. So, he decided to test this model: he went down to Professor John Kuriyan's lab, where he became an expert crystallographer, to show that his model was basically correct and to make more predictions about the specificity of the effect. At this stage, David is an accomplished structural biologist, able to use biochemistry, molecular biology, and crystallography to address problems.

Thus, David has been an essential collaborator who is still indispensable in the lab, in spite of the fact that he left to be a postdoc in Jack Szostak's lab at Harvard, where he is playing with "in vitro evolution," a panacea for his mind. We still keep in close contact, and no major decision in the lab is made without consulting David.

—Claude Desplan

Lori Michelle Zeltser

Having graduated *magna cum laude* from Princeton, Lori entered my lab and commenced an effort to clone an elusive protein implicated in DNA replication, RIP60. Lori made a discovery characteristic of her alert mind: One of the proteins she identified was most certainly not RIP60 but instead a very interesting member of the mammalian homeobox gene family, thought to have been lost during evolution. Lori immediately recognized the importance of this discovery.

I confess that I did not initially approve of her departure from the route to success we had charted together. However, Lori prevailed

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in our debate—and it was no dispassionate armchair discussion! She produced a beautiful experimental dissertation that has been embraced by the field. She has contributed a fascinating chapter to our knowledge of a critical family of developmental regulatory proteins.

Lori has been a popular and community-spirited member of the lab. I am certain her good humor, independence, and interest in discovery will serve her well during her postdoctoral studies in London.

—Nathaniel Heintz

Chen Zheng

When she came to my lab, Chen had the good sense to abandon *Drosophila* in search of genes that control the establishment of cellular architecture in vertebrate cortex. She dove into what had been an elusive but central goal—to clone a biological activity we had shown to be central to cell migration along the glial scaffold, a key step in cell positioning in nerve layers. With functional activity in biological assays, but no monospecific probe, she plowed into some 80 cDNAs.

Through incredible diligence and a rising tide of biological talent, she identified a candidate clone, isolated the full gene, and showed by functional studies of the expressed protein that she had cloned *astrotactin*. We are all most excited about this achievement, as it is the first gene to be cloned that directly acts in cell migrations, a crucial step in the proper arrangement of young neurons in the brain and one that has untold clinical consequences for developing humans.

Chen has been a firebrand of energy, roaming through endless clones to find the *astrotactin* activity. Her devotion is matched only by her sense of humor. She has been generous to me and to her many friends, and we will deeply miss her.

—Mary E. Hatten

Sydney Brenner

There have been dozens of heroic contributions to the biological sciences in the last 50 years but there is also a tacit understanding, at least among us older biologists, that some contributions and particularly some contributors have had much more impact than others. Sydney Brenner is one of that limited number of biologists who are universally admired, respected, and honored—definitely in the heroic category.

Sydney took a graduate degree in biochemistry at Oxford, finishing in 1954. Undoubtedly, the experiments that most influenced his subsequent career concerned bacteriophage replication in spheroplasts of *Bacillus megatherium* in which he

Dignity. **The university awarded honorary doctorates to biologist Sydney Brenner (*above*) and neuroscientist and nonagenarian Viktor Hamburger, who was unable to attend the ceremony.**

attempted to influence replication by externally applied RNAse and DNAse. Studying DNA-containing phage replication may have called his attention to the progress made in Cambridge by Watson and Crick and, according to Francis Crick, Sydney came to visit Cambridge in 1953 to see the newly completed DNA model. Crick was, as legions have since been, greatly impressed with his quick analytic mind and helped recruit him to Cambridge.

By 1957, Sydney had settled into the Medical Research Council laboratories in Cambridge and into a shared office with Crick, which arrangement continued for over 20 years. That year, Sydney produced one of his earliest important papers on the subject of the genetic code: He demonstrated by comparing amino acids in known protein sequences that an overlapping triplet code would not work.

Reflecting on it from this distance, I judge that Sydney's immersion in the "code" problem set the stage for his participation in the discovery of messenger RNA, one of the most thrilling pieces of scientific detective work in this century.

Sydney respected the long-standing tradition of *Drosophila* genetics, but as his career progressed, he found even that tractable organism cumbersome. He decided biology needed a simpler paradigmatic organism. He read, studied, conversed with an array of people, and settled on *Caenorhabditis elegans*, a tiny nematode worm. By 1974, he adapted conditions for its rapid growth and observation and had a primitive chromosomal map on which several hundred mutants had been placed. He attracted top flight students, and a field of extraordinarily productive research was born.

Sydney's skills weren't all practiced at the bench. He was director of the MRC labs from 1979 to 1986 during one of its most productive periods. Also, from 1963 until 1985 he served the biologic community as assistant editor or editor of the *Journal of Molecular Biology*. This was the first outlet for the "new biology" and under Brenner's guidance was eminently fair, efficient, and effective.

With such glorious accomplishments, it is no surprise that we are hardly the first to recognize Sydney. His CV lists over 40 major awards and prizes from around the world. The CV available in our library must have had at least some influence from his own mischievous hand. It lists under the category Recreation: Rumination.

There can be few whose ruminations have been so productive.

—James E. Darnell, Jr.

Viktor Hamburger

In the decade of the brain, it is a great honor to pay tribute to one of the great figures of neuroscience in this century, a man renowned not only for his scientific contributions, but as a generous and influential friend and mentor to so many in developmental neurobiology.

Born in 1900, Viktor Hamburger carried out doctoral studies in Berlin with the great developmentalist of his day, Hans Spemann. Then, after two years with Professor Otto Mangold in the Kaiser Wilhelm Institute, Hamburger joined the University of Freiburg and began to apply the microsurgical techniques he had learned with Spemann to studies on the early development of the chick embryo.

In 1932, Hamburger received a one-year Rockefeller fellowship to join F.R. Lillie's group at the University of Chicago—one of the few labs studying chick embryology. In 1933, the rise of the Nazi party resulted in a letter from his dean in Freiburg, informing him that he had been dismissed.

An extended Rockefeller fellowship allowed him to stay in Chicago until 1935, at which time he joined the zoology faculty at Washington University. Since then his research has followed four primary lines. The first was his classic study of the development of the chick embryo.

"Our real teacher," said Hamburger, "has been and still is the embryo—who is, incidentally, the only teacher who is always right."

Because of his work, the chick embryo provides the standard for much of developmental biology, with the classic "Hamburger and Hamilton, 1951" defining the major developmental stages of the chick and providing one of the landmark papers in biology.

The second avenue he pursued is, perhaps, his seminal contribution, namely the discovery of normal cell death during development. Although earlier investigators had seen that the removal of a peripheral target—a limb bud for example—resulted in a failure of neural development, Hamburger with his younger colleague Rita Levi-Montalcini showed that normal cell death is controlled by the target. These early studies form the framework for current thinking about competitive processes in the nervous system.

The third line of research was his discovery with Levi-Montalcini, in the late 1940s and early 1950s, of the protein nerve growth factor, the prototype of soluble protein growth factors that maintain selected neuronal populations during development.

In later years, Hamburger's behavioral studies found that, contrary to the views of psychologists, early movements were independent of sensory stimulation.

Hamburger continued doing bench science into his 80s. In recent years, he published important historical works, including the remarkable biography of Hans Spemann. Generous to his younger colleagues, Hamburger has left us not only a legacy of wonderful science, but a wellspring of neuroscientists at Washington University.

—Mary E. Hatten

The next generation. **Poised between her student and postdoctoral stays in the Hatten lab, graduate Xiao-Lin Liu embraces her son Ian.**

Potpourri

Tri-Institutional Noon Recital
The St. Lawrence String Quartet, featuring clarinetist Todd Palmer, will perform at the last noon recital of the academic year. The concert, to be held today (June 21) at noon in Caspary, is the Second Albert Einstein String Quartet Concert. Admission is free. All are welcome.

Dining room
The Abby Aldrich dining room will close for the summer Fri., June 28 and reopen after Labor Day.

Statistical software discount
University members may now purchase the SPSS statistical package, available for Macintosh and Windows, for $135 (the street price is $695). Annual upgrades are available for $35. For more information and purchase requests call Computing Services, x8925.

Gala
The Rockefeller Archive Center in Pocantico Hills, N.Y., was the site of a fund-raiser for Historic Hudson Valley Thurs., May 30. The evening included a garden tour of Kykuit, the mansion on the Rockefeller family estate. Governor George Pataki was among the guests at the center, which holds Hudson Valley manuscripts dating back three centuries as well as RU archival material.

Honorary degree
Professor James E. Darnell, Jr. received an honorary degree from Washington University in St. Louis, Mo. He earned his M.D., *cum laude*, from the university's School of Medicine in 1955.

***News&Notes* schedule**
Weekly publication of *News&Notes* will resume in September.

Computer workshops
Space is available in the following Computing Services workshops Please leave voice mail at x7768 to register. You will be called to confirm registration.

UNIX for Sequencers, Part I:
Tues., June 25, 10:00 A.M. to noon;
Eudora for Mac and Windows:
Thurs., June 27, 10:00 A.M. to noon;
UNIX for Sequencers, Part II:
Tues., July 2, 10:00 A.M. to noon;
Eudora for Mac and Windows:
Thurs., July 11, 10:00 A.M. to noon.

New Academic Council members

At the meeting of the Academic Council Tues., June 18, Professor Peter Model was elected to chair the Senate and its Academic Council, succeeding Professor Mary Elizabeth Hatten. New council members for the 1996-97 academic year are: Professors Frederick Cross, Jeffrey Friedman, and A. James Hudspeth, and Assistant Professor Ali Hemmati-Brivanlou, who was elected by the junior heads of lab.

The Academic Council, which represents the faculty on matters of interest to the university, comprises 12 faculty members—nine senior and three junior heads of lab. Members serve three-year terms. Continuing council members are: Professors Jan Breslow, Stephen Burley, James Darnell, Charles Gilbert, and Albert Libchaber, Associate Professor Sanford Simon, and Assistant Professor Robert Darnell. Outgoing members are, in addition to Hatten, Assistant Professor Ulrike Gaul and Professors Nathaniel Heintz and John Kuriyan.

Scenes from a summer supper

The Faculty and Students Club held its annual barbeque Fri., June 7.

Diamond center

(continued from page 1)

RU President Torsten Wiesel, who has chaired the Diamond Center Board of Directors since 1995 and has served as a member since 1993.

Among RU's investigations of HIV/AIDS are projects focused on the spread of the virus within the body, the immune system's molecular and cellular signaling processes involved in fighting HIV, the molecular characteristics of HIV replication, and use of therapies for HIV-related wasting syndrome and boosting of the immune system.

Since early 1995, Diamond Center scientists have conducted inpatient and outpatient studies of HIV/ AIDS at the RU Hospital, including trials of combination therapies for patients ranging from those newly infected with HIV to those with more advanced stages of the disease. Other Diamond Center studies focus on factors that influence HIV's ability to be transmitted, cause disease, replicate, and thwart treatments.

"We think the affiliation between the Aaron Diamond Center for AIDS Research and the Rockefeller University, which is highly regarded for its long tradition of basic research, will encourage a rich cross-fertilization of ideas and fruitful collaborations among the two institutions' investigators that may yield a greater understanding of HIV and the AIDS disease process and improve therapies for patients infected with the virus," said Ho.

The Aaron Diamond Foundation provided $11 million to create an independent nonprofit HIV/ AIDS research corporation in 1989, collaborating with the New York City Department of Health, New York University School of Medicine (NYU), and the Public Health Research Institute to open the center in 1991. On Mon., Apr. 15, 1996, the center's directors voted to dissolve its association with NYU.

"The Aaron Diamond AIDS Research Center for the City of New York looks forward to a most productive and interesting working future with Rockefeller University," said Irene Diamond, president of The Aaron Diamond Foundation, which she founded with her late husband, a real estate developer.

The Diamond Center's 50 scientists will continue to occupy a 20,000 square-foot floor of the New York City Bureau of Laboratories building. With the support of The Aaron Diamond Foundation, the center built state-of-the-science labs, including a 5,000 square-foot Biosafety Level-3 facility, in 1990 and 1991. The Diamond Center is renovating an adjacent floor of the building.

In addition to The Aaron Diamond Foundation, the Diamond Center has received funding from the National Institutes of Health (NIH), the Pediatric AIDS Foundation, and the American Foundation for AIDS Research (AmFAR). The center has an annual research budget of $6.7 million.

A native of China, Ho attended MIT and received a B.S. from the California Institute of Technology in 1974 and an M.D. from Harvard Medical School in 1978. Ho completed his residency at the UCLA School of Medicine in 1981, serving as chief resident in 1982. From 1982 to 1985, he was a clinical and research fellow in the Infectious Disease Unit of the Massachusetts General Hospital and a research fellow in medicine at Harvard.

From 1986 to 1990 he was a physician and research scientist in the Division of Infectious Diseases and the Department of Medicine at Cedars-Sinai Medical Center. Also in 1986, he became assistant professor of medicine in residence at the UCLA School of Medicine, becoming an associate professor in 1989. In 1990, Ho became director of the Diamond Center and professor of medicine and microbiology and co-director of the Center for AIDS Research at NYU, becoming director of the latter in 1994.

Ho serves on the scientific board of AmFAR, the President's National Task Force on AIDS Drug Development, and the NIH Vaccine Working Group. A fellow of the American Association for the Advancement of Science, he has received the Ernst Jung Prize in Medicine, among other honors.

The NIH has awarded Rockefeller several grants for HIV/AIDS and related studies. Private supporters of HIV/AIDS research at the university include The Aaron Diamond Foundation, American Express Foundation, AmFAR, Citicorp, donors to the DirectEffect AIDS Research Program, The Dorothy Schiff Foundation, Harry Winston Research Foundation, Inc., The Irvington Institute for Medical Research, Mellam Family Foundation, the Pediatric AIDS Foundation, Tebil Foundation, Christopher H. Browne, and Frederick Kane Marek.